ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 139

[EPA–HQ–OW–2019–0482; FRL–10015–54–OW]

RIN 2040–AF92

Vessel Incidental Discharge National Standards of Performance

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The U.S. Environmental Protection Agency (EPA) is publishing for public comment a proposed rule under the Vessel Incidental Discharge Act that would establish 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. The proposed national standards of performance were developed in coordination with the U.S. Coast Guard (USCG) and in consultation with interested Governors. The proposed standards, once finalized and implemented through corresponding USCG regulations addressing implementation, compliance, and enforcement, would reduce the discharge of pollutants from vessels and streamline the current patchwork of federal, state, and local vessel discharge requirements. Additionally, EPA is proposing procedures for states to follow if they choose to petition EPA to issue an emergency order, to review any standard of performance, regulation, or policy, to request additional requirements with respect to discharges in the Great Lakes, or to apply to EPA to prohibit one or more types of vessel discharges proposed for regulation in this rulemaking into specified waters to provide greater environmental protection.

DATES: Comments must be received on or before November 25, 2020. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before November 25, 2020.

ADDRESSES: Submit your comments to the public docket for this proposed rule, identified by Docket No. EPA–HQ–OW–2019–0482, at *https://www.regulations.gov*. Follow the online instructions for submitting comments. 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 ''General Information'' heading of the **SUPPLEMENTARY INFORMATION** section of this document. Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are closed to the public, with limited exceptions, to reduce the risk of transmitting COVID–19. Our Docket Center staff will continue to provide remote customer service via email, phone, and webform. We encourage the public to submit comments via *https://www.regulations.gov* or email, as there may be a delay in processing mail and faxes. Hand deliveries and couriers may be received by scheduled appointment only. For further information on EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets*.

FOR FURTHER INFORMATION CONTACT: Jack Faulk at (202) 564–0768; *faulk.jack@epa.gov* or Katherine Weiler at (202) 566–1280; *weiler.katherine@epa.gov* of the Oceans and Coastal Management Branch (4504T), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460.

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I. Public Participation

A. How should I submit written comments?

EPA solicits comment on the proposed rule during the public comment period. Submit your comments, identified by Docket ID No. EPA–HQ–OW–2019–0482, at *https://www.regulations.gov*. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit to EPA's docket at *https://www.regulations.gov* any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. 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. To facilitate the processing of comments, commenters are encouraged to organize their comments in a manner that corresponds to the outline of this proposal; clearly explain why they agree or disagree with the proposed language; suggest alternative language; and include any technical or economic data to support their comment. For comments to be considered during the development of the final rule, comments must be received before the end of the comment period.

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). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets*.

EPA is temporarily suspending its Docket Center and Reading Room for public visitors, with limited exceptions, to reduce the risk of transmitting COVID–19. Our Docket Center staff will continue to provide remote customer service via email, phone, and webform. We encourage the public to submit comments via *https://www.regulations.gov* as there may be a delay in processing mail and faxes. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at *https://www.epa.gov/dockets*.

EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID–19.

II. Legal Authority

EPA proposes this rule under the authority of Clean Water Act Sections 301, 304, 307, 308, 312, and 501 as amended by the Vessel Incidental Discharge Act. 33 U.S.C. 1311, 1314, 1317, 1322, and 1361.

III. Executive Summary

Discharges incidental to the normal operation of a vessel, also referred to as ''incidental discharges'' or ''discharges'' in this rulemaking, can have adverse impacts on aquatic ecosystems and other potential impacts such as to human health through contamination of food from aquaculture/shellfish harvesting areas because the discharges may contain pollutants such as aquatic nuisance species (ANS), nutrients, bacteria or pathogens (*e.g., Escherichia coli* and fecal coliform), oil and grease, metals, as well as other toxic, nonconventional, and conventional pollutants (*e.g.,* organic matter, bicarbonate, and suspended solids). These pollutants can have wide-ranging environmental consequences that vary in degree depending on the type and number of vessels operating in a waterbody and the nature and extent of the discharge.

The Clean Water Act (CWA), the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA), the Act to Prevent Pollution from Ships (APPS), and several other federal, state, local, and international authorities have established over time various requirements for both domestic and international vessels. To clarify and streamline existing requirements, in December of 2018, the President signed into law the Vessel Incidental Discharge Act (VIDA). 33 U.S.C. 1322(p). The VIDA established a new CWA Section 312(p) titled ''Uniform National Standards for Discharges Incidental to Normal Operation of Vessels.'' The VIDA consolidates and restructures the existing regulatory framework for non-military (vessels of the Armed Forces) and non-recreational vessels; clarifies current and future regulatory coverage for different types of vessels; and, requires EPA and the USCG to establish national standards of performance for marine pollution control devices and corresponding implementing regulations, respectively, to prevent or reduce the discharge of pollutants from vessels.

More specifically, the new CWA Section 312(p) directs the Administrator of EPA (Administrator) to develop national standards of performance in consultation with interested Governors and with the concurrence of the Secretary of the department in which the USCG is operating (Secretary) by December 2020. With limited exceptions, the VIDA requires that the standards be at least as stringent as EPA's 2013 National Pollutant Discharge Elimination System (NPDES) Vessel General Permit (VGP) requirements established under CWA Section 402. *See* 33 U.S.C. 1322(p)(4)(B)(iii) (EPA standards); *id.* (5)(A)(ii) (USCG requirements). The VIDA also requires that the standards be technology-based using a similar approach to that outlined by the CWA for setting, among other things, effluent limitation guidelines. Additionally, the VIDA requires the USCG to develop corresponding implementation, compliance, and enforcement regulations within two years after EPA publishes the national standards of performance. The USCG implementing regulations may also include requirements governing the design, construction, testing, approval, installation, and use of devices to achieve EPA national standards of performance. Importantly, requirements of EPA's VGP and the USCG's requirements under Section 110 of NANPCA remain in place until these new EPA and USCG regulations under CWA Section 312(p) are final, effective, and enforceable. In addition, the VIDA repealed the 2014 EPA NPDES Small Vessel General Permit (sVGP) and established that neither EPA nor the states shall require an NPDES permit for any discharge incidental to the normal operation of a vessel, other than ballast water, from a small vessel or fishing vessel, effective immediately upon enactment of the VIDA.

The proposed rule would establish both general and specific discharge standards of performance for approximately 82,000 international and domestic non-military, non-recreational vessels operating in the waters of the United States or the waters of the contiguous zone. The types of vessels intended to be covered under the proposed rule include, but are not limited to, public vessels of the United States, fishing vessels (for ballast water only), passenger vessels such as cruise ships and ferries, barges, tugs and tows, offshore supply vessels, mobile offshore drilling units, tankers, bulk carriers, cargo ships, container ships, and research vessels. While most provisions are intended to apply to a wide range of vessels, the VIDA specified that fishing vessels would only be subject to ballast water provisions. 33 U.S.C. 1322(p)(2)(B)(i)(III).

The general discharge standards of performance are designed to apply to all vessels and incidental discharges covered by the rule, as appropriate, and are organized into three categories: (1) General Operation and Maintenance, (2) Biofouling Management, and (3) Oil Management. The general discharge standards of performance are preventative in nature and require best management practices (BMPs) to minimize the introduction of pollutants into the discharges, as well as the volume of discharges.

The specific discharge standards of performance would establish requirements for 20 separate discharges incidental to the normal operation of a vessel from the following pieces of equipment and systems: Ballast tanks, bilges, boilers, cathodic protection, chain lockers, decks, desalination and purification systems, elevator pits, exhaust gas emission control systems, fire protection equipment, gas turbines, graywater systems, hulls and associated niche areas, inert gas systems, motor gasoline and compensating systems, non-oily machinery, pools and spas, refrigeration and air conditioning, seawater piping, and sonar domes. These discharge-specific requirements are based on best available technology economically achievable, best conventional pollutant control technology, and best practicable technology currently available, including the use of BMPs, to prevent or reduce the discharge of pollutants into the waters of the United States or the waters of the contiguous zone.

Pursuant to the VIDA, the proposed discharge standards of performance are proposed to be at least as stringent as the VGP, with some exceptions discussed below. However, the proposed standards do not incorporate the VGP requirements verbatim. EPA is proposing changes to the VGP requirements to transition the permit requirements into national technology-based standards of performance, improve clarity, enhance enforceability and implementation, or incorporate new information and technology. In some cases, this resulted in EPA consolidating or renaming the VGP requirements to comport with the VIDA. As proposed, the similarities and differences between the requirements in the proposed discharge standards of performance and the requirements in the VGP can be sorted into three distinct groups. The first group consists of 13 proposed discharge standards that are substantially the same as the requirements of the VGP: Boilers, cathodic protection, chain lockers, decks, elevator pits, fire protection equipment, gas turbines, inert gas systems, motor gasoline and compensating systems, non-oily machinery, pools and spas, refrigeration and air conditioning, and sonar domes. These 13 proposed discharge standards encompass the intent and stringency of the VGP but include other changes in response to the VIDA (*e.g.,* extent of regulated waters, consistency across discharge standards, enforceability and legal precision, as well as minor clarifications). The second group consists of two proposed discharge standards that are consistent but slightly modified from the VGP to expand controls or provide greater language clarifications: Bilges and desalination and purification systems. The third group consists of five proposed discharge standards which contain the greatest modifications from the VGP: Ballast tanks, exhaust gas emission control systems, graywater, hulls and associated niche areas, and seawater piping. In addition, EPA is proposing to modify slightly the requirements as they apply in federally-protected waters for five discharges: Chain lockers, decks, hulls and associated niche areas, pools and spas, and seawater piping. These modifications are being proposed to address specific VIDA requirements as well as incorporate new information that has become available since the issuance of the VGP.

CWA Section 312(p) also directs EPA to establish additional discharge requirements for vessels operating in certain bodies of water, to include: The ''Great Lakes,'' the ''Pacific Region,'' and waters subject to Federal protection, in whole or in part, for conservation purposes (''federally-protected waters''). The proposed rule would establish place-based requirements to further prevent or reduce the discharge of pollutants into these waterbodies that may contain unique ecosystems, support distinctive species of aquatic flora and fauna, contend with more sensitive water quality issues, or otherwise require greater protection.

Finally, as required under CWA Section 312(p), EPA is proposing specific procedural requirements for states seeking to petition EPA to establish different discharge standards, issue emergency orders, or establish no-discharge zones.

This proposed rule, once finalized, will fulfill EPA's requirements under CWA Section 312(p) to establish technology-based national standards of performance for discharges incidental to the normal operation of primarily non-military, non-recreational vessels 79 feet in length and above. EPA solicits public comments on this proposal and the associated regulatory impact analysis, which can be found in the rulemaking docket.

IV. Background

A. Clean Water Act

EPA's regulatory regime under the CWA to address vessel discharges has changed over the years due to EPA regulations, court decisions, and new legislation. The first sentence of the Federal Water Pollution Control Act Amendments of 1972, commonly known as the CWA,[1] states, ''[t]he objective of [the Act] is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.'' 33 U.S.C. 1251(a). Section 301(a) of the CWA provides that ''the discharge of any pollutant by any person shall be unlawful'' unless the discharge is in compliance with certain other sections of the Act. 33 U.S.C. 1311(a). Among its provisions, the CWA authorizes EPA and other federal agencies to address the discharge of pollutants from vessels. As such, EPA established regulations to address vessel discharges authorized under CWA Section 311 (addressing oil), Section 312 (addressing sewage and discharges incidental to the normal operation of a vessel of the Armed Forces), and Section 402 (pursuant to which EPA established the NPDES VGP).

From 1972 to 2005, EPA vessel regulations were primarily limited to addressing the discharge of oil and sewage under CWA Sections 311 and 312, respectively. In December of 2003, a long-standing exclusion of discharges incidental to the normal operation of vessels from the CWA Section 402 NPDES permitting program became the subject of a lawsuit in the U.S. District Court for the Northern District of California (*Nw. Envtl. Advocates* v. *U.S. Envtl. Prot. Agency,* No. C–03–05760–SI, 2005 WL 756614). The lawsuit arose from EPA's September 2003 denial of a January 1999 rulemaking petition submitted to EPA by parties concerned about the effects of ballast water discharges. Prior to the lawsuit, EPA, through a 1973 regulation, had excluded discharges incidental to the normal

[1] The FWPCA is commonly referred to as the CWA following the 1977 amendments to the FWPCA. Public Law 95–217, 91 Stat. 1566 (1977). For ease of reference, the agencies will generally refer to the FWPCA in this notice as the CWA or the Act.

operation of vessels from the CWA Section 402 permitting program. See 38 FR 13528, May 22, 1973. The petition asked the Agency to repeal its regulation at 40 CFR 122.3(a) that excludes certain discharges incidental to the normal operation of vessels from the requirement to obtain an NPDES permit. The petition asserted that vessels are ''point sources'' requiring NPDES permits for discharges to U.S. waters; that EPA lacks authority to exclude point source discharges from vessels from the NPDES program; that ballast water must be regulated under the NPDES program because it contains invasive plant and animal species as well as other materials of concern (*e.g.,* oil, chipped paint, sediment, and toxins in ballast water sediment); and that enactment of CWA Section 312(n) (Uniform National Discharge Standards, also known as the UNDS program) in 1996 demonstrated Congress' rejection of the exclusion.

In March 2005, the court determined the exclusion exceeded the Agency's authority under the CWA and subsequently in 2006 declared that ''[t]he blanket exemption for discharges incidental to the normal operation of a vessel, contained in 40 CFR 122.3(a), shall be vacated as of September 30, 2008.'' *Nw. Envtl. Advocates* v. *U.S. Envtl. Prot. Agency,* C 03–05760 SI, 2006 WL 2669042, at *15 (N.D. Cal. Sept. 18, 2006), *aff'd* 537 F.3d 1006 (9th Cir. 2008). Shortly thereafter, Congress enacted two pieces of legislation to exempt discharges incidental to the normal operation of certain types of vessels from the need to obtain a permit. The first of these, entitled the Clean Boating Act of 2008 (Pub. L. 110–288, July 28, 2008), amended the CWA to provide that discharges incidental to the normal operation of recreational vessels are not subject to NPDES permitting, and created a new regulatory regime to be implemented by EPA and the USCG under a new CWA Section 312(o). The second piece of legislation provided for a temporary moratorium on NPDES permitting for discharges, excluding ballast water, subject to the 40 CFR 122.3(a) exclusion from (1) commercial fishing vessels (as defined in 46 U.S.C. 2101 and regardless of size) and (2) those other non-recreational vessels less than 79 feet in length. S. 3298, Public Law 110–299 (July 31, 2008).

In response to the court decision and the legislation, EPA issued the first VGP in December 2008 for discharges incidental to the normal operation of non-recreational, non-military vessels 79 feet in length and above. See 73 FR 79473, December 29, 2008. Additionally, in September 2014, EPA issued the sVGP for discharges from non-recreational, non-military vessels less than 79 feet. See 79 FR 53702, September 10, 2014. Upon expiration of the 2008 permit, EPA issued the second VGP in 2013. See 78 FR 21938, April 12, 2013.

After the EPA issuance of the VGP under the CWA and the USCG promulgation of regulations under the NANPCA, the vessel community expressed concerns regarding the lack of uniformity, duplication, and confusion associated with the vessel regulatory regime. See Errata to S. Rep. No. 115–89 (2019) [hereinafter VIDA Senate Report], at 3–5 (discussing these and similar concerns), available at *https://www.congress.gov/115/crpt/srpt89/CRPT-115srpt89-ERRATA.pdf*. In response, members of Congress introduced various pieces of legislation to modify and clarify the regulation and management of ballast water and other incidental vessel discharges. In December 2018, President Trump signed into law the Frank LoBiondo Coast Guard Authorization Act of 2018, which included the VIDA. Public Law 115–282, tit. IX (2018) (codified primarily at 33 U.S.C. 1322(p)). The VIDA restructures the way EPA and the USCG regulate incidental vessel discharges from non-military, non-recreational vessels and amended CWA Section 312 to include a new Subsection (p) titled ''Uniform National Standards for Discharges Incidental to Normal Operation of Vessels.'' CWA Section 312(p), among other things, repeals EPA's 2014 sVGP effectively immediately and requires EPA and the USCG to develop new regulations to replace the existing EPA VGP and USCG vessel discharge requirements. The VIDA also specifies that, effectively immediately upon enactment of the VIDA, neither EPA nor NPDES-authorize states may require, or in any way modify, a permit under the NPDES program for any discharge incidental to the normal operation of a vessel from a small vessel (less than 79 feet in length) or fishing vessel (of any size).

Specifically, CWA Section 312(p)(4) directs the Administrator, with concurrence of the Secretary and in consultation with interested Governors, to promulgate national standards of performance for marine pollution control devices for each type of discharge incidental to the normal operation of non-recreational and non-military vessels.[2] CWA Section 312(p)(5) also directs the Secretary to develop corresponding implementing regulations to govern the implementation, compliance, and enforcement of the national standards of performance. Additionally, CWA Section 312(p) generally preempts states from establishing more stringent discharge standards once the USCG implementing regulations required under Section 312(p)(5)(A)–(C) are final, effective, and enforceable. However, the VIDA includes several exceptions to this expressed preemption (33 U.S.C. 1322(p)(9)(A)(ii)–(v); VIDA Senate Report at 15 (discussing these exceptions)), a savings clause (33 U.S.C. 1322(p)(9)(A)(vi)), and provisions for states working directly with EPA or the USCG to seek and obtain additional requirements, including the establishment of no-discharge zones for one or more incidental discharges (33 U.S.C. 1322(p)(10)(D)). Although not part of CWA Section 312(p), the VIDA also establishes several programs to address invasive species, including the establishment of the ''Great Lakes and Lake Champlain Invasive Species Program'' research and development program and the ''Coastal Aquatic Invasive Species Mitigation Grant Program.''

B. Additional U.S. and International Authorities

During the development of the proposed rule, EPA reviewed other U.S. laws and international authorities that address discharges incidental to the normal operation of a vessel. The requirements established under these authorities are currently being met and implemented and therefore are technologically and economically practicable and achievable. As appropriate, EPA considered these requirements while developing this proposed rule.

As expressly provided in the VIDA, this proposed rule would not affect the requirements for vessels established under any other provision of Federal law. 33 U.S.C. 1322(p)(9)(B). EPA provides a short summary of these U.S. authorities as well as some international authorities below.

[2] CWA Section 312(b) provides authority for EPA to establish federal standards of performance for sewage from vessels within the meaning of ''sewage'' as defined in section 312(a)(6). Thus, the discharge of sewage from vessels, is not included in this CWA section 312(p) rulemaking, except when commingled with other discharges incidental to the normal operation of a vessel, as authorized in CWA section 312(p)(2)(A)(ii). EPA and the USCG regulate sewage from vessels under CWA section 312(b) as codified in 40 CFR part 140 (marine sanitation device standard) and 33 CFR part 159 subparts A–D (requirements for the design, construction, certification, installation, and operation of marine sanitation devices).

International Convention for the Prevention of Pollution From Ships, the Act To Prevent Pollution From Ships, and Implementing Regulations

The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) is an international treaty that regulates certain discharges from vessels. MARPOL Annexes regulate different types of vessel pollution; the United States is a party to Annexes I, II, III, V, and VI. MARPOL is primarily implemented in the United States by APPS, 33 U.S.C. 1901 *et seq.* The USCG is the lead agency for APPS implementation and issued implementing regulations primarily found at 33 CFR part 151. Those requirements already apply to many of the vessels covered by the proposed rule.

APPS regulates the discharge of oil and oily mixtures, noxious liquid substances, and garbage, including food wastes and plastic. With respect to oil and oily mixtures, the USCG regulations at 33 CFR 151.10 prohibit ''any discharge of oil or oily mixtures into the sea from a ship'' except when certain conditions are met, including a discharge oil content of less than 15 parts per million (ppm) and that the ship operates oily water separating equipment, a bilge monitor, a bilge alarm, or a combination thereof.

Substances regulated as noxious liquid substances under APPS are divided into four categories based on their potential to harm marine resources and human health. Under 46 CFR 153.1128, discharges of noxious liquid substances residues at sea may only take place at least 12 nautical miles (NM) from the nearest land. Given this requirement, the proposed rule would also prohibit the discharge of noxious liquid substances within 12 NM from the nearest land.

MARPOL Annex III addresses harmful substances in packaged form and is implemented in the United States by the Hazardous Materials Transportation Authorization Act of 1994, as amended (49 U.S.C. 5901 *et seq.*), and regulations appearing at 46 CFR part 148 and 49 CFR part 176. The regulatory provisions establish labeling, packaging, and stowage requirements for such materials to help avoid their accidental loss or spillage during transport. The proposed rule does not regulate loss or spillage of transported materials; however, the proposed rule would establish BMPs to help reduce or prevent the loss of materials and debris overboard.

Oil Pollution Act (33 U.S.C. 2701 et seq.)

The Oil Pollution Act of 1990 and the associated USCG implementing regulations at 33 CFR parts 155 and 157 also address oil and oily mixture discharges from vessels. These regulations establish and reinforce the 15 ppm discharge standard under APPS for oil and oily mixtures for seagoing ships and require most vessels to have an oily water separator. Oceangoing vessels of less than 400 gross tonnage as measured under the Convention Measurement System of the International Convention on Tonnage Measurement of Ships (GT ITC) (400 gross register tonnage (GRT) if GT ITC is not assigned) must either have an approved oily water separator or retain oily water mixtures on board for disposal to an approved reception facility onshore. Oceangoing vessels of 400 GT ITC (400 GRT if GT ITC is not assigned) and above, but less than 10,000 GT ITC (10,000 GRT if GT ITC is not assigned), except vessels that carry ballast water in their fuel oil tanks, must be fitted with ''approved 15 parts per million (ppm) oily-water separating equipment for the processing of oily mixtures from bilges or fuel oil tank ballast.'' 33 CFR 155.360(a)(1). Oceangoing ships of 10,000 gross tonnage and above and oceangoing ships of 400 gross tonnage and above that carry ballast water in their fuel oil tanks, must be fitted with approved 15 ppm oily water separating equipment for the processing of oily mixtures from bilges or fuel oil tank ballast, a bilge alarm, and a means for automatically stopping any discharge of oily mixture when the oil content in the effluent exceeds 15 ppm. 33 CFR 155.370. 33 CFR part 155 also references oil containment and cleanup equipment and procedures for preventing and reacting to oil spills and discharges. The proposed rule references or incorporates the existing requirements for fuel and oil established under the Oil Pollution Act and APPS and prohibits the discharge of oil greater than 15 ppm.

Clean Water Act Section 311 (33 U.S.C. 1321)

CWA Section 311, Oil and Hazardous Substances Liability Act, states that it is a policy of the United States that there should be no discharges of oil or hazardous substances into the waters of the United States, adjoining shorelines, and certain specified areas, except where permitted under Federal regulations (*e.g.,* the NPDES program). As such, the Act prohibits the discharge of oil or hazardous substances into these areas in such quantities as may be harmful. Further, the Act states that the President shall, by regulation, determine those quantities of oil and any hazardous substances that may be harmful if discharged. EPA defines the discharge of oil in such quantities as may be harmful as those that violate applicable water quality standards or ''cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoin shorelines.'' 40 CFR 110.3. Sheen is clarified to mean ''an iridescent appearance on the surface of the water.'' 40 CFR 110.1. The proposed rule would prohibit the discharge of oil, including oily mixtures, in such quantities as may be harmful.

Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 *et seq.*).

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates the distribution, sale, and use of pesticides. One of the primary components of FIFRA requires the registration and labeling of all pesticides sold or distributed in the United States, ensuring that, if pesticides are used in accordance with the specifications on the label, they will not cause unreasonable adverse effects on humans or the environment. The proposed rule would reiterate from the VGP that any registered pesticide must be used in accordance with its FIFRA label for all activities that result in a discharge into the waters of the United States or the waters of the contiguous zone. The proposed rule does not negate the requirements under FIFRA and its implementing regulations to use registered pesticides consistent with the product's labeling. In fact, the discharge of pesticides used in violation of certain FIFRA requirements could also be a violation of these standards and therefore a violation of the CWA (*e.g.,* exceeding hull coating application rates).

National Marine Sanctuaries Act (16 U.S.C. 1431 *et seq.* and Implementing Regulations Found at 15 CFR Part 922 and 50 CFR Part 404)

The National Marine Sanctuaries Act (NMSA) authorizes the designation and management of National Marine Sanctuaries to protect marine resources with conservation, education, historical, scientific, and other special qualities. Under NMSA, additional restrictions and requirements may be imposed on vessel operators who boat in and around National Marine Sanctuaries. Consistent with the VGP, the proposed rule would establish additional restrictions and requirements for certain discharges for vessels that operate in and around National Marine Sanctuaries as these areas are included in the definition of federally-protected waters in the proposed rule as designated in Appendix A of Part 139. Pursuant to CWA Sections 312(9)(B) and (E), discharge requirements established by regulations promulgated by the Secretary of Commerce under the National Marine Sanctuaries Act would continue to apply to waters under the control of the Secretary of Commerce (*e.g.,* National Marine Sanctuaries) in addition to the standards and requirements established in this proposed rule.

C. Environmental Impacts of Discharges for Which Technology-Based Discharge Standards Would Be Established by This Rule

Discharges incidental to the normal operation of vessels can have significant adverse impacts on aquatic ecosystems and other potential impacts such as to human health through contamination of food from aquaculture/shellfish harvesting areas through the addition of pollutants (*e.g.,* metals, nutrients, bacteria, viruses, ANS). The adverse environmental impacts vary considerably based on the type and number of vessels, the size and location of the port or marina, and the condition of the receiving waters. These adverse impacts are more likely to occur when there are significant numbers of vessels operating in receiving waters with limited circulation or if the receiving waters are already impaired. As a result of this variation, protecting U.S. waters from vessel-related activities poses unique challenges for local, state, and federal governments. Targeted reduction of certain discharges or constituents of concern can significantly benefit receiving waters.

The information below provides an overview of the environmental impacts associated with the pollutants addressed in this proposed rule: ANS, nutrients, pathogens (including *Escherichia coli* and fecal coliform), oil and grease, metals, toxic and nonconventional pollutants with toxic effects, and other nonconventional and conventional pollutants.

Aquatic Nuisance Species (ANS)

ANS are a persistent problem in U.S. coastal and inland waters. ANS can include invasive plants, animals, and pathogens. The VIDA specifically includes ANS in the category of nonconventional pollutants to be regulated through the application of best available technology and best practicable technology. 33 U.S.C. 1322(p)(4)(B)(i).

ANS may be incidentally discharged or released from a vessel's operations through a variety of vessel systems and equipment, including but not limited to ballast water, sediment from ballast tanks, vessel hulls and appendages, seawater piping, chain lockers, and anchor chains. ANS pose severe threats to aquatic ecosystems, including outcompeting native species, damaging habitat, changing food webs, and altering the chemical and physical aquatic environment. Furthermore, ANS can have profound and wide-ranging socioeconomic impacts, such as damage to recreational and commercial fisheries, infrastructure, and water-based recreation and tourism. Once established, it is extremely challenging and costly to remove ANS and remediate the impacts. It has become even more critical to control discharges of ANS from vessel systems and equipment with the increase in ship traffic due to globalization and increased trade.

Nutrients

Nutrients, including nitrogen, phosphorus, and other micro-nutrients, are constituents of incidental discharges from vessels. Though often associated with discharges from sewage treatment facilities and other sources such as runoff from agricultural and urban stormwater sources, nutrients are also discharged from vessel sources such as runoff from deck cleaning, graywater, and bilgewater.

Increased nutrient discharges from anthropogenic sources are a major source of water quality degradation throughout the United States (U.S. Geological Survey, 1999). Generally, nutrient over-enrichment of waterbodies adversely impacts biological diversity, fisheries, and coral reef and seagrass ecosystems (National Research Council, 2000). One of the most notable effects of nutrient over-enrichment is the excess proliferation of plant life and ensuing eutrophication. A eutrophic system has reduced levels of dissolved oxygen, increased turbidity, and changes in the composition of aquatic flora and fauna. Such conditions also fuel harmful algal blooms, which can have significant adverse impacts on human health as well as aquatic life (National Research Council, 2000; Woods Hole Oceanographic Institute, 2007).

Pathogens

Pathogens are another constituent that can be found in discharges from vessels, particularly in graywater and ballast water discharges. Discharges of pathogens into waterbodies can adversely impact local ecosystems, fisheries, and human health. Pathogens found in untreated graywater are similar to, and in some cases may have a higher concentration than, domestic sewage entering land-based wastewater treatment plants (U.S. EPA, 2008). Specific pathogens of concern found in graywater include *Salmonella* spp., *Escherichia coli,* enteroviruses, hepatitis, and pathogenic protists (National Research Council, 1993). Additional pathogen discharges have also been associated with ballasting operations, including *Escherichia coli,* intestinal enterococci, *Vibrio cholerae, Clostridium perfringens, Salmonella* spp., *Cryptosporidium* spp., *Giardia* spp., and a variety of viruses (Knight et al., 1999; Reynolds et al., 1999; Zo et al., 1999). Pathogens can potentially even be transported in unfilled ballast water tanks (Johengen et al., 2005). Under the VIDA, bacterial and viral pathogens can qualify as ''aquatic nuisance species.'' 33 U.S.C. 1312(p)(1)(A), (Q), (R) (defining the related terms ''aquatic nuisance species,'' ''nonindigenous species,'' and ''organism'').

Oil and Grease

Vessels can discharge a variety of oils during normal operations, including lubricating oils, hydraulic oils, and vegetable or organic oils. A significant portion of the lubricants discharged from a vessel during these normal operations directly enters the marine environment. Some types of oil and grease can be highly toxic and carcinogenic, and have been shown to alter the immune system, reproductive abilities, and liver functions of many aquatic organisms (Ober, 2010). Broadly, the toxicity of oil and grease to aquatic life is due to reduced oxygen transport potential and an inability of organisms to metabolize and excrete them once ingested, absorbed, or inhaled.

The magnitude of impact of oils differs depending on the chemical composition, method of exposure, concentration, and environmental conditions (*e.g.,* weather, salinity, temperature). It can therefore be difficult to identify one single parameter responsible for negatively impacting aquatic life. However, studies have shown that compounds with hydrocarbon chains are consistently associated with harmful impacts. Hydrocarbon chains contain strong hydrogen bonds, which do not readily break down in water. Such oils can then accumulate in the tissues of aquatic organisms and cause toxic effects.

Aromatic hydrocarbon compounds, commonly present in fuels, lubricants, and additives, are consistently associated with acute toxicity and harmful effects in aquatic biota (Dupuis and Ucan-Marin, 2015*).* Impacts are observed in both developing and adult organisms, and include reduced growth, enlarged livers, fin erosion, reproduction impairment, and modifications to heartbeat and respiration rates (Dupuis and Ucan-Marin, 2015). Laboratory experiments have shown that fish embryos exposed to hydrocarbons exemplify symptoms collectively referred to as blue sac disease (BSD). Symptoms of BSD range from reduced growth and spinal abnormalities, to hemorrhages and mortality (Dupuis and Ucan-Marin, 2015). Oils can also taint organisms that are consumed by humans, resulting in economic impacts to fisheries and potential human health effects.

In establishing the VGP, EPA considered the research efforts focused on the development of environmentally acceptable lubricants (EALs). Production of EALs focuses on using chemicals with oxygen atoms, which, unlike hydrocarbons, makes them water soluble. The solubility of EALs increases their biodegradability, thereby decreasing their accumulation in aquatic environments. The solubility of EALs also makes it easier for aquatic life to metabolize and excrete these chemicals (U.S. EPA, 2011). Overall, EALs reduce bioaccumulation potential and toxic effects to aquatic life.

Metals

Vessel discharges can contain metal constituents from a variety of on-board sources, including graywater, bilgewater, exhaust gas emission control systems, and firemain systems. While some metals, including copper, nickel, and zinc, are known to be essential to organism function when present at certain levels, many others, including thallium and arsenic, are non-essential and/or are known to have only adverse impacts. Even essential metals may harm organism function in sufficiently elevated concentrations. Some metals may also bioaccumulate in the tissues of aquatic organisms, intensifying toxic effects. Through a process called biomagnification, concentrations of some metals can increase up the food chain, leading to elevated levels in commercially harvested fish species (U.S. EPA, 2007).

Vessel hulls and appendages are frequently coated in metal-based biocides to prevent biofouling. The most widely-used metal in biocides is copper. While it is an essential nutrient, copper can be both acutely and chronically toxic to fish, aquatic invertebrates, and aquatic plants at higher concentrations. Elevated concentrations of copper can adversely impact survivorship, growth, and reproduction of aquatic organisms (U.S. EPA, 2016). Copper can inhibit photosynthesis in plants and interfere with enzyme function in both plants and animals in concentrations as low as 4 µg/L (U.S. EPA, 2016).

Other Pollutants

Vessel discharges can contain a variety of other toxic, conventional, and nonconventional pollutants. This rule would help to prevent and control the discharge of certain pollutants that have been identified in the various discharges. For example, graywater can contain phthalates phenols, and chlorine (U.S. EPA, 2008). These compounds can cause a variety of adverse impacts on aquatic organisms and human health. Phthalates are known to interfere with reproductive health, liver, and kidney function in both animals and humans. (Sekizawa et al., 2003; DiGangi et al., 2002). Chlorine can cause respiratory problems, hemorrhaging, and acute mortality to aquatic organisms even at relatively low concentrations (U.S. EPA, 2008).

Vessel discharges may also contain certain biocides used in vessel coatings, which can be harmful to aquatic organisms. For example, cybutryne, also commonly known as Irgarol 1051, is a biocide that functions by inhibiting the electron transport mechanism in algae, thus inhibiting growth. Numerous studies indicate that cybutryne is both acutely and chronically toxic to a range of marine organisms, and in certain cases, more harmful than tributyltin (Carbery et al, 2006; Van Wezel and Van Vlaardingen, 2004).

Some vessel discharges are more acidic or basic than the receiving waters, which can have a localized effect on pH (Alaska Department of Environmental Conservation, 2007). For example, exhaust gas emission control systems remove sulfur dioxide in exhaust gas and dissolve it in washwater, where it is then ionized and produces an acidic washwater. Research has shown that even minor changes in ambient pH can have profound effects, such as developmental defects, reduced larval survivorship, and decreased calcification of corals and shellfish (Oyen et al., 1991; Zaniboni-Filho et al., 2009, Marubini and Atkinson, 1999).

V. Scope of the Regulatory Action

A. Waters

The proposed rule would apply to incidental discharges from non-military, non-recreational vessels operating in the waters of the United States or the waters of the contiguous zone. 33 U.S.C. 1322(p)(8)(B). Sections 502(7), 502(8), and 502(9) of the CWA define the terms ''navigable waters,'' ''territorial seas,'' and ''contiguous zone,'' respectively. The term ''navigable waters'' means the waters of the United States including inland waters and the territorial seas, where the United States includes the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the Trust Territories of the Pacific Islands. The term ''territorial seas'' means the belt of seas that extends three miles seaward from the line of ordinary low water along the portion of the coast in direct contact with the open sea and the line marking the seaward limit of inland waters. The term ''contiguous zone'' means the entire zone established or to be established by the United States under Article 24 of the Convention of the Territorial Sea and the Contiguous Zone.

B. Vessels

The proposed rule would apply to discharges incidental to the normal operation of a vessel as set forth in CWA Section 312(p)(2). The proposed rule would not apply to discharges incidental to the normal operation of a vessel of the Armed Forces subject to CWA Section 312(n); a recreational vessel subject to CWA Section 312(o); a small vessel less than 79 feet in length or a fishing vessel, except that the proposed rule would apply to any discharge of ballast water from a small vessel or fishing vessel; or a floating craft that is permanently moored to a pier, including a floating casino, hotel, restaurant, or bar. The types of vessels intended to be covered under the proposed rule include, but are not limited to, public vessels of the United States, commercial fishing vessels (for ballast water only), passenger vessels such as cruise ships and ferries, barges, tugs and tows, offshore supply vessels, mobile offshore drilling units, tankers, bulk carriers, cargo ships, container ships, and research vessels. EPA estimates that the domestic and international vessel population that would be subject to the proposed national standards of performance is approximately 82,000 vessels. The proposed rule also would not apply to a narrow category of ballast water discharges that Congress believed do not pose a risk of spreading or introducing ANS (VIDA Senate Report, at 10), or to any discharges that result from (or contain material derived from) an activity other than the normal operation of a vessel (33 U.S.C. 1322(p)(2)(B)(iii)). Unless otherwise provided by CWA Section 312(p), any incidental discharges excluded from regulation in the VIDA remain subject to the pre-enactment status quo (*e.g.,* State law, NPDES permitting, etc.). VIDA Senate Report, at 10.

The national standards of performance proposed herein apply equally to new and existing vessels except in such cases where the proposed rule expressly distinguishes between such vessels as authorized by CWA Section 312(p)(4)(C)(ii).

C. Incidental Discharges

EPA proposes to establish general as well as specific national standards of performance for discharges incidental to the normal operation of a vessel described in CWA Section 312(p)(2). The general standards would be applicable to all vessels and incidental discharges subject to the proposed rule to the extent that the requirements are appropriate for each incidental discharge. The specific standards would be applicable to specific incidental discharges from the normal operation of the following types of vessel equipment and systems: Ballast tanks, bilges, boilers, cathodic protection, chain lockers, decks, desalination and purification systems, elevator pits, exhaust gas emission control systems, fire protection equipment, gas turbines, graywater systems, hulls and associated niche areas, inert gas systems, motor gasoline and compensating systems, non-oily machinery, pools and spas, refrigerators and air conditioners, seawater piping, and sonar domes.

D. Emergency and Safety Concerns

The VIDA recognizes that safety of life at sea and other emergency situations not resulting from the negligence or malfeasance of the vessel owner, operator, master, or person in charge may arise, and that the prevention of loss of life or serious injury may require operations that would not otherwise be consistent with these standards. Therefore, it is reasonably likely that no person would be found to be in violation of the proposed rule under the affirmative defense described in CWA Section 312(p)(8)(C). The corresponding USCG implementing regulations would include language to address vessel emergency and safety considerations.

E. Effective Date

The proposed national standards of performance, once finalized, would become effective beginning on the date upon which the regulations promulgated by the Secretary pursuant to CWA Section 312(p)(5) governing the implementation, compliance, and enforcement of the national standards of performance become final, effective, and enforceable. Per CWA Section 312(p)(3)(c), as of that date, the requirements of the VGP and all regulations promulgated by the Secretary pursuant to Section 1101 of the NANPCA (16 U.S.C. 4711) (as in effect on December 3, 2018), including the regulations contained in subparts C and D of part 151 of title 33, Code of Federal Regulations, and 46 CFR 162.060 (as in effect on December 3, 2018), shall be deemed repealed and have no force or effect. Similarly, as of that same date, any CWA Section 401 certification requirement in Part 6 of the 2013 VGP, shall be deemed repealed and have no force or effect.

VI. Stakeholder Engagement

During the development of the proposed rule, EPA and the USCG reached out to other federal agencies, states, tribes, non-governmental organizations, and the maritime industry. Detailed documentation of the stakeholder outreach prior to the proposal is in the public docket for the proposed rulemaking. EPA also intends to hold stakeholder engagement opportunities during the proposed rule public comment period. General summaries of the outreach are included in this section and in section XII. Statutory and Executive Order Reviews.

A. Informational Webinars and Public Listening Session

EPA, in coordination with the USCG, hosted two informational webinars on May 7 and 15, 2019 to enhance public awareness about the VIDA and provide opportunity for engagement. During the webinars, EPA and the USCG provided a general overview of the VIDA, discussed interim and future discharge requirements, described future state and public engagement opportunities, and answered clarifying questions raised by the audience. The webinar recordings and presentation material are available at *https://www.epa.gov/vessels-marinas-and-ports/vessel-incidental-discharge-act-vida-engagement-opportunities*.

Additionally, EPA, in coordination with the USCG, hosted a public, in-person listening session at the U.S. Merchant Marine Academy in New York on May 29–30, 2019. At the listening session, EPA with the support of the USCG, provided an overview of the VIDA, described the interim requirements and the framework for the future regulations, and conducted sessions on key vessel discharges to provide an opportunity for public input. Fifty-two individuals from a variety of stakeholder groups attended and provided input. Public input largely centered on ballast water management systems, including testing methods and monitoring requirements. Stakeholders requested harmonization of domestic regulations with those of the International Maritime Organization (IMO), such as standards for exhaust gas emission control systems. Input was also received on challenges with compliance and reporting under the VGP and the USCG ballast water regulations. The meeting agenda and a summary of the comments received are available in the public docket for this proposed rulemaking.

B. Post-Proposal Public Meetings

During the public comment period for this proposed rule, EPA intends to hold public meetings to provide an opportunity for stakeholders to ask questions about the proposed rule and describe procedures for submitting formal comments on the rule. Details for these public meetings will be made available at *https://www.epa.gov/vessels-marinas-and-ports/vessel-incidental-discharge-act-vida-engagement-opportunities*.

C. Consultation and Coordination With States

1. Federalism Consultation

Pursuant to the terms of Executive Order 13132, on July 9, 2019 in Washington, DC, EPA and the USCG conducted a Federalism consultation briefing to allow states and local officials to have meaningful and timely input into EPA rulemaking for the development of the national standards of performance. Additional information regarding the VIDA Federalism Consultation can be found in section XII. Statutory and Executive Order Reviews.

2. Governors Consultation

CWA Section 312(p)(4)(A)(iii)(II) directs EPA to develop a process for soliciting input from interested Governors to allow interested Governors to inform the development of the national standards of performance, including sharing information relevant to the process. On July 10 and 18, 2019, EPA and the USCG, with the support and assistance of the National

Governors Association, held meetings with Governor representatives to provide an overview of the VIDA, discuss state authorities under the VIDA, and solicit input on a process that would meet both the statutory requirements and state needs. Based on this input, EPA developed its ''Governors' input process'' for this rulemaking. Thirteen states (Alaska, California, Hawaii, Maryland, Michigan, Minnesota, New York, North Carolina, Ohio, Puerto Rico, Virginia, Washington, and Wisconsin) participated in the process as did representatives from the Western Governors Association, the Pacific States Marine Fisheries Commission, and the All Islands Coral Reef Committee.

EPA developed the VIDA Governors' input process to outline EPA's intended approach to engage with the states and address their expressed interest for multiple enhanced engagement opportunities (possibly regionally-based), additional details regarding the direction of the proposed standards, and ultimately, more involvement in the development of the national standards of performance.

The Governors' input process included three regional, web-based forums for Governors and their representatives to inform EPA on the challenges and concerns associated with existing requirements under the VGP and to discuss potential considerations for key discharges of interest. The three regional, web-based forums were held on September 10 (Western States), September 12, (Great Lakes States) and September 19 (All States), 2019. During each forum subject-matter experts from EPA provided a brief background on the VIDA followed by organized discussions regarding the key discharges identified by the regional representatives prior to the forum. During the organized discussions, interested Governors' representatives commented on the presentation content, shared applicable scientific or technical information, and provided suggested options for EPA to consider during the development of the national standards of performance. In addition to the verbal input provided during the three regional, web-based forums, EPA accepted written comments. Copies of those written comments are included in the public docket for this proposed rule.

Additionally, EPA held two follow-up calls with representatives from the Great Lakes states on December 18, 2019. During each call, EPA addressed the comments that had been submitted by Great Lakes states, including comments on specific requirements of the VIDA, non-ballast water discharges, and best available technology as it relates to ballast water treatment systems. Representatives from Michigan, New York, Wisconsin, Pennsylvania, Illinois, Minnesota, and Ohio attended the calls.

EPA also held a follow-up call with representatives from the West Coast states on January 15, 2020. During the call, EPA addressed the comments that had been submitted by West Coast states, including comments on outreach and engagement, the best available technology analysis for ballast water treatment systems, and regulation of biofouling and in-water cleaning and capture devices. Representatives from the states of California, Hawaii, Oregon, and Washington, as well as representatives from the Pacific States Marine Fisheries Commission and the Western Governors Association attended the call.

In conjunction with the requirement to engage states in the development of the proposed standards, CWA Section 312(p)(4)(A)(iii)(III) provides for governors to formally object to a proposed national standard of performance. As detailed in CWA Section 312(p)(4)(A)(iii)(III), an interested Governor may submit to the Administrator a written, detailed objection to the proposed national standard of performance, describing the scientific, technical, and operational factors that form the basis of the objection. Before finalizing a national standard of performance for which there has been an objection from one or more interested Governors, the Administrator shall provide a written response to the objection detailing the scientific, technical, or operational factors that form the basis for that standard.

To be considered an objection by the Administrator under CWA Section 312(p)(4)(A)(iii)(III)(aa), an objection letter from the Governor must:

- Be submitted in writing to the Administrator;
- Be signed by the Governor;
- Clearly state the proposed standard that is the subject of the objection;
- Describe the scientific, technical, or operational factors that indicate why the proposed standard does not represent the best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and/or best available technology economically achievable (BAT) to address the conventional pollutants, toxic pollutants, and nonconventional pollutants contained in the discharge; and
- Include the scientific, technical, or operational factors that indicate what BPT, BCT, and BAT is available that should be included in the proposed standard to address the conventional pollutants, toxic pollutants, and nonconventional pollutants contained in the discharge.

In addition, to facilitate EPA's due consideration of any objections within a timeframe that would enable EPA to meet its statutory deadline for this rulemaking, EPA requests that any Governor's objection be submitted within 60 days of the published Notice of Proposed Rulemaking.

Pursuant to CWA Section 312(p)(4)(A)(iii)(III)(bb), the Administrator's response would:

- Be provided in writing to each interested Governor prior to publication of the final rule;
- Be signed by the Administrator; and
- Include the scientific, technical, or operational factors that form the basis for the proposed standard.

3. Comments (Federalism Consultation and Governors' Consultation Comments)

During the engagement with states, EPA received pre-proposal comments from states, governors, and governors' representatives. EPA received comments submitted by representatives from Hawaii, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, Puerto Rico, U.S. Virgin Islands, Florida, California, Washington, Oregon, Wisconsin, Michigan, Minnesota, and the Western Governors Association. The pre-proposal comments primarily focused on ballast water, biofouling, and the state engagement process. These comments can be found in the public docket for this proposed rule.

VII. Definitions

The proposed rule includes definitions for several statutory, regulatory, and technical terms. These definitions apply solely for the purposes of the proposed rule and do not affect the definition of any similar terms used in any other context. By including these definitions, EPA has, where possible, relied on existing definitions from other laws, regulations, and the VGP to provide consistency with existing requirements. Many of the proposed definitions are taken either verbatim or with minor clarifying edits from the VIDA, the legislation upon which this proposed rule is based. This includes definitions for: ANS, ballast water, ballast water exchange, ballast water management system, Captain of the Port (COTP) Zone, commercial vessel—as that term is used for vessels operating within the Pacific Region, empty ballast tank, Great Lakes State, internal waters, live or living, marine pollution control device, organism, Pacific Region, port or place of destination, render nonviable, saltwater flush, Secretary, small vessel or fishing vessel (and the term ''fishing vessel'' to direct the reader to the definition of ''small vessel or fishing vessel''), and VGP.

To provide additional clarity for certain proposed standards, if terms were not defined in the VIDA, the proposed rule includes definitions from other sections of the CWA, USCG regulations, the VGP, and other regulations. Additionally, EPA is proposing to include new definitions for federally-protected waters, fouling rating, marine growth prevention system, mid-ocean, and oil-to-sea interface. Terms not defined in the proposed rule have the meaning defined under the CWA and any applicable regulations.

VIII. Development of National Discharge Standards of Performance

The CWA established a two-step process for implementation of increasingly stringent limitations. The first step, to be accomplished by July 1, 1977, required compliance with standards based on ''the application of the best practicable control technology currently available [BPT] as defined by the Administrator. . . .'' 33 U.S.C. 1311(b)(1)(A). The second step, to be accomplished by July 1, 1987, required compliance with standards based on application of the ''best available technology economically achievable [BAT] for such category or class. . . .'' 33 U.S.C. 1311(b)(2)(A). The CWA, as amended in 1977, replaced the BAT standard with a new standard, ''best conventional pollutant control technology [BCT],'' but only for certain so-called ''conventional pollutants'' (*i.e.,* total suspended solids, oil and grease, biochemical oxygen demand (BOD_5), fecal coliform, and pH). 33 U.S.C. 1311(b)(2)(E) (1976 ed., Supp. III). Section 312(p)(4)(B)(i) of the VIDA requires the national standards of performance promulgated for conventional pollutants, toxic pollutants, and nonconventional pollutants (including ANS) be developed using the same statutory framework as applied to the VGP. Specifically, the national standards of performance developed under the VIDA for all categories and classes of vessels must require the application of best practicable control technology currently available (BPT) for conventional, toxic, and nonconventional pollutants; best conventional pollutant control technology (BCT) for conventional pollutants; and best available technology economically achievable (BAT) for toxic and nonconventional pollutants (including ANS), which will result in reasonable progress toward the national goal of eliminating the discharge of all pollutants. 33 U.S.C. 1322(p)(4)(B)(i). The VIDA specifically adopts by reference the existing BPT, BCT, and BAT standards defined elsewhere in the CWA at Sections 301(b) and 304(b). 33 U.S.C. 1322(p)(1)(F), (G), (I). CWA Section 312(p)(4)(B)(ii) also directs EPA to use BMPs to control or abate any discharge incidental to the normal operation of a vessel if numeric discharge standard standards are infeasible or if the BMPs are reasonably necessary to achieve the standards or to carry out the purpose of reducing and eliminating the discharge of pollutants.

In addition, CWA Section 312(p)(4)(B) establishes minimum requirements for the national standards of performance such that, ''the combination of any equipment or best management practice . . . shall not be less stringent than'' the effluent limits and related requirements established in parts 2.1, 2.2, or 5 of the VGP. 33 U.S.C. 1322(p)(4)(B)(iii). Thus, while the statute directs EPA to set the national standards of performance at the level of BPT/BCT/BAT, depending on the pollutant, it also creates a presumption that those standards would provide protection at least equivalent to the VGP requirements absent one of the exceptions at CWA Section 312(p)(4)(D)(ii)(II) for situations where either new information becomes available that ''would have justified the application of a less-stringent standard'' or ''if the Administrator determines that a material technical mistake or misinterpretation of law occurred when promulgating the existing standard.'' Absent one of those exceptions, the statute directs that EPA ''shall not revise a standard of performance . . . to be less stringent than an applicable existing requirement.'' 33 U.S.C. 312(p)(4)(D)(ii)(I).

EPA endeavored to identify instances where the BPT/BCT/BAT level of control called for new, more stringent options for the national standards of performance; however, where EPA identified no such new information or options, EPA is continuing to rely on the BPT/BCT/BAT analysis that led to the development of the VGP requirements. This approach is consistent with EPA's obligations under CWA Section 312(p)(4) for the following reasons. The effluent limits that EPA adopted in the VGP were already the product of a BPT/BCT/BAT analysis described in the permit fact sheets for both the 2008 and 2013 iterations of the VGP and corresponding supporting materials. The text of CWA Section 312(p)(4)(D)(ii) prohibits EPA from ''revis[ing] a standard of performance. . . to be less stringent than an applicable existing requirement.'' There is a narrow exception for instances where EPA identifies absent new information or technical or legal error in the VGP analysis. Absent such exception, the VIDA prohibits EPA from identifying a less stringent option as BPT/BCT/BAT. Indeed, by identifying the VGP as the minimum requirements for the national standards of performance and then expressly identifying the circumstances under which EPA could select a different, less stringent standard (*i.e.,* new information or error), the text and legislative history of the VIDA show that Congress intended to preserve the existing VGP requirements as a regulatory floor. VIDA Senate Report, at 12 (''The exceptions to this provision [for new information and technical or legal error] would provide the sole basis for the Administrator to weaken standards of performance compared to the legacy VGP requirements. . . .''). Moreover, Congress did not intend for EPA to depart from the considerations that informed the VGP. To the contrary, although the VIDA is a permit-less regime, Congress defined BPT, BCT, and BAT with ''intentional[] cross-reference[s]'' to where those terms are used elsewhere in the CWA ''to ensure that the Administrator makes identical considerations when setting the standards of performance under CWA Section 312(p) as the Administrator was previously required to do when setting technology-based effluent limits for permits'' like in the VGP. VIDA Senate Report, at 11. It is significant that Congress gave EPA only a two-year deadline to develop the national standards of performance for marine pollution control devices for each type of discharge incidental to the normal operation of a vessel that is subject to regulation under the VIDA. The VGP requirements address more than 30 such discharges and given the short timeframe that Congress set forth for this task, EPA did not think it was necessary or appropriate to re-analyze the marine pollution control device standards for which there have not been meaningful changes in technology or practice since EPA last undertook a BPT/BCT/BAT analysis. In contrast to this initial promulgation of standards, Congress established a significantly longer five-year cycle for review and, if appropriate, future revision of the initial standards. 33 U.S.C. 1322(p)(4)(D)(i).

While EPA is, for most of the discharges addressed in this rulemaking, relying on the BPT/BCT/BAT analysis that was performed to develop the VGP, EPA is not incorporating the VGP requirements verbatim. In many cases, EPA proposes change to translate the VGP discharge requirements into national standards of performance or otherwise improve the clarity to enhance implementation and enforceability. As the proposed changes do not materially differ from the requirements established in the VGP, EPA can reasonably rely on the BPT/BCT/BAT analysis that supported the VGP to develop the new proposed standards under the VIDA.

Where EPA research identified new alternatives or new options for marine pollution control devices, EPA evaluated those options as candidates for new BPT/BCT/BAT requirements. The CWA requires consideration of BPT for conventional, toxic, and nonconventional pollutants. CWA Section 304(a)(4) designates the following as conventional pollutants: Biochemical oxygen demand, total suspended solids, fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979. 40 CFR 401.16. Toxic pollutants (*e.g.,* toxic metals such as arsenic, mercury, selenium, and chromium; toxic organic pollutants such as benzene, benzo-a-pyrene, phenol, and napthalene) are those outlined in CWA Section 307(a) and subsequently identified in EPA regulations at 40 CFR 401.15 and 40 CFR part 423 Appendix A. All other pollutants are nonconventional.

In determining BPT, under CWA Sections 301(b)(1)(A) and 304(b)(1)(B), and 40 CFR 125.3(d)(1), EPA evaluates several factors. EPA first considers the cost of application of technology in relation to the effluent reduction benefits. The Agency also considers the age of equipment and facilities, the processes employed, engineering aspects of various types of control technologies, process changes, non-water quality environmental impacts (including energy requirements), and such other factors as the Administrator deems appropriate. If, however, existing performance is uniformly inadequate within an industrial category, EPA may establish limitations based on higher levels of control if the Agency determines that the technology is available in another category or subcategory and can be practically applied to this industrial category.

The 1977 amendments to the CWA required EPA to identify effluent reduction levels for conventional pollutants associated with BCT for discharges from existing industrial point sources. 33 U.S.C. 1311(b)(2)(E); 1314(b)(4)(B); 40 CFR 125.3(d)(2). In addition to considering the other factors specified in CWA Section 304(b)(4)(B) to establish BCT requirements, EPA also considers a two-part ''cost-reasonableness'' test. EPA explained its methodology for the development of BCT requirements in 1986. See 51 FR 24974, July 9, 1986.

For toxic pollutants and nonconventional pollutants, EPA promulgates discharge standards based on BAT. 33 U.S.C. 1311(b)(2)(A); 1314(b)(2)(B); 40 CFR 125.3(d)(3). In establishing BAT, the technology must be technologically ''available'' and ''economically achievable.'' The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, non-water quality environmental impacts, including energy requirements, and other such factors as the Administrator deems appropriate. EPA retains considerable discretion in assigning the weight accorded to these factors. *See Weyerhaeuser Co* v. *Costle,* 590 F.2d 1011, 1045 (D.C. Cir. 1978). BAT discharge standards may be based on effluent reductions attainable through changes in a facility's processes and operations. Where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved within a subcategory based on technology transferred from a different subcategory or category. *Am. Paper Inst.* 5 V. *Train,* 539 F.2d 328, 353 (D.C. Cir. 1976); *Am. 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.

The proposed rule contains discharge standards that correspond to required levels of technology-based control (BPT, BCT, BAT) for discharges incidental to the normal operation of a vessel, as required by the CWA. As noted above, some discharge standards have been established by examining other existing laws and requirements (*e.g.,* Oil Pollution Act, APPS, and the Clean Hull Act). Where these laws already exist, it was deemed feasible for the operators to implement these practices as part of the proposed standards because these are demonstrated practices that EPA found to be technologically available and economically practicable (BPT) or achievable (BAT). For example, the proposed standards reaffirm requirements of the Clean Hull Act that coating on vessel hulls must not contain TBT or any other organotin compound used as a biocide. In some cases, such as with certain discharges of oils, graywater from passenger vessels, and ballast water, numeric discharge standards are being proposed. In assessing the availability and achievability of the technologies discussed herein, in addition to the rationale for the VGP effluent limits, EPA considered studies and data from both domestic and international sources including studies and data from foreign-flagged vessels as appropriate.

Additionally, EPA is proposing that two of the VGP-named discharges do not require specific discharge requirements beyond the general discharge requirements in Subpart B. EPA acknowledges that discharges from motor gasoline and compensating systems and inert gas systems are indeed discharges incidental to the normal operation of a vessel; however, EPA determined that the requirements outlined in the general discharge standards section in Subpart B of the proposed rule are sufficient and at least as stringent as the VGP.

A. Discharges Incidental to the Normal Operation of a Vessel—General Standards

This section describes the proposed national standards of performance associated with the general discharge requirements proposed in 40 CFR part 139, subpart B. These proposed standards are designed to apply to all vessels and incidental discharges subject to the proposed rule to the extent the requirements are appropriate for each incidental discharge. These proposed standards are proactive and preventative in nature and are designed to minimize the introduction of pollutants into the waters of the United States and the waters of the contiguous zone. These proposed standards are based on EPA's analysis of available and relevant information, including available technical data, existing statutes and regulations, statistical industry information, and research studies included in the public docket for this proposed rule.

1. General Operation and Maintenance

The first category of proposed national standards of performance would establish requirements associated with the general operation and maintenance vessel practices that are designed to eliminate or reduce the discharge of pollutants. EPA considers these proposed requirements to be consistent with the VGP requirements and provides a consolidation of requirements from many subparts within Part 2 of the VGP. The first requirement proposes that all discharges covered under this rulemaking be minimized. For purposes of this proposed rule and consistent with the technology-based requirements of the CWA, EPA is proposing to clarify the term ''minimize'' to mean to reduce or eliminate to the extent achievable using any control measure that is technologically available and economically practicable and achievable and supported by demonstrated BMPs such that compliance can be documented in shipboard logs and plans as determined by the Secretary (that is, the Secretary of the department in which the USCG is operating). The ''minimize'' requirement is included pursuant to the CWA Section 312(p)(2)(H) definition of BMP within the technology-based BPT/BCT/BAT analysis. Minimizing discharges provides a reasonable approach by which EPA, the regulated community, and the public can determine and evaluate appropriate control measures for vessels to control all specific discharges identified in 40 CFR part 139, subpart B of this proposed rulemaking. To minimize discharges, operators should consider the use of reception facilities, storage onboard the vessel, or reduced production of pollutants to be discharged. For some vessel discharges, such as for graywater, minimization of pollutants in those discharges can be achieved without using highly engineered, complex treatment systems. Other vessel discharges, such as ballast water, may require more complex behavioral practices such as saltwater flushing or ballast water exchange.

The proposed general operation and management standard would also include provisions from the VGP (Parts 2.2.2 and 5.3.1.2) that are intended to minimize the discharges from vessels to nearshore waters by requiring, to the extent practicable, that vessels discharge while underway and as far from shore as practical.

The proposed general operation and management standard also would include requirements that limit the types and quantities of materials discharged. For one, EPA is clarifying that the addition of any materials to an incidental discharge, other than for treatment of the discharge, that is not incidental to the normal operation of the vessel, is prohibited as is using dilution to meet any effluent discharge standards. EPA is also proposing a requirement specifying that only the amount of a material (*e.g.,* disinfectant, cleaner, biocide, coating, sacrificial anode) necessary to perform its intended function is authorized to be used if its residue could be discharged and that any such materials used do not contain biocides or toxic or hazardous materials banned for use in the United States. Also, EPA is proposing to prohibit the discharge of any material used that will be subsequently discharged that contains any materials banned for use in the United States. For any pesticide products (*e.g.,* biocides, anti-microbials) subject to FIFRA registration, vessel operators must follow the FIFRA label for all activities that result in a discharge into the waters of the United States or the waters of the contiguous zone.

The presence or use of toxic or hazardous materials may be necessary for the operation of vessels. For purposes of the proposed rule, the term ''Toxic or Hazardous Materials'' means any toxic pollutant identified in 40 CFR 401.15 or any hazardous material as defined in 49 CFR 171.8. EPA is proposing requirements for how toxic or hazardous materials are managed to minimize the potential for discharge of these materials. Toxic or hazardous material containers must be appropriately sealed, labeled, and secured, and located in an area of the vessel that minimizes exposure to ocean spray and precipitation consistent with vessel design. Materials that may not be considered toxic in small concentrations could pose an environmental threat if significant amounts are washed overboard, particularly in shallow or impaired waters. Wastes should be managed in accordance with any applicable local, state, and federal regulations, which are outside of the scope of this proposed rule. For example, the Resource Conservation and Recovery Act (RCRA) governs the generation, transportation, storage, and disposal of solid and hazardous wastes.

Therefore, the proposed rule would require that all vessel operators practice good environmental stewardship by minimizing any exposure of cargo or other onboard materials that may be inadvertently discharged by containerizing or covering materials with a tarp, and generally limiting any exposure of these materials to wind, rain, or spray. The proposed rule acknowledges that these requirements would apply unless the vessel operator reasonably determines this would interfere with essential vessel operations or safety of the vessel or doing so would violate any applicable regulations that establish specifications for safe transportation, handling, carriage, and storage of toxic or hazardous materials. Also, to avoid discharges and prevent emergency or other dangerous situations, the proposed standard would require that containers holding toxic or hazardous materials not be overfilled and incompatible materials not be mixed in containers.

Like the requirements related to toxic and hazardous materials, the proposed standard would also require control measures to prevent or minimize the overboard discharge of cargo, on-deck debris, garbage, and residue and would prohibit the jettisoning of cargo or toxic or hazardous materials. EPA proposal would also require vessel operators to clean out cargo residues (*i.e.,* broom clean or equivalent) from any cargo compartment or tank prior to discharging washwater from such areas overboard. EPA is proposing that these material management measures be followed to minimize the discharge of pollutants.

The proposed rule would also require vessel operators to maintain their topside surface (*i.e.,* outer surfaces above the waterline) in a manner that minimizes the discharge of rust (and other corrosion by-products), cleaning compounds, paint chips, non-skid material fragments, and other materials associated with exterior topside surface preservation. Additionally, this EPA standard proposes that coating techniques selected for any topside surfaces must minimize the residual paint and coating entering the water and that the discharge of any unused paints and coatings is prohibited.

The last proposed general operation and maintenance requirement specifies that any equipment that is expected to release, drip, leak, or spill oil or oily mixtures, fuel, or other toxic or hazardous materials that may be discharged or drained or pumped to the bilge, must be maintained regularly to minimize the discharge of pollutants. As with other requirements in the proposed general operation and maintenance standard, EPA considers this requirement to be consistent with the bilgewater requirements in Part 2.2.2 of the VGP.

2. Biofouling Management

Vessel biofouling is the accumulation of aquatic organisms such as plants, animals, and micro-organisms on vessel equipment or systems submerged or exposed to the aquatic environment. Biofouling can be broadly separated into microfouling, which consists of microscopic organisms including bacteria and diatoms, and macrofouling, which consists of large, distinct multicellular organisms visible to the human eye, such as barnacles, tubeworms, or fronds of algae. Studies suggest that biofouling on vessel equipment and systems is one of the main vectors for the introduction and spread of ANS (Drake and Lodge, 2007; Gollasch, 2002; Hewitt and Campbell, 2010; Hewitt et al., 2009). Biofouling also produces drag on a vessel hull and protruding niche areas, requiring greater fuel consumption and increased greenhouse gas emissions. It can additionally result in hull corrosion and blockage of internal piping, such as the engine cooling and firemain systems, thereby degrading the integrity of the vessel structure and impeding safe operation.

EPA understands the statutory definition of ''discharge incidental to the normal operation of a vessel'' (incidental discharge) at 33 U.S.C.1322(a)(12) to include any discharge of biofouling organisms from vessel equipment and systems. Consistent with the VGP discharges of biofouling organisms from vessel equipment and systems while the vessel is immersed or exposed to the aquatic environment are incidental to the normal operation of a vessel. Such discharges during normal operation of the vessel include, but are not limited to, those from maintenance and cleaning activities of hulls, niche areas, and associated coatings. EPA included management requirements to minimize the discharge of biofouling organisms from vessel equipment and systems in both the VGP and the discharge regulations for the vessels of the Armed Forces. 33 U.S.C. 1322(n)). The VGP in Parts 2.2.23 and 4.1.3, respectively, required that vessel operators minimize the transport of attached living organisms and conduct annual inspections of the vessel hull, including niche areas, for fouling organisms. Part 4.1.4 of the VGP also required vessel operators to prepare drydock inspection reports noting that the vessel hull and niche areas had been inspected for attached living organisms and those organisms had been removed or neutralized and make these reports available to EPA or an authorized representative of EPA upon request. With one of the legislative purposes of the VIDA being to establish uniform national incidental discharge regulations that are as stringent as the VGP, except in those circumstances specified by the VIDA in CWA Section 312(p)(4)(D)(ii)(II), EPA is proposing to include requirements for the discharge of biofouling organisms from vessel equipment and systems in this rulemaking.

The proposed rule would require each vessel to develop and follow a biofouling management plan with a goal to prevent macrofouling, thereby minimizing the potential for the introduction and spread of ANS. A biofouling management plan that would be consistent with the VGP and fulfill the purpose of the proposed rule is one that provides a holistic strategy that considers the operational profile of the vessel, identifies the appropriate antifouling systems, and details the biofouling management practices for specific areas of the vessel. The details of the plan will be established by the Secretary, although the plan elements must prioritize procedures and strategies to prevent macrofouling.

While the VGP does not explicitly require a biofouling management plan, it requires the majority of the components of the proposed biofouling management plan individually, such as the consideration of vessel class, operations, and biocide release rates and components in the selection of antifouling systems, an annual inspection of the vessel hull and niche areas for assessment of biofouling organisms and condition of anti-fouling paint, a drydock inspection report noting that the vessel hull and niche areas have been inspected for biofouling organisms and those organisms have been removed or neutralized, reporting of cleaning schedules and methods, and appropriate disposal of wastes generated during cleaning operations. Additionally, according to the Clean Hull Act of 2009, every vessel engaging in one or more international voyages is required to carry an antifouling system certificate that contains the details of the antifouling system. Moreover, under the National Invasive Species Act, the USCG requires the individual in charge of any vessel equipped with ballast water tanks that operates in the waters of the United States to maintain a ballast water management plan that has been developed specifically for the vessel and that will allow those responsible for the plan's implementation to understand and follow the vessel's ballast water management strategy and comply with the requirements. The ballast water management plan must also include detailed biofouling maintenance and sediment removal procedures (33 CFR 151.2050(g)(3)). According to guidance issued by the USCG on these regulations, such procedures constitute a ''Biofouling Management and Sediment Plan.'' Under this guidance, the USCG advised that IMO Resolution Marine Environment Protection Committee (MEPC) 207(62) provides a basis for developing and implementing a vessel-specific biofouling management plan.

Developing individual biofouling management plans for vessels is important because vessels can vary widely in operational profile and, therefore, in the extent and type of biofouling. EPA recognizes, however, that vessels with similar operational profiles, such as vessels that cross the same waterbodies, travel at similar speeds, and share the same design, may also employ the same management measures, such as selecting the same types of antifouling systems, and applying the same inspection and cleaning schedules. EPA anticipates that fleet owners may develop a biofouling management plan template that can be readily adapted into a vessel-specific biofouling management plan.

3. Oil Management

The proposed rule aims to minimize discharges of oil, including oily mixtures. The proposed standard would require vessel operators to use control and response measures to minimize and contain spills and overflows during fueling, maintenance, and other vessel operations. Also, the proposed standard specifies that the discharge of used or spent oil no longer being used for its intended purpose would be prohibited, including any used or spent oil that may be added to an incidental discharge that is otherwise authorized to be discharged. Discharges of small amounts of oil, including oily mixtures, incidental to the normal operation of a vessel are permissible provided such discharges comply with the otherwise applicable existing legal requirements. For example, consistent with the CWA and as implemented by the 2013 VGP, this standard would prohibit the discharge of oil in such quantities as may be harmful, as defined in 40 CFR 110.3.

Section 139.3 of the proposed rule specifies that, except as expressly provided, nothing in this part would affect the applicability of any other provision of Federal law as specified in several statutory and regulatory citations. Two of those citations are to CWA Section 311 and to APPS. Those two laws address discharges of oil. Under CWA Section 311, any oil, including oily mixtures, other than those exempted in 40 CFR 110.5, may not be discharged in such quantities as ''may be harmful,'' which is defined to include those discharges that violate applicable water quality standards or ''cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.'' Discharges that are not included in the description of ''may be harmful'' include discharges of oil from a properly functioning vessel engine (including an engine on a public vessel) and any discharges of such oil accumulated in the bilges of a vessel discharged in compliance with 33 CFR part 151, subpart A; other discharges of oil permitted under MARPOL 73/78, Annex I, as provided in 33 CFR part 151, subpart A; and any discharge of oil explicitly permitted by the Administrator in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution. Regarding the APPS (33 U.S.C. 1901 *et seq.*), the United States enacted it to implement the obligations under MARPOL 73/78. The USCG is the lead agency for APPS implementation and issued implementing regulations primarily found at 33 CFR part 151. Those APPS requirements already apply to many of the vessels that would be covered by the proposed rule. Among other things, APPS regulates the discharge of oil and oily mixtures. Generally, these requirements prohibit ''any discharge of oil or oily mixtures into the sea from a ship'' except when certain conditions are met, including a discharge oil content of less than 15 ppm and that the ship operates oily-water separating equipment, an oil content monitor, a bilge alarm, or a combination thereof.

Additionally, the proposed rule would require measures during fueling, maintenance and other vessel operations to control and respond to spills and overflows, such as may occur from human error or improper equipment use. These proposed requirements reinforce existing requirements that require taking immediate and appropriate corrective actions if an oil spill is observed as a result of vessel operations. This includes maintaining appropriate spill containment and cleanup materials onboard and using such immediately in the event of any spill.

The proposed rule also includes requirements for oil-to-sea interfaces. Specifically, the proposed standard would require use of EALs for such oil-to-sea interfaces unless technically infeasible and sets out a series of mandatory BMPs for minimizing lubricant discharges during maintenance.

Oil-to-sea interfaces are seals or surfaces on ship-board equipment where the design is such that small quantities of oil can escape into the surrounding sea during normal vessel operations. For example, below-water seals frequently use lubricating oil mechanisms that maintain higher pressure than the surrounding sea to ensure that no seawater enters the system and compromises the unit's performance. During normal operation, small quantities of lubricant oil in those interfaces are released into surrounding waters. Above-deck equipment can also have oil-to-sea interfaces when portions of the machinery extend overboard, thereby allowing lubricant oil to be released directly into surrounding waters. Constituents of conventional hydraulic and lubricating oils vary by manufacturer, but may include copper, tin, aluminum, nickel, and lead. In addition, traditional mineral oils have a small biodegradation rate, a high potential for bioaccumulation and a measurable toxicity towards marine organisms. In the case of a controllable pitch propellers (CPP), up to 20 ounces of such oils could be released for every CPP blade that is replaced, with blade replacement occurring at drydock intervals or when the blade is damaged. When the blade replacement includes removal of the blade port cover (generally occurring infrequently, less than once per month), up to five gallons of oil could be discharged into surrounding waters unless the service is performed in drydock.

Additionally, many ocean-going ships operate with oil-lubricated stern tubes and use lubricating oils in much of the other machinery both on-deck and underwater. Oil leakage from stern tubes, once considered a part of normal ''operational consumption'' of oil, has become an issue of global concern and is now treated as oil pollution. A 2001 study commissioned by the European Commission DG Joint Research Centre concluded that routine unauthorized operational discharges of oil from ships into the Mediterranean Sea created more pollution than accidental spills (Pavlakis et al., 2001). Similarly, an analysis of data on oil consumption sourced from a lubricant supplier indicated that daily stern tube lubricant consumption rates for different vessels could range up to 20 liters per day (Etkin, 2010). This analysis estimated that operational discharges (including stern tube leakage) from vessels add between 36.9 million liters and 61 million liters of lubricating oil into marine port waters annually.

Vessels use lubricants in a wide variety of ship-board applications. Examples of lubricated equipment with oil-to-sea interfaces include:

- *Stern tube:* A stern tube is the casing or hole through the hull of the vessel that enables the propeller shaft to connect the vessel's engine to the propeller on the exterior of the vessel. Stern tubes contain seals designed to keep the stern tube lubricant from exiting the equipment array and being discharged to waters at the exterior of the vessel's hull.
- *Controllable pitch propeller:* Variably-pitched propeller blades are for changing the speed or direction of a vessel and supplementing the main propulsion system. Controllable pitch propellers also contain seals that prevent the lubricant from exiting the equipment array.
- *Rudder bearings:* These bearings allow a vessel's rudder to turn freely; they also use seals with an oil-to-sea interface.
- *On-deck equipment:* Hose handling cranes, hydraulic system prov cranes, hydraulic cranes, and hydraulic stern ramps are examples of machinery with the potential for above-water discharges of lubricants. When vessels are underway, this equipment is often not operational, and any lubricant losses are typically captured during deck washdown and treated as part of deck washdown wastewater. However, discharges can occur when portions of the machinery such as booms or jibs, trolleys, cables, hoist gear, or derrick arms are in use and extend over the side of vessel.

The EAL portion of the proposal provides that the EAL would need to meet three criteria; it must be ''biodegradable,'' ''minimally-toxic,'' and ''not bioaccumulative'' as defined in the proposed rule.

The proposed standard for oil-to-sea interfaces is slightly different from what was required for oil-to-sea interfaces in the VGP. EPA is proposing four changes. First, for clarity, EPA moved the EAL requirements to a general standard for oil management applicable to any specific discharge that may have an oil-to-sea interface rather than a specific discharge standard as was done in Part 2.2.9 of the VGP, and eliminated the specific discharge category, identified in Part 2.2.9 of the VGP as ''*Controllable Pitch Propeller (CPP) and Thruster Hydraulic Fluid and other Oil-to-sea Interfaces including Lubrication Discharges from Paddle Wheel Propulsion, Stern Tubes, Thruster Bearings, Stabilizers Rudder Bearings, Azimuth Thrusters, and Propulsion Pod Lubrication and Wire Rope and Mechanical Equipment Subject to Immersion.*'' The change demonstrates that the standard covers all oil-to-sea interfaces on vessels rather than just the interfaces listed in the name of that section of the VGP. EPA notes that certain types of seals used on below-deck equipment such as air seals are based on designs that use an air gap or other mechanical features to prevent oils from reaching waters at the exterior of the vessel's hull. To the extent that these seals do not allow the lubricant to be released under normal circumstances, they are not considered to be oil-to-sea interfaces. Second, the VGP included specific criteria for demonstrating that use of an EAL was ''technically infeasible.'' Under the VIDA delineation of responsibilities between EPA and the USCG, determinations of technical infeasibility regarding the use of an EAL are most properly treated as a matter of implementation and as such, would be addressed as part of the implementing regulations to be developed by the USCG. Third, EPA made minor revisions to the wording of the standard to clarify that the scope of this discharge category extends to all types of equipment with direct oil-to-sea interfaces, including any on-deck equipment where lubricant losses can occur when portions of the machinery extend over the side of the hull. Fourth, the VGP provided two ways that a lubricant could be classified as an EAL: the EAL must be ''biodegradable,'' ''minimally-toxic,'' and ''not bioaccumulative'' as defined in the VGP; or, the EAL must be labeled under a defined list of labeling programs (*e.g.,* the European Union's European Ecolabel and Germany's Blue Angel). EPA is proposing to remove the list of acceptable labeling programs acknowledging that the requirements of these different labeling programs are established by organizations for which neither EPA nor the USCG have control over any modifications to the criteria these organizations may make to identify acceptable products for labeling. The expectation is that all or most of the labeling programs identified in the VGP meet the EAL criteria in the proposed rule and as such would provide a comparable list of options from which vessel operators could select appropriate lubricants. This provides a clear delineation of expectations for any institution interested in establishing a labeling program if that program demonstrates products that are labeled based on criteria that are at least as stringent as those in the proposed rule for biodegradability, toxicity, and bioaccumulation.

Although certification programs to label lubricants as ''environmentally acceptable lubricants'' have existed for some time, the VGP was one of the first regulatory programs to require use of EALs. Today, more than sixteen manufacturers produce EALs for the global shipping community, giving vessel operators a wide array of choices for optimizing lubricant technical performance. Most major marine equipment manufacturers have approved EALs for use in their machinery, and new equipment is being introduced commercially such as air seals, composite bearings, electric motors, and synthetic line. The market for EALs continues to expand around the world, particularly in Europe where the use of such lubricants is promoted through a combination of tax breaks, purchasing subsidies, and national and international labeling programs.

In the analysis EPA completed for the VGP, the Agency found that product substitution of EALs for other lubricants in oil-to-sea applications (unless technically infeasible) together with the required BMPs for maintenance represents BAT. As the Agency described when it issued the VGP, use of EALs in lieu of conventional formulations for oil-to-sea interfaces can offer significantly reduced discharges of pollutants of concern (U.S. EPA, 2011).

As part of the BAT analysis for the VGP, EPA considered the processes employed and potential process changes that might be necessary for vessels to use EALs. As EPA explained at the time, EALs are readily available and their use is economically achievable for most applications (U.S. EPA, 2011). New vessels in particular can select equipment during design and construction that is compatible with EALs. Furthermore, vessel operators can design additional onboard storage capacity for EALs if they choose to use traditional mineral-based oil for engine lubrication (thereby needing two types of oils on-hand). The extra storage capacity needed would be minor. EPA, however, continues to believe that the use of EALs in all applications is not practicable or achievable, therefore this proposed rule retains the provision from the VGP oil-to-sea interface requirements that allows for a claim of ''technically infeasible.''

The Agency considered several other approaches for regulating oil-to-sea interfaces in the proposed rule. For one, the most recent version of the European Ecolabel program has a modified definition of what constitutes an ''environmentally acceptable lubricant'' in that it now allows for ''small quantities'' (*i.e.,* <0.1 percent) of bioaccumulative substances in lubricant formulations. EPA considered revising the definition of ''biodegradable'' to bring the terminology more in line with current European Ecolabel requirements for a 10-day test pass window rather than a 28-day test pass window for achieving specific levels of degradation. EPA notes that stakeholders involved in the European Ecolabel program felt strongly that this change in the test pass window would significantly reduce the number of lubricant formulations available on the market. To ensure widespread installation and use of EALs by vessels that operate in the waters of the United States or the waters of the contiguous zone, EPA is retaining the definition of biodegradable as used in the VGP.

4. Training and Education

The proposed rule does not include training and education requirements. CWA Section 312(p)(5)(A)(ii)(III) requires the USCG to promulgate training and educational requirements that are not less stringent than those contained in the VGP.

B. Discharges Incidental to the Normal Operation of a Vessel—Specific Standards

This section describes the proposed national standards of performance for discharges incidental to the normal operation of a regulated vessel. The proposed national standards of performance would apply to regulated vessels operating within the waters of the United States or the waters of the contiguous zone. The proposed rule would require that a discharge comprised of two or more regulated incidental discharges must meet the national standards of performance established for each of those commingled discharges.

1. Ballast Tanks

i. Applicability

Ballast water is any water, suspended matter, and other materials taken on-board a vessel to control or maintain trim, draught, stability, or stresses of the vessel, regardless of the means by which any such water or suspended matter is carried; or during the cleaning, maintenance, or other operation of a ballast tank or ballast management system of the vessel. The term ''ballast water'' does not include any substance that is added to the water that is directly related to the operation of a properly functioning ballast water management system. As defined in the proposed standards, a ballast tank is any tank or hold on a vessel used for carrying ballast water, regardless of whether the tank or hold was designed for that purpose. Fresh water, sea water, or ice carried onboard a vessel for food safety and product quality purposes is not considered ballast water and, as such, would not be subject to the ballast water requirements in the proposed rule. Ballast water discharge volumes and rates vary significantly by vessel type, ballast tank capacity, and type of deballasting equipment for the universe of vessels covered under the VGP and VIDA. Most passenger vessels have ballast capacities of less than 5,000 cubic meters (approximately 1.3 million gallons) of water. Cargo/container ships generally have ballast capacities of 5 to 20 thousand cubic meters (more than 1.3 to 5.3 million gallons) of water while some bulk carriers and tankers have ballast capacities greater than 40 thousand cubic meters (over 10 million gallons) of water.

Ballast water may contain toxic and nonconventional pollutants such as rust inhibitors, epoxy coating materials, zinc or aluminum (from anodes), iron, nickel, copper, bronze, silver, and other material or sediment from inside the tanks, pipes, or other machinery. More importantly, ballast water may also contain marine and freshwater organisms that originate from where the water is collected. When ballast water is discharged, these organisms may establish new populations of ANS in the receiving waterbodies. Ballast water discharged from vessels has been, and continues to be, a significant environmental concern because it can introduce and spread ANS that threaten the diversity and abundance of native species, threaten the ecological stability of our Nation's waters, and threaten the commercial, agricultural, aquacultural, and recreational use of those waters.

Currently, ballast water discharges are regulated by multiple federal and state laws and regulations. The USCG regulates ballast water discharges under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), and amendments thereto by the National Invasive Species Act (NISA) of 1996 (33 CFR part 151 subparts C and D). Starting in 2009, EPA regulated ballast water discharges under the NPDES program authorized under CWA Section 402; however, the VIDA requires that ballast water be regulated as an incidental discharge under CWA Section 312. The VIDA set as a minimum baseline the VGP/NPDES requirements previously developed under CWA Section 402. Additionally, several states (California, Michigan, Minnesota, Ohio, Oregon, Washington, and Wisconsin) previously used their certification authorities under CWA Section 401 or under stand-alone state authorities to impose additional, state-specific requirements that would apply to commercial vessels operating within their state waters. Such additional stand-alone State standards will no longer be permissible under the VIDA once EPA has established national standards and the USCG has promulgated implementing regulations that are final, effective, and enforceable. [33 U.S.C. 1322(p)(9)(A)(i)].

The proposed standards for ballast water reflect BAT and consider the previous requirements established in the 2013 VGP and 33 CFR part 151 subparts C and D, the BAT factors as specified in Section 304(b) of the Clean Water Act, as well as the new requirements established in the VIDA. The analysis described herein is based largely on information gathered and included in the public docket for this proposed rulemaking and includes information on the United States and international requirements surrounding ballast water discharges and the candidate control technologies (both best management practices and treatment technologies).

ii. Exclusions

The proposed standards for ballast water apply to any vessel equipped with one or more ballast tanks that operates in the waters of the United States or waters of the contiguous zone, except as excluded by statute or regulation. Pursuant to the VIDA in CWA Section 312(p)(2)(B)(ii), the proposed rule would exclude the following five discharges from the CWA Section 312(p) ballast water standards.

A. Vessels That Continuously Take on and Discharge Ballast Water in a Flow-Through System

The proposed rule would exclude discharges of ballast water from a vessel that continuously takes on and discharges ballast water in a flow-through system, if the Administrator determines that the system cannot materially contribute to the spread or introduction of an ANS from ballast water into waters of the United States or the contiguous zone, acknowledging that such a flow-through system may have additional areas on the hull (*e.g.,* niches) requiring more rigorous biofouling management. EPA is unaware of any such vessels currently in commercial operation, but theoretically a vessel could be designed to have ambient water flow through the hull for vessel stability without retaining any of that water in such a way that it would be transported. Should any such vessel begin commercial operation, EPA expects that it would evaluate the ballasting configuration to determine if the vessel meets the statutory description, in which case it would be excluded from the ballast water discharge standards. In that instance, the Administrator would notify the vessel owner or operator of such a determination. [33 U.S.C. 1322(p)(2)(B)(ii)(I)]

B. Vessels in the National Defense Reserve Fleet Scheduled for Disposal

The proposed rule would exclude discharges of ballast water from a vessel that is in the National Defense Reserve Fleet that is scheduled for disposal, if the vessel does not have an operable ballast water management system.

C. Vessels Discharging Ballast Water Consisting Solely of Water Meeting the Safe Drinking Water Act Requirements

The existing USCG regulations (33 CFR 151.2025) allow vessels to use, as ballast water, water from a U.S. public water system (PWS), as defined in 40 CFR 141.2, that meets the requirements of the Safe Drinking Water Act (SDWA) at 40 CFR parts 141 and 143. In plain terms, this means finished, potable water as opposed to untreated water that is owned or operated by a PWS but not necessarily potable. Those USCG regulations specify that vessels using water from a PWS as ballast must maintain a record of which PWS they received the water from as well as a receipt, invoice, or other documentation from the PWS indicating that water came from that system. Furthermore, vessels must certify that the ballast tanks have either previously cleaned (including removing all residual sediments) and not subsequently introduced ambient water, or never introduced ambient water to those tanks and supply lines. The existing EPA requirements in the VGP similarly allow vessels to use water, not only from a U.S. public water system, but also from a Canadian drinking water system, as defined in Health Canada's Guidelines for Canadian Drinking Water Quality.

As specified by Congress in the VIDA, the proposed rule would exclude a vessel that discharges ballast water consisting solely of water taken onboard from a public or commercial source that, at the time the water is taken onboard, meets the applicable requirements of the Safe Drinking Water Act (SDWA) (42 U.S.C. 300f *et seq.*) at 40 CFR parts 141 and 143. As provided in the existing VGP, EPA proposes that this exclusion also applies to water taken on board that meets Health Canada's Guidelines for Canadian Drinking Water Quality because EPA has evaluated these Guidelines and found them to be consistent with the applicable requirements of the SDWA. Canada's drinking water treatment processes require a high degree of disinfection and, in many cases filtration, which would make the likelihood of loading ANS into a vessel's ballast tank highly unlikely. Further, as under existing requirements, EPA proposes that this exclusion applies only if the ballast tanks have either been previously cleaned (including removing all residual sediments) and not subsequently loaded with ambient water; or, if the ambient water has never been introduced to the ballast tanks and supply lines. Note that EPA considered whether use of a potable water generator installed onboard the vessel should be covered under this exclusion; however, pursuant to CWA Section 312(p), this exclusion is only available to ballast water that is taken onboard from a public or commercial source that is compliant with SDWA requirements at the time it is taken aboard the vessel (U.S. EPA, 2015).

D. Vessels Carrying All Permanent Ballast Water in Sealed Tanks

The proposed rule would exclude discharges of ballast water from a vessel that carries all permanent ballast water in sealed tanks that are not subject to discharge. This exclusion is consistent with the previous requirements of the VGP and was specified by Congress under the VIDA.

This exclusion is different from the proposed ballast water exchange and saltwater flushing exemptions (described in VIII.B.1.ix. *Ballast Water Exchange and Saltwater Flushing*) for ballast contained in sealed tanks, which EPA proposes to be for ballast tanks that are not permanently sealed.

E. Vessels Discharging Ballast Water Into a Reception Facility

The proposed rule would exclude discharges of ballast water from a vessel that only discharges ballast water into a reception facility (which could include another vessel for the purpose of storing or treating that ballast water). This exclusion would carry forward the existing VGP requirements and USCG regulation (33 CFR 151.2025) that allow discharges to a reception facility as an eligible ballast water management method. In such instances, once the ballast water is offloaded to a reception facility, that ballast water would be subject to regulation if discharged from that facility. Consistent with the rationale provided in the VGP fact sheet, EPA would continue to expect that all vessel piping and supporting infrastructure up to the last manifold or valve immediately before the reception facility manifold connection, or similar appurtenance, prevent untreated ballast water from being discharged. Any such discharge not meeting this requirement would be expected to meet the discharge standards in the proposed rule.

iii. Exclusion Not Continued From Existing USCG Regulations for Crude Oil Tankers

Crude oil tankers engaged in coastwise trade are excluded from the existing USCG regulation (33 CFR 151.2015(b)), consistent with Section 1101(c)(2)(L) of the National Invasive Species Act of 1996 (16 U.S.C. 4711). However, these same vessels are not excluded from meeting the ballast water requirements in the VGP and are not exempted under the VIDA. Therefore, pursuant to CWA Section 312(p)(4)(B)(iii), which requires this proposed rule to be at least as stringent than specified parts of the VGP, EPA proposes that crude oil tankers engaged in coastwise trade not be excluded from meeting the ballast water requirements set forth in the proposed rule. Such vessels are not inherently unable to perform ballast water exchanges and other ANS management practices that their currently non-exempt counterparts routinely carry out. EPA expects this proposal to impose no additional costs given that the requirements are presently in effect under the VGP.

iv. Ballast Water Best Management Practices (BMPs)

Pursuant to CWA Section 312(p)(4)(B)(ii), EPA is proposing BMPs to control or abate ballast water discharges from all vessels equipped with ballast tanks. Following the requirement of the VIDA that EPA requirements must not be less stringent than the VGP unless a less stringent requirement is justified, EPA proposes to retain many of the BMPs in the VGP as they were designed to reduce the number of living organisms taken up and discharged in ballast water. At present, these BMPs are widely followed and implemented, thus technologically available and economically achievable. They have no unacceptable non-water quality environmental impacts (*e.g.,* energy requirements, air impacts, solid waste impacts, and changes in waters use). They are proposed to be carried forward from both the existing EPA requirements in the VGP and USCG regulations (33 CFR part 151 subpart D). Discussion of BMPs not proposed to be carried forward from the VGP and USCG regulations is included in VIII.B.1.iv.H. *Best Management Practices Not Continued from Existing Requirements.* The proposed BMPs are described below.

A. Clean Ballast Tanks Regularly

As required under the VGP and USCG regulations, the proposed rule would require ballast tanks to be flushed regularly and cleaned thoroughly at every scheduled drydock to remove sediment and biofouling organisms. Residual sediment left in ballast tanks can negatively affect the ability of a vessel to meet discharge standards, even when a ballast water management system (BWMS) is properly operated and maintained. Such sediments may pose a risk of spreading ANS as organisms can survive in ballast sediment for prolonged periods of time in resting stages.

B. Use High Sea Suction

Consistent with EPA requirements under the VGP, the proposed rule would require that, when practicable and available, high sea suction sea chests must be used when at a port or where clearance to the bottom of the waterbody is less than 5 meters to the lower edge of the sea chest. As an example of when use of high sea suction may not be practicable is to avoid ice or algae, or other biofilm on the water surface. This BMP minimizes the potential for uptake of bottom-dwelling organisms, suspended solids, particulate organic carbon, and turbidity into the ballast tanks.

C. Use Ballast Water Pumps When in a Port

As previously required under the VGP, the proposed rule would require that when practicable, ballast water must be discharged in port using pumps rather than using gravity to drain tanks. This BMP has been shown to increase the mortality rate of living organisms in the ballast water during discharge, particularly zooplankton and other larger organisms, that would otherwise be discharged, given the physical action of the pumps (*e.g.,* cavitation, entrainment, and/or impingement).

D. Maintain Sea Chest Screens

The proposed rule would require that the sea chest screen(s) must be maintained and fully intact. This BMP is consistent with an EPA requirement under the VGP for existing bulk carriers operating exclusively in the Laurentian Great Lakes, also known as ''Lakers,'' but EPA proposes to expand it to all vessels with ballast tanks. These screens are designed to keep the largest living organisms, such as fish, as well as bacteria and viruses associated with these organisms, out of ballast tanks.

This BMP may reduce the risk of spreading ANS. Adequately maintaining sea chest screens is a simple technology-based practice that is available, economically achievable, and beneficial to all vessels to reduce the threat of ANS dispersal.

E. Prohibit Ballast Tank Cleaning Discharges

As described above, the proposed rule would require ballast tanks to be periodically flushed and cleaned to remove sediment and biofouling organisms; however, the proposed rule also would prohibit the discharge of residual sediment or water from ballast tank cleanings. Rather, these wastes should be disposed of in accordance with any applicable local, state, and federal regulations, which are outside of the scope of this proposed rule.

F. Avoid Ballast Water Discharge or Uptake in Areas With Coral Reefs

The proposed rule would require vessel owners and operators to avoid the discharge or uptake of ballast water in areas with coral reefs. This BMP is consistent with the VGP requirements. The VGP also included similar prohibitions for ''marine sanctuaries, marine preserves, marine parks, . . . or other waters'' listed in Appendix G. The proposed rule also would prohibit the discharge and uptake of ballast water in those areas but under a separate section of the proposed rule specific to activities in federally-protected waters as described in VIII.B.1.xiii. *Additional Considerations in Federally-Protected Waters.*

Further, consistent with a USCG Marine Safety Information Bulletin (*Ballast Water Best Management Practices to Reduce the Likelihood of Transporting Pathogens That May Spread Stony Coral Tissue Loss Disease;* Marine Safety Information Bulletin, OES–MSIB Number: 07–19, September 6, 2019), ballast water discharges should be conducted as far from coral reefs as possible, regardless of whether the reef is inside or outside of 12 NM from shore (USCG, 2019a).

EPA is seeking input for the development of the final rule regarding: (1) How best to define areas with coral reefs, and (2) public availability of navigational charts that can be used for identifying areas with coral reefs.

G. Develop a Ballast Water Management Plan

Like the previous requirements of the VGP and the USCG regulations, the proposed rule would require that any vessel with one or more ballast tanks develop and follow a vessel-specific ballast water management plan (BWMP) to minimize the potential for the introduction and spread of ANS. Such a BWMP should employ a holistic strategy that considers the operational profile of the vessel and the appropriate ballast water management practices and systems. Details of such a plan will be detailed in the corresponding implementation regulation to be promulgated by the Secretary as specified in section 139.1(e) of the proposed rule.

H. Best Management Practices Not Continued From Existing Requirements

The proposed rule would not include one BMP that is currently included as a measure in both the VGP and USCG regulations at 33 CFR part 151 subparts C and D. These practices were adopted from the voluntary ''Code of Best Practices for Ballast Water Management'' of the Shipping Federation of Canada dated September 28, 2000, for vessels operating in the Great Lakes and St. Lawrence Seaway and codified in the VGP and USCG regulations (Shipping Federal of Canada, 2000).

EPA proposes not to continue the requirement that vessel operators must minimize or avoid uptake of ballast water in the following areas and situations:

- Areas known to have infestations or populations of harmful organisms and pathogens (*e.g.,* toxic algal blooms);
- Areas near sewage outfalls;
- Areas near dredging operations;
- Areas where tidal flushing is known to be poor or times when a tidal stream is known to be turbid;
- In darkness, when bottom-dwelling organisms may rise in the water column
- Where propellers may stir up the sediment; and
- Areas with pods of whales, convergence zones, and boundaries of major currents.

The proposed deletion is based on the finding that such measures are not practical to implement. These conditions are usually beyond the control of the vessel operator during the uptake and discharge of ballast water and thus it is not an available measure or practice to minimize or avoid uptake of ballast water in those areas and situations. 33 U.S.C. 1314(b)(2)(B). In lieu of these measures, the VIDA and the proposed rule contain several provisions that can help address some of the situations identified above. For example, in cases of a known outbreak of harmful algal blooms or viral hemorrhagic septicemia, a state can submit a petition to EPA or the USCG requesting EPA to issue an emergency order as provided for in CWA Section 312(p)(7)(A)(i). The emergency order provision in the VIDA acknowledges that when a water quality or invasive species issue is identified in a geographic area, EPA will identify appropriate BMPs to address that concern and impose specific requirements on the universe of vessels (and potentially others) as necessary. 33 U.S.C. 1322(p)(4)(E)(i).

v. Numeric Ballast Water Discharge Standard

Pursuant to CWA Section 312(p)(4)(B)(iii), the proposed rule would continue, as a numeric discharge standard, the numeric discharge limitations previously contained in the VGP, to include:

- For organisms greater than or equal to 50 micrometers in minimum dimension: Discharge must include less than 10 living organisms per cubic meter of ballast water.
- For organisms less than 50 micrometers and greater than or equal to 10 micrometers: Discharge must include less than 10 living organisms per milliliter (mL) of ballast water.
- Indicator microorganisms must not exceed:
  - 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.

The proposed rule would define ''living'' using the CWA Section 312(p)(6)(D) clarification that the terms 'live' and 'living' shall not include an organism that has been rendered nonviable; or preclude the consideration of any method of measuring the concentration of organisms in ballast water that are capable of reproduction. However, it is important to recognize that as of the time of the proposed rule, the USCG has not identified any testing protocols, based on best available science, that are available for use to quantify nonviable organisms in ballast water. As such, compliance with the proposed discharge standard requires the use of test methods as detailed in the 2010 EPA *Generic Protocol for the Verification of Ballast Water Treatment Technology* that do not consider non-viable organisms as part of the test protocol. Should the USCG identify one or more testing protocols that enumerate nonviable organisms, such methods would be acceptable for demonstrating compliance with the proposed numeric ballast water discharge standard (U.S. EPA, 2010).

In addition, the proposed rule would continue the numeric discharge limitations as a numeric standard for four biocide parameters contained in the VGP, namely:

- For any BWMS using chlorine dioxide, the chlorine dioxide must not exceed 200 µg/L;
- For any BWMS using chlorine or ozone, the total residual oxidizers must not exceed 100 µg/L; and
- For any BWMS using peracetic acid, the peracetic acid must not exceed 500 µg/L and the hydrogen peroxide must not exceed 1,000 µg/L.

The standard for both the organisms and biocide parameters represents instantaneous maximum values not to be exceeded.

The proposed rule would continue the requirement contained in the VGP and USCG regulations at 33 CFR part 151 that, prior to the compliance date for the vessel to meet the discharge standard, ballast water exchange must be conducted as required in section 139.10(e) of the proposed rule, or the applicable regional requirements in sections 139.10(f) and 139.10(g) of the proposed rule, for any vessel subject to the ballast water discharge standard. As directed in the VIDA, the USCG will include requirements regarding compliance dates in its proposed regulation. 33 U.S.C. 1322(p)(5)(A)(iv).

A. BAT Rationale for Standard Pursuant to VIDA

1. Types of Ballast Water Management Systems Determined To Represent BAT

The treatment technologies used for ballast water management representing BAT typically have three processes: Physical separation, disinfection, and neutralization. For physical separation, filtration is used most often as a pre-treatment by removing large organisms and particles (down to about 40–50 µm) from ballast water. Filtration improves the efficiency of subsequent disinfection processes by lowering the amount of chemicals or ultraviolet (UV) light needed. Filtration is also important for chemical disinfection because chemicals are relatively ineffective against organisms buried in sediment, especially invertebrates in resting stages (U.S. EPA, 2011a).

Disinfection is the effect of a chemical (*e.g.,* an oxidant) or physical action (*e.g.,* UV irradiation, heat, shear force, etc) that kills organisms or renders them no longer able to reproduce. The types of disinfection processes of a BWMS broadly includes UV radiation, electrochlorination, chemical addition, ozonation, heat and deoxygenation. Disinfection using UV radiation is currently the most common disinfection technology used in BWMS and is typically combined with filtration during ballasting. The UV light is emitted from a mercury arc lamp, and the rays transfer electromagnetic energy through the organism's cell membrane to chemically alter DNA in its nucleus which kills the organism or terminates its ability to reproduce. A UV-based BWMS often includes a second round of UV treatment when deballasting.

Electrochlorination (or electrolysis) systems are the second most common type of disinfection system used to treat ballast water. Electrochlorination creates hypochlorous acid, the active substance, by running an electric current through saltwater. The two primary requirements for treatment are a minimum salinity in the ambient water for the reaction to occur and a power source with direct current to run the electrolyzer. Two design options for electrochlorination systems are used in BWMS: In-line and side-stream treatment. Both systems undergo the same chemical reaction in an electrolyzer but vary in the concentrations of active substance created and in the volume of water dosed. Chemical addition (*e.g.,* liquid sodium hypochlorite), ozonation, and deoxygenation are other types of ballast water disinfection technologies that have been developed and type-approved; although, use of these systems is far less common than UV and electrochlorination systems.

Neutralization is the addition of a neutralizing agent that reacts with excess disinfection chemicals to eliminate their toxicity at discharge. Neutralization is an important step in chemical ballast water treatment to avoid excess chemicals, residual oxidizers, and disinfection by-products from entering and impairing the water at the point of discharge. As required in the 2013 VGP, the proposed rule includes a numeric standard for residual biocides which can be met through neutralization of treated ballast water.

2. Justification for the Numeric Ballast Water Discharge Standard

i. Type-Approval of Ballast Water Management Systems is a Well-Established and Demonstrated Process for Selection of Technologies

As a preliminary matter, EPA notes that the establishment of a ballast water discharge standard for vessels (both domestic and international) using technology based criteria pursuant to the CWA poses challenges that are not present for stationary facilities for which EPA routinely establishes national discharge effluent limitations guidelines and standards based on BAT under the effluent limitation guidelines program. Importantly, it is impractical to conduct routine monitoring and analysis of the discharged ballast water from vessels to assess the ability of an installed BWMS onboard a ship to meet the numerical discharge standard for biological parameters. Rather, the biological efficacy of any BWMS is best demonstrated through a series of land-based and shipboard trials performed specific to each BWMS. Such a system, when selected, installed, and operated consistent with the manufacturer's specifications, as tested in those land-based and shipboard trials, and ''type-approved'' by an Administration (*i.e.,* the federal agency responsible for approvals) is then expected to meet the discharge standard for biological parameters in the proposed rule.

The BWMS type-approval process was first developed as part of the IMO International Convention for the Control and Management of Ships' Ballast Water and Sediments (*i.e.,* the BWM Convention), an international treaty developed with a goal of establishing an international standard for the management of ballast water (IMO, 2004). The BWM Convention was adopted in 2004 after more than 14 years of complex negotiations between IMO member states and entered into force in 2017, 12 months after ratification of the BWM Convention by a minimum of 30 member states, representing at least 35 percent of world merchant shipping tonnage. Regulation D–2 of that BWM Convention established the ballast water discharge performance standard as follows:

- Organisms greater than or equal to 50 micrometers in minimum dimension—less than 10 viable organisms per cubic meter;
- Organisms less than 50 micrometers in minimum dimension and greater than or equal to 10 micrometers in minimum dimension—less than 10 viable organisms per milliliter;
- Indicator microbes:
  - Toxicogenic *Vibrio cholerae* (O1 and O139): Less than 1 colony forming unit (cfu) per 100 milliliters or less than 1 cfu per gram (wet weight) zooplankton samples;
  - *Escherichia coli:* Less than 250 cfu per 100 milliliters; and
  - Intestinal enterococci: Less than 100 cfu per 100 milliliters.

Regulation D–3 requires that any BWMS used to meet the standard be approved in accordance with specific IMO procedures, which had initially been adopted as guidelines (Guidelines for Approval of Ballast Water Management Systems, or more commonly referred to as ''G8'' for being the eighth in a series of BWM Convention guidelines) but subsequently adopted into the BWM Convention as mandatory (IMO, 2008; IMO, 2016). The approval process includes detailed requirements for BWMS vendors to submit BWMS for both land-based and shipboard testing by independent third-party test facilities to demonstrate that the BWMS can meet the D–2 standard following technical specifications detailed in the *Code for Approval of Ballast Water Management Systems (BWMS Code, Resolution MEPC.300(72; 13 April 2018, effective October 13, 2019)* (IMO, 2018a). Upon a successful demonstration that a BWMS can meet the D–2 standard, such a system is approved (''type-approved'') for use onboard a ship. Adoption of the BWM Convention in 2004 prompted development of ballast water management systems (BWMS) that could demonstrate compliance with the D–2 standard. In this approach, unlike how EPA develops effluent limitations guidelines and standards based on demonstrated treatment system effectiveness, the BWM Convention establishes a standard, then vendors develop systems to be demonstrated and approved as meeting that standard. As of October 2019, the IMO recognizes 80 BWMS approved by one or more administrations as capable of meeting the D–2 standard (IMO, 2019).

While the United States is not party to the BWM Convention, the USCG developed domestic regulations with the intent to harmonize as closely as possible with the adopted BWM Convention, and established a discharge standard to be met using a BWMS that has been demonstrated as capable of meeting that standard through a USCG type-approval process. Criteria for the USCG type-approval are detailed in regulations at 46 CFR 162.060, *Ballast Water Management Systems* and address BWMS design, installation, operation, and testing to ensure any type-approved system meets both performance and safety standards. The USCG type-approval testing requirements were widely accepted as having been more complex and rigorous than those of the IMO (although this is not necessarily still the case since adoption of the BWMS Code). The USCG regulations provide for temporary use of foreign type-approved BWMS in the United States for up to five years after the vessel is required to comply with the ballast water discharge standard.

Type-approval is a critical step in verifying that a BWMS, when tested under standardized and relatively challenging conditions, is capable of consistently meeting the discharge standard. In the USCG type-approval testing process to determine biological efficacy, careful analyses are employed to (1) assure the source water for testing meets a threshold concentration of organisms to meaningfully challenge the BWMS, and (2) to quantify (ideally, sparse) concentrations of living organisms in treated and untreated (*i.e.,* control) discharge water. As part of its type-approval procedure, the USCG regulations require BWMS land-based testing to be conducted pursuant to the ETV Protocol (*i.e.,* the 2010 *Generic Protocol for the Verification of Ballast Water Treatment Technology,* developed under the now defunct EPA Environmental Technology Verification Program) that outlined the experimental design, sampling and analysis protocols, test, and reporting requirements (U.S. EPA, 2010).

The USCG type-approval process contrasts with the typical approach when EPA develops a numeric discharge effluent limitations guideline or standard under the effluent limitation guidelines program. There, EPA does not also specify the technology that must be used; rather, EPA identifies one or more technologies that have been demonstrated as being capable of meeting the discharge standard and the discharger selects one of those technologies. EPA typically establishes numeric effluent discharge limits based on a daily maximum and long-term (*i.e.,* monthly) average to reflect pollution control that reflects BAT, including accounting for variability at well-operated systems. Compliance with such effluent limits is demonstrated through routine self-monitoring by the discharger. Because of the challenges with collecting and testing representative samples of ballast water at the time of discharge, regulating discharged ballast water sourced from around the world has required a different approach. Namely, EPA adopted the USCG and IMO approach over the last decade by not only setting the numeric discharge limitations, but also specifying the technologies deemed to meet the limitations through the type-approval process. Currently, for vessels operating in waters of the United States and contiguous zones, compliance with the key biological parameters (*i.e.,* organisms in the 10–50 microns and greater than 50 microns ranges) is achieved largely through demonstrating that any installed BWMS is operated and maintained consistent with the criteria under which that system received USCG type-approval, acknowledging that discharges are required to meet the discharge standard as well.

The proposed ballast water discharge standard reflects EPA's BAT analysis that any USCG type-approved BWMS kill, render harmless, or remove living organisms from ballast water. These approved technologies have been demonstrated to achieve the existing requirements, and therefore are technologically available; for the reasons set out in the 2013 VGP Fact Sheet, they are also economically achievable and have no unacceptable non-water quality environmental impacts. The USCG type-approved its first BWMS in 2016 and to date, more than two dozen systems have received USCG type-approval (USCG, 2019).

ii. International Nature of Vessel Operations Dictates Consideration of IMO Discharge Standard

When developing the VGP, EPA established the numeric ballast water effluent limits equivalent to the standard in the USCG regulations (33 CFR 151.1511 and 151.2030) and generally consistent with the BWM Convention. In establishing those effluent limits, EPA demonstrated it was critical to consider that BWM Convention. As described above, the United States is not a party to the BWM Convention; however, both the USCG (serving as the lead for the U.S. delegation) and EPA were actively involved in the standard setting discussions that led to the BWM Convention numeric discharge standard which entered into force in September 2017. Worldwide, it is estimated that approximately 34,000–70,000 commercial vessels are required to meet a ballast water discharge standard (IMO, 2016a; King and Hagan, 2013). Vessels from IMO member countries that have signed onto the BWM Convention are required to comply with both the BWM Convention and U.S. ballast water regulations when operating in U.S. waters. Similarly, U.S.-flagged vessels must meet the BWM Convention requirements when operating in any countries that are a signatory of that BWM Convention (*e.g.,* a U.S.-flagged vessel will be required to comply with Canadian regulations developed pursuant to the BWM Convention when in Canadian waters).

Based on the most recent five years of VGP annual reports submitted to EPA, over 75 percent of vessels discharging ballast water spent 25 percent or less of their time (and nearly 60 percent of those vessels that discharged ballast water spent less than 10 percent of their time) operating in waters of the United States or waters of the contiguous zone (U.S. EPA, 2020). As of October 31, 2019, 81 IMO member countries representing more than 80 percent of the world merchant fleet by tonnage have ratified the BWM Convention, thus requiring vessels either flying the flag of those countries or operating in those countries to comply with that BWM Convention (IMO, 2020). Thus, vessels comprising 80 percent of the world merchant fleet by tonnage are obligated to comply with the BWM Convention anywhere they operate in the world, including while operating in the United States. The movement of vessels through international waters, the need to comply with any international pollution control standard, and the great variability in source water quality among all the ports where vessels operate presents process and engineering challenges that are unique to the vessel community. This is particularly true of BWMS where the physical scale of such systems relative to the vessels themselves often makes it impossible to accommodate redundant systems or potentially even two different systems to be used depending on where the vessel may be ballasting. These practical challenges relate to the technical availability of such requirements where the relationship between U.S. and other international requirements may limit the ability of the vessel to select and install technologies capable of complying with multiple sets of requirements where that vessel is intending to voyage. With that in mind, it is important that EPA considers the implications for the entire universe of vessels that may operate in waters of the U.S. and waters of the contiguous zone. So, while the U.S. requirements do not have to be identical to the BWM Convention, it is important that, to the extent possible, U.S. requirements do not conflict with international obligations for the vessels of flag states that have signed onto that BWM Convention.

In 2015, in *Nat. Res. Def. Council, et al.* v. *U.S. Envtl. Prot. Agency, et al.,* 808 F.3d 556 (2d Cir. 2015), the United States Court of Appeals for the Second Circuit found, among other things, that EPA acted arbitrarily and capriciously in the 2013 VGP because EPA failed to address why it did not select technologies that could have resulted in a more stringent limitation than the technologies underlying the IMO Standard. The court stated that there are shipboard technologies capable of surpassing the international standard and that EPA failed to demonstrate why limits based on these technologies were not considered. The information cited by the court is the 2011 Science Advisory Board (SAB) report that showed that nine BWMS representing five types of systems had data generated during their IMO type-approval testing demonstrating that these systems can meet a standard between the IMO/USCG standard and 10 times the standard for one or more organism sizes (U.S. EPA, 2011b).

Establishing a discharge standard necessarily based on the most stringent of type-approved systems, as implied by the court's decision, is not required where mitigated by one of the factors relevant to BAT under CWA Section 304(b), therefore EPA does not believe the Second Circuit's decision must dictate the outcome of the agency's analysis. As discussed above, the BAT factors, particularly with respect to process considerations and engineering challenges, weigh in favor of maintaining the proposed ballast water standard at a level of consistency with the IMO standard. This is not to say that U.S. requirements must or should always be identical with the international standard. However, particularly for ballast water discharges, which are frequently significant in scale and expensive to control and which are intrinsic to the long-distance movement of vessels through international waters, EPA places value on being consistent with international obligations, when reasonably possible, in establishing BAT. Here, it is neither reasonable nor appropriate for the universe of vessels that would be regulated under the proposed ballast water discharge standard to not consider the international obligations for those vessels. The current world economic and trade system is predicated on timely and efficient maritime transportation, a significant proportion of which operates globally where trade takes it. Many of the vessels that are subject to the U.S. discharge standard spend most of their time outside of waters of the United States and waters of the contiguous zone, are operating under international ballast water obligations, which for the most part is the IMO standard established in the BWM Convention.

The record for this proposed rulemaking demonstrates that the proposed standard reflects BAT in that the current technology, USCG type-approved BWMS, are technologically available, safe, effective, reliable, and commercially available for shipboard installation. Also, the record indicates that their use is economically achievable. These technologies have been shown (*i.e.,* through shipboard type approval testing) to substantially reduce the concentration of living organisms in ballast water discharges (and achieve the IMO and USCG/EPA discharge standards) compared to mid-ocean exchange or discharges of unexchanged ballast water.

iii. Proposed Standard Accounts for Multiple Sources of Variability

The proposed standard successfully accounts for various sources of variability inherent in addressing ANS in ballast water, including:

- Vessel size, operational profile (*e.g.,* voyage lengths, volumes of ballast water, ballast water flow rates, etc.) and class and flag state;
- Ballast water management system (BWMS) performance in diverse environments; and
- Discharge monitoring (*i.e.,* sampling and analysis).

This variability in addressing ANS dictates that different BWMS options are needed to account for differences in vessels such as different voyage patterns (in marine, brackish, or fresh waters), ballasting rates, architectural characteristics of the vessel such as space constraints or the need to locate the BWMS in a hazardous location onboard the vessel, and BWMS vendor support availability at locations around the world where that vessel intends to voyage. That is, a BWMS that is technically and operationally appropriate for one vessel may not be so appropriate for a different vessel, or even a similar vessel with a different operating profile. EPA analysis for the proposed rule is based on a similar determination that a wide range of available systems is necessary to accommodate technical and operational differences of varying vessel types, sizes, operating profiles, classes and flag states. The existing discharge standard has promoted through the type-approval process a range of types of BWMS disinfection technologies (including UV, electrochlorination, chemical addition, ozonation, and deoxygenation) that operate under a wide range of conditions allowing vessel operators to select a system that is most appropriate for that vessel, considering factors such as:

- The vessel's ballast tank(s), pump(s), and piping configuration;
- Temperature, salinity, and turbidity range of uptake water in areas where the vessel voyages;
- Duration of voyages and segments of each voyage that can affect the

necessary holding time for certain systems;

• Ballast water capacity and required uptake and discharge pumping rates;

• Treatment system weight and space considerations, including accessibility and acceptability for use in hazardous spaces;

• Availability of service, support, replacement parts, supplies, etc. in areas where the vessel voyages;

• Compatibility of treatment with vessel construction (*e.g.,* corrosivity concerns);

• Power demand and energy consumption to pump ballast and operate treatment system; and

• Safety concerns (*e.g.,* explosivity risks, particularly on oil and chemical carriers).

Certain systems may be more advantageous for certain types of vessels. For example, the choice of many shipowners may be limited to UV systems as compared to chemical-based systems for those vessels that operate in ports around the world that ban or impose very low discharge limits on certain hazardous chemicals (*i.e.,* treatment chemicals) used by certain BWMS. In addition, it may be difficult or impossible for a vessel operator to obtain specific chemicals for certain BWMS in certain ports around the world. Similarly, a vessel owner may choose a chemical-based system because they do not have the electrical generation capacity (or room to add such capacity) onboard to support a UV system. Shipowners' decisions may also be based on the ease of operational and maintenance requirements. As such, it is critical that a range of BWMS be available to the global shipping industry to reduce ANS discharge under a variety of operational and environmental conditions.

Variability is inherent to all well-operated treatment systems. When EPA establishes BAT, it must consider the variability at a well-operated treatment system to ensure that the standard is technologically available. EPA's approach to providing for some variability for well-operated systems in establishing BAT limits in effluent limitations guidelines rulemakings has been upheld by the courts several times. See for example, *Nat'l Wildlife Fed'n* v. *U.S. Envtl. Prot. Agency,* 286 F.3d 554, 572 (D.C. Cir. 2002), which upheld EPA's decision to set the monthly average at the 95th percentile by stating that EPA has considerable discretion in determining a technical approach that will ensure that the effluent limitations reasonably account for the expected variability in plant operations while still maintaining an effective level of control. See also *Chemical Mfrs. Ass'n* v. *EPA,* 870 F.2d 177, 229 (5th Cir. 1989), where it is upheld that the purpose of these variability factors is to account for routine fluctuations that occur in plant operation, not to allow poor performance. As is typically the case in the effluent guidelines program, operators design pollution control systems to achieve results below the discharge standard on a long-term basis to account for normal variability at well-operated systems.

The goal of the USCG type-approval process is to demonstrate that a BWMS can treat ballast water such that organism concentrations in discharged water are sufficiently low to meet the discharge standard (*e.g.,* less than 10 organisms per cubic meter of ballast water as an instantaneous maximum) for a given number of consecutive valid tests. The individual test results are reflective of the conditions of the water quality at the land-based and ship-based testing facility at the time. The type-approval process acknowledges that there will be variability in how systems are tested but establishes an instantaneous maximum value to verify BWMS performance using a set of challenging, but not rare, water quality conditions representative of the natural environment. 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. However, that is not the case. For example, as required in the USCG type-approval process, shipboard testing occurs on systems for a period of six months in the locations where that vessel voyages during that time period, regardless of where else that vessel has voyaged or plans to voyage in the future. As such, the test results illustrate that BWMS manufacturers are having systems tested in a variety of environmental conditions and locations around the world, all with the goal of demonstrating that the BWMS can consistently meet, not necessarily exceed, the IMO discharge standard. Demonstrating a system can achieve this discharge standard regardless of the environmental factors is the standard by which the USCG evaluates these systems. [46 CFR 162.060–10(f)(2)]. To do otherwise is to unfairly favor systems that may have had more favorable test conditions.

Multiple sources of variability exist in type-approval sampling and analysis that also affects the results of type-approval testing. For example, stratification in ballast tanks, variability between tanks, flow rates, and contamination in uptake and discharge pipes are just a few of the considerations that may impact type-approval testing. It is also a challenge to capture and count appropriately sized organisms and to collect samples such that the sample collection process does not physically damage or kill these organisms (which should be counted as dead or nonviable only if such happens as a result of the BWMS, not because of poor sample collection and handling practices). Currently, the ETV Protocol is an EPA and USCG accepted method to evaluate the performance characteristics of commercial-ready BWMS regarding factors such as biological treatment performance, predictability/reliability, cost, environmental acceptability, and safety. Based on the ETV Protocol, the determination of the concentration of living organisms in treated water is done through manual microscope counts by trained microscopists.

The sources of uncertainty are systematic error, which is the loss of organisms during sampling and processing, which can be substantial, and random error, which is the difference in organism counts among analysts and among replicate subsamples, as well as variability across measurements of sample volumes. Counting organisms within a size class under a microscope is also challenging. For one, it is difficult to evaluate and count dormant or immotile organisms. Also, organisms can have a wide variety of shapes making it difficult to assign to a size class. For example, phytoplankton (organisms in the 10–50 micron size class) may be combined in chains or radially and may be either symmetrical or asymmetrical. Also, sizing generally is to be based on the minimum diameter of width of the cell except for things such as spikes, hair, or appendages. The Second Circuit recognized and upheld an EPA rule that considers the margin of error inherent in measuring aquatic organisms to allow for a standard that is not equivalent to also represent the same level of control. See for example, *Riverkeeper, Inc.* v. *U.S. Envtl. Prot. Agency,* 358 F.3d 174, 188–89 (2d Cir. 2004) upholding EPA's Track II requirements allowing for ''substantially similar'' reductions in impingement and entrainment at new facility cooling water intake structures as not a less stringent standard but the same standard accounting for the measurement margin of error when measuring in the natural environment.

In the case of ballast water, the operators experience even greater variability than would exist at a shoreside facility subject to a typical effluent guideline because, rather than the numeric discharge standard being a long-term or monthly average, that standard is based on an instantaneous maximum standard, never to be exceeded, which is the unit of time selected for compliance monitoring because of the challenges associated with monitoring, despite varying turbidity, salinity, temperatures and other environmental factors. Vessel owners may have to modify vessel operations to ensure ballast water treatment requirements do not exceed the limitations of the BWMS. BWMS manufacturers must account for these two conflicting challenges—continuous compliance and inherent variability—in their system design and operation. Vendors accomplish this by (1) designing their systems to achieve long-term average discharge concentrations that are *lower than the numeric discharge standard,* and (2) adequately controlling for variation in BWMS performance. Designing a system to meet an instantaneous maximum requires even a higher level of control than that necessary to meet a daily maximum. Designing and operating BWMS to consistently achieve levels close to the numeric discharge standard is poor practice because even relatively slight variability would result in a high rate of non-compliance with the instantaneous maximum numeric discharge standard (and would not pass the USCG type-approval testing process). This partially explains why some of the test results described by the Second Circuit Court decision on the VGP were lower than the current standard. *Nat. Res. Def. Council* v. *U.S. Envtl. Prot. Agency,* 808 F.3d 566, 570 n.11 (2d Cir. 2015). EPA recognizes that variability in performance around the long-term average occurs during normal operations, and that at times even well-operated BWMS will discharge at a level that is higher than the long-term average performance.

iv. Proposed Standard Provides a High Level of Pollutant Reduction

The record demonstrates that the proposed standard reflects BAT in that the current technology, USCG type-approved BWMS, are technologically available, safe, effective, reliable, and commercially available for shipboard installation. Also, the record indicates that their use is economically achievable. These technologies have shown to substantially reduce the concentration of living organisms in ballast water discharges as necessary to meet the discharge standard, beyond the reduction achieved through mid-ocean exchange or unexchanged ballast water.

Specifically, the current standard of 10 organisms per the specified volume of ballast water for the two organism size classes reflects BAT and the current technology basis, use of a USCG type-approved BWMS, effectively removes ANS from ballast water. The Golden Bear Research Center at the California State University Maritime Academy, a university-government-industry partnership that provides shipboard testing of commercial ballast water treatment technologies, recently found BWMS that meet the proposed standard to be highly efficient, achieving several log reductions in pollutant loadings. In 2018, the Center compiled over 100 side-by-side comparisons of the concentrations of ''living'' organisms pumped into their test facility during both land-based and shipboard tests in relation to the final discharge concentration of living organisms after ballast treatment. The order of magnitude of reduction of organisms ranged from 1,000 to over 1,000,000 times; more than half of the comparisons fell in the range 100,000 to 1,000,000 times, or, using the terminology of food and drinking water management, a 5-log to 6-log reduction in targeted organisms (in the log10 scale). In fact, the actual reduction is likely larger because the data were conservatively calculated using fixed minimum detection levels in treated water even when no live organisms were observed at all. This evaluation demonstrates that type-approved BWMS that are designed to meet the proposed standard are highly efficient, achieving several log reductions in pollutant loadings. This level of organism reduction approaches and even exceeds the stringency required in drinking water testing and food management practices (Golden Bear, 2018).

3. Available Information Does Not Justify a More Stringent Discharge Standard

i. Data Quality of IMO BWMS Type-Approval Data Are Inadequate for BAT Evaluation

EPA carefully considered the IMO BWMS test data in the 2011 SAB report that the Second Circuit Court referenced in its decision on the VGP as evidence of BWMS capability, but finds they lack the necessary quality for EPA to develop a revised, more stringent standard for two reasons. *Nat. Res. Def. Council* v. *U.S. Envtl. Prot. Agency,* 808 F.3d 566, 570 (2d Cir. 2015). First, the data packages used in the SAB report were from ballast water management system vendors for their IMO type-approval packages developed under the original *Guidelines for Approval of Ballast Water Management Systems* (G8) adopted in 2005 and revised in 2008 (IMO, 2008). The SAB panel, in response to Charge Question 1, concluded that the BWMS tested under the IMO ''will likely meet USCG Phase I standards.'' In fact, after the SAB report, the USCG found that not to be the case. Further, every vendor with a BWMS requesting USCG type-approval has had to undergo a new round of testing to demonstrate system performance to the satisfaction of the USCG. The IMO has since updated, and codified, new type approval test requirements (IMO, 2018a) that entered into effect in 2019 and address many of the quality issues that limited the reliability of the IMO type-approval data for evaluating BWMS performance.

Second, although the SAB panel determined that nine BWMS representing five BWMS categories had reliable data, they did not fully assess data quality. Instead, the SAB panel made a critical assumption that all protocols and methods were followed exactly as described, regardless of the presence or absence of Quality Assurance/Quality Control (QA/QC) procedures and documentation. Therefore, any use of the findings of the SAB panel must consider this lack of quality assessment. While the USCG does accept IMO data packages for its Alternate Management System (AMS) program, importantly, the requirements for the USCG BWMS type-approval testing require a different type of testing and a higher level of QA/QC than that required by the IMO until the recent entry into effect of the BWMS Code.

As part of the analysis for the proposed rule, EPA conducted an independent review of BWMS performance and data quality. EPA developed a rating system to provide an objective method for determining whether available performance data are of acceptable quality for development of the proposed standard. EPA found that most of the IMO data packages lacked information on test-specific Quality Management Plans, Quality Assurance Project Plans, and individual test results. Average data results were frequently submitted without specific sample dates or reporting of the individual results. While the quality of data improved over time, many reports did not contain adequate information on field replicate samples used for QA/QC measures or actual BWMS flow rates at the time of samples. Also, and importantly, the IMO G8 guidelines required five successful land-based tests as part of the type-approval process regardless of how many tests were conducted to achieve those five successful tests. Thus, for example, a system that passed five land-based tests but also failed five tests would be considered to have a successful land-based test for type-approval. The IMO did recently revise the G8 guidelines to address this issue. Now, as codified in the BWMS Code, five successful *consecutive* land-based tests demonstrating compliance with the discharge standard are necessary for type-approval.

For these reasons, EPA found that foreign type-approval data, such as that used by the SAB in its analysis, is inadequate to assess whether any IMO-approved BWMS can meet the proposed discharge standard and it follows that such a testing regime would not be of sufficient scientific rigor to be appropriate for use in a BAT analysis. In contrast, EPA found that performance data developed consistent with the USCG type-approval procedures and requirements provided at 46 CFR 162.060 would be of sufficient quality for use in evaluating whether a particular BWMS meets the proposed standard.

ii. Type-Approval Data Do Not Support a More Stringent Standard

To date, more than thirty BWMS have received USCG type-approval. The USCG treats all type-approval submissions as proprietary information; however, EPA was provided anonymous data for 9 manufacturers (11 different BWMS) from the Ballast Water Equipment Manufacturers Association (BEMA). EPA analyzed the data and determined the data submission requirements of the USCG type-approval regulations at 46 CFR 162.060 provides data of sufficient quality for EPA to evaluate system effectiveness for a BAT determination (Ballast Water Equipment Manufacturers Association, 2020).

EPA considers that receipt and review of additional type-approval packages would not support a more stringent standard because these test results are within the same order of magnitude as the current standard and fall 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. As noted above, in addressing EPA's effluent limitation guidelines for cooling water intake systems, the Second Circuit Court of Appeals explained that it is reasonable for a performance standard to reflect the margin of error that is inherent when measuring organisms in a natural environment. See *Riverkeeper, Inc.* v. *U.S. E.P.A.,* 358 F.3d 174, 188–89 (2d Cir. 2004). The type approval data must be considered with that margin of error in mind. For example, type approval data provided by BEMA for the 11 different BWMS show the discharge concentrations of organisms greater than 50 microns range from less than 1 to as high as 9.5 organisms per cubic meter, and for organisms between 10 and 50 microns, discharges range from less than 1 to 9.7 organisms per milliliter (mL).

In VIII.B.1.vi.A.3.i., *Data Quality of IMO BWMS Type-Approval Data are Inadequate for BAT Evaluation,* EPA explains the basis for its determination that the IMO data are not of adequate quality to base a standard. However, to demonstrate the impact of the variability of ballast water characteristics, EPA evaluated the court's citation to three UV/filtration systems (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 court stated EPA failed to consider the SAB data that showed these systems can meet a standard between the current standard and 10 times the standard. Implicit in the court's statements are that these three systems are 1.4, 3.7, 4.5, or even 7.7 times as effective as the current standard based on the average discharge standard achieved by each BWMS. However, that effectiveness is mischaracterized. In fact, as demonstrated in the USCG type-approval data, simply because one type of BWMS had a lower average discharge concentration than a second type of system did not mean that first system had a higher treatment efficiency. Importantly, the test results demonstrate that in some instances, BWMS achieved a lower discharge standard than a second system during type-approval testing but that first system had fewer organisms to treat in the intake water than that second system. The BEMA data, as highlighted by the examples provided above, demonstrate that performance varies even within a single BWMS and achieving a low average discharge concentration or high log reduction in one setting does not necessarily mean this system is demonstrated to be a more effective system in all situations. In any case, the effectiveness of any USCG type-approved BMWS should not be downplayed. As demonstrated in the data provided by BEMA, every one of the 11 systems achieved a treatment efficiency of at least 99 percent, for both size classes and in both land-based and shipboard testing meaning that any difference in treatment efficiency between these systems is something less than one percent.

The test results identified by the court indicating greater removal of organisms are not an indication that these systems can achieve a more stringent standard in all conditions. Rather, the test results provide a variety of situations where BWMS manufacturers are testing their systems in a variety of environmental conditions and locations around the world, all with the goal of obtaining USCG type approval by demonstrating that the BWMS can consistently meet, not necessarily exceed, the IMO discharge standard. [46 CFR 162.060–10(f)(2)].

To further demonstrate the true performance of a BWMS and to highlight the change in treatment effectiveness associated with meeting a more stringent discharge standard, EPA evaluated data provided directly to EPA by the BWMS manufacturer, Alfa Laval, that had been included as part of its type-approval package submitted to the USCG in September 2016 for its PureBallast 3 filtration + UV BWMS, which received USCG type-approval in December 2016. The results of EPA analysis are presented in Table 1. Using the court's rationale, the Alpha Laval PureBallast 3 system type-approved by the USCG demonstrates 3.7 times more effective treatment for large organisms (*i.e.,* average discharge concentration of 2.7) and 4.6 times more effective treatment for medium organisms (*i.e.,* average discharge concentration of 2.18 organisms). EPA calculated the actual treatment efficiency the Alfa Laval system achieved as well as the efficiency the system would have to achieve to meet the proposed discharge standard, a standard 10 times (10×) more stringent, and a standard 100 times (100×) more stringent. As shown in Table 1, the Alfa Laval system reduced large organisms (>50 microns in size) by 99.98 percent whereas a treatment efficiency of 99.92 percent was needed to meet the proposed discharge standard (*i.e.,* the Alfa Laval system was 0.06 percent more effective). For medium organisms (10–50 microns in size), the Alfa Laval system was 0.29 percent more efficient (Alfa Laval, 2017).

Achieving a numeric discharge standard 10× and 100× more stringent than the proposed standard would represent an insignificant improvement in treatment system effectiveness for both large and medium organisms. For achieving a standard 10× more stringent, the difference is that between 99.92 and 99.99 percent efficiency for large organisms and 97.82 and 99.78 percent for medium organisms. For achieving a standard 100× more stringent, the difference is that between 99.92 and 99.999 percent efficiency for large organisms and 97.82 and 99.98 percent for medium organisms. These differences in performance are small and within the margin of error due to the variability in ballast water uptake and testing and does not reflect substantial improvement in ANS removal that would warrant a revised standard inconsistent with the international standard.

TABLE 1—TREATMENT EFFICIENCY OF THE ALFA LAVAL PUREBALLAST 3 USCG TYPE-APPROVED BALLAST WATER MANAGEMENT SYSTEM

Size class	Organisms (/m³)		Stringency compared to standard	Removal efficiency (%)	Removal efficiency (%) necessary to achieve		
	Uptake	Discharge			<10/m³	<1/m³	<0.1/m³
≥50 microns	*13,026*	*2.7*	*3.7 times*	*99.98*	*99.92*	*99.99*	*99.999*
10–50 microns	*459*	*2.18*	*4.6 times*	*99.53*	*97.82*	*99.78*	*99.98*

iii. Ballast Water Test Methods Do Not Allow for Establishing a Discharge Standard 100 Times or 1,000 Times More Stringent or a ''No Detectable Organisms'' Standard

Consideration of a standard that is less than 1 organism per volume of ballast water for the two organism size classes (*i.e.,* a standard 10 times more stringent than proposed), including any standard that would be more than 10, 100, or 1,000 times more stringent, is currently not possible because there are no performance data available at these organism concentrations (U.S. EPA, 2011b).

As has been considered in the past by both EPA and the USCG, EPA evaluated whether a discharge standard 100× or 1,000× more stringent than the proposed standard is appropriate. As noted by the SAB, ''methods (and associated detection limits) prevent testing of BWTS to any standard more stringent than the IMO D–2 standard and make it impracticable for verifying a standard 100× or 1,000× more stringent.'' Further, the SAB concluded that no current BWMS can meet a standard beyond 10× more stringent than the current standard (*e.g.,* 100× or 1,000×) as even showing one organism using the current test methods clearly exceeds that more stringent standard. As shown in the review of publicly available USCG type approval data provided by BEMA and evaluated by EPA, at least one living organism was identified in each BWMS type-approval test. Thus, new or improved test methods are still needed to support a statistical determination that technologies are available to meet a standard 100 or 1,000 times more stringent than the IMO discharge standard. Further, EPA has determined, consistent with findings of the SAB, that it is 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 have missed the few live organisms present in the discharge. And, collecting larger volumes of ballast water becomes impractical. For example, the SAB estimated that anywhere from 120–600 cubic meters of ballast would have to be collected to meet a standard 10× more stringent (U.S. EPA, 2011b).

EPA evaluated the available USCG type-approval data and found that these data do not show that performance better than the proposed discharge standard is achievable in all vessel types and situations. It is important to consider that a USCG BWMS type-approval certification is based on its system components at the time of certification and no changes or optimizations to the technology can be made by the vessel operator. For example, the vessel operator cannot change the filter or chemical concentration to improve the system's performance without the BWMS manufacturer notifying the USCG, in accordance with 46 CFR 162.060–16.

iv. Monitoring Limitations Do Not Support a More Stringent Standard

If a more stringent standard were to be established, it would require confidence in the ability to monitor at that lower concentration to demonstrate both treatment effectiveness of available technology and compliance with the discharge standard. However, monitoring low concentrations of living organisms in ballast water (or direct organism monitoring), by mass or any other measure, at lower levels than necessary for demonstrating compliance with the existing numeric discharge standard is impractical because of challenges with collecting and analyzing ballast water to detect and quantify organisms at those levels. In lieu of direct organism monitoring, in the VGP, EPA developed a three-component self-monitoring program as a reliable indicator of whether BWMS are effectively controlling the discharge of living organisms: (1) Biological monitoring to indirectly assess the effectiveness of reducing living organisms in the discharge, (2) functionality monitoring of the system to assure it is operating as designed, and (3) residual biocide/derivative monitoring for those systems using active substances. Presently, there are no means to routinely sample and analyze in real-time ballast water for compliance with the discharge standard for the two largest size classes of organisms, and while various tools are under development, there is no widely-accepted methodology to formally evaluate and choose tools for use in regulatory enforcement applications (Drake et al., 2014).

There is no basis either in science or the CWA's BAT factors to assume a BWMS can achieve a higher level of treatment than is supported by reliable data. Therefore, regulators have had to rely on indirect indicators of compliance to ensure that any BWMS continues to perform as demonstrated during land- and ship-based type-approval testing. ''Functionality monitoring,'' as required by the VGP, is an indirect indicator of compliance entailing the use of a variety of meters, electronic sensors and analyzers that measure and transmit to control systems operational data such as flow rate, pressure drops across filters, disinfectant concentrations and energy intensity. If these indirect measurements fall within the BWMS design operating ranges, then it is reasonable to assume the BWMS is reducing living organisms as required since the USCG type-approved the BWMS as being able to achieve the living organism discharge standards when operating within the design specifications. The lack of sampling and analysis methods available to monitor ballast water discharges for the two largest organism size classes at lower concentrations than the current discharge standard with any statistical significance justifies EPA proposing a discharge standard identical to the current standard.

Demonstration of a higher level of treatment effectiveness reasonably would require testing of a different parameter for which there is the ability to monitor, which is likely some measure of organisms other than the two organism sizes classes (and bacteria) upon which the current standard is based. This would require a new type-approval process, which would result in significant delays in testing, ''approving,'' and manufacturing an adequate supply of systems available for installation aboard the global shipping fleet. Conversely, this would require a comprehensive evaluation and selection of more appropriate parameters than the two organism size classes, undertaking a comprehensive monitoring program to sample and analyze ballast water for those new parameters to evaluate BAT for those parameters. Without such an evaluation, EPA does not have the necessary data to justify treatment system effectiveness associated with the required level of pollutant control.

4. Conclusion

In summary, EPA and the USCG are committed to protecting U.S. waters from invasive species and support a strong national and international solution that does not disrupt the continuous flow of maritime commerce that drives the U.S. and global economies. The proposed rule would implement the VIDA requirement for ballast water to establish the standard according to BAT by continuing the current EPA and USCG standard given that the standard and the USCG type-approval process is effective and promotes the development of highly efficient technology to control ANS in ballast water. In the last three years, the USCG has type-approved more than thirty ballast water management systems (BWMS) for vessels that would meet the proposed discharge standard, with at least half as many more under review. These systems have provided a variety of treatment options for a breadth of national and international vessels. The current standard continues to be appropriate to significantly reduce invasive species transport given the complexity of the universe of vessels that would be subject to the proposed rule and the great variation of vessel processes and engineering constraints of ballast water management. The current standard is driving development of type-approved BWMS that are highly efficient. Establishing a more stringent standard at this time would not result in a meaningful improvement in system performance or discharge reduction.

The challenge in ballast water management that will reduce ANS discharges is not adopting a lower or more stringent standard, but instead focusing on the vessel installation of available and highly efficient BWMS; proper operation and maintenance of those systems to achieve the treatment efficacy demonstrated as part of the USCG type-approval testing; and the evolution of vessel ballasting practices to minimize volumes of ballast water requiring management. Only very recently has EPA begun to see broad compliance of the vessel community with installation, operation, and maintenance of the range of the USCG type-approved BWMS. To date, about one-third of vessels operating pursuant to the requirements of the VGP have installed BWMS (U.S. EPA, 2019). In 2017, the American Bureau of Shipping (ABS) conducted a global survey of 27 shipowners with 220 vessels including bulk carriers, tankers, containerships and gas carriers. In 2018, ABS repeated the survey with more than double the participants of 60 shipowners and operators worldwide covering 483 BWMS installations for seven different BWMS treatment technologies. In 2018, ABS found that 35 percent of BWMS installations were reported as operating regularly, and the remaining systems were either inoperable or considered problematic. Surprisingly, the survey findings show that the number of problematic BWMS in operation increased from 29 percent in 2017 to 59 percent in 2018. It appears that many vessel operators are trying to get their BWMS fully functional and into operation before the USCG or IMO compliance deadlines (ABS, 2019) and in starting up and operating installed systems, often for the first time after a period of nonuse since installation, are finding unexpected problems. No particular system is identified as being more or less likely to meet the discharge standard.

Opportunities for advancement in ballast water treatment and technology may require EPA to assist the vessel community in tackling installation and operational challenges with the existing BWMS and future type-approved systems and best management practices. Significant limitations remain in ANS monitoring such that setting a different numeric discharge standard for ANS is unlikely to result in meaningful technological advancement. The VIDA provides EPA and the USCG with this opportunity to streamline the ballast water regulations which should aid with the operation of demonstrated, but not yet fully optimized, systems and with future systems as they continue to come online.

B. Ballast Water Reception Facilities

The VIDA expressly excludes from the discharge standards ''ballast water from a vessel . . . that only discharges water into a reception facility.'' 33 U.S.C. 1322(p)(2)(B)(ii)(V). As such, CWA Section 312(p) does not authorize EPA to regulate the transfer of ballast water from ships to a reception facility as part of the proposed rulemaking. Nonetheless, for the purposes of this proposed rule and to acknowledge the 2015 Second Circuit Court decision on the VGP, EPA reviewed and considered whether zero discharge or a more stringent discharge standard based on the use of a reception facility may be BAT for ballast water discharged from regulated vessels. *Nat. Res. Def. Council* v. *U.S. Envtl. Prot. Agency.,* 808 F.3d 566, 572–75 (2d Cir. 2015). For the purposes of this proposed rule, unless otherwise noted, when EPA refers to ''onshore'' or a ''reception facility,'' it refers to both the transfer of ballast water to either an onshore reception facility or another vessel for the purpose of storing or treating that ballast water.

The Second Circuit Court decision stated that EPA failed to give fair and thorough consideration to reception facilities in setting the discharge standards in the VGP. The Second Circuit stated that a technology is ''available'' in the following instance: ''(1) the transfer technology must be available within the first industry: (2) the transfer technology must be transferable to the second industry; and (3) it must be reasonably predicable that the technology, if used in the second industry, will be capable of removing the increment required by the effluent standards.'' *Nat. Res. Def. Council,* 808 F.3d at 572–73. The Second Circuit stated that in establishing BAT, consideration should be given to whether a particular technology that is being used in another industry could form that technology basis for BAT. As part of the proposed rule, EPA evaluated several technologies to identify whether any such technology is transferable from another industrial sector but has not found any such technologies that would provide a greater level of control for ballast water from vessels. This is largely because of the unique nature of ballast water and its use aboard ships—which are not stationary, and, many of which spend a very small portion of their time in the United States.

In developing this proposed rule, EPA considered whether discharges of ballast water to a reception facility could result in zero discharge or a more stringent standard for ballast water discharges than what currently exists. EPA investigated ballast water discharges to a reception facility to better understand the technological availability, economic achievability and the non-water quality environmental impacts associated with limits based on its use and explored the alternative forms of reception facilities—including fixed treatment facilities (reception facilities or wastewater treatment plants) and mobile, shore-based, or near-shore-based ballast water treatment deployed on trucks, barges or boats—and feasibility factors of the use of these facilities such as vessel and port characteristics, economic feasibility, and treatment cost estimates.

Despite considering the potential advantages identified in recent years for the use of ballast water reception facilities (*e.g.,* fewer onshore facilities than shipboard systems would be needed; fewer physical restrictions and time limitations could lead to effective treatment technologies), the analysis identified many challenges of implementing a national and international network of reception facilities. By far the most significant challenge is ensuring the availability of reception facilities at all ports of call, because if even one anticipated port location for a vessel does not have an available reception facility, that vessel would need an alternative approach, likely requiring installation of a shipboard treatment system, deferring the discharge of ballast water, or declining to call at that port. A search of the National Ballast Information Clearinghouse found that between the effective date of the 2013 VGP (*i.e.,* December 19, 2013) and the end of 2017, vessels with ballast water operated in approximately 700 U.S. ports and discharged ballast water in over 400 of those ports, with individual discharges as large as 20 million gallons (75,000 MT) and daily combined discharges of more than 25 million gallons (100,000 MT) in a day in a single port (National Ballast Information Clearinghouse, 2020). To meet the ballast water discharge management needs for these vessels would require some type of reception facility at each of those 400 ports (as well as potentially at some of those other 300 ports where vessels operate with ballast water onboard and may at some point have the need to discharge ballast); otherwise, any vessel needing to discharge ballast water at any of these ports would need a BWMS. For example, numerous ports that were initially expecting to accept liquified natural gas, during which ships would offset the reduced cargo weight by taking on ballast water, are now instead planning to export that liquified natural gas, with a consequent need for ships to discharge ballast water while loading cargo. This analysis does not consider the universe of vessels that also operate in other countries and a similar expectation that without reception facility availability, these vessels would still need to install, operate, and maintain a BWMS. The massive scale of the new physical infrastructure that would be needed to accommodate the systematic deployment and application of shoreside ballast water reception facilities is another process and engineering challenge that weighs against the selection of a zero-discharge standard based on discharge to a reception facility as BAT for ballast water. 33 U.S.C. 1314(b)(2)(B).

Another critical challenge is retrofitting vessels with the appropriate ballast water systems (including pipes and pumps) required to move ballast water up from tanks and off the ship at a rate fast enough that the vessel can perform normal cargo operations without significant and costly delays. To date, no U.S. or international ship-to-shore connection standard exists for non-oily ballast water discharges. As such, vessels are not fitted with, nor would an appropriate reception facility have, a standard size, configuration, strength, etc. on which to base a design to ensure vessels would be able to connect and discharge ballast water to such a facility. In a similar situation, the IMO established connection requirements under Regulation 13 of Annex I to MARPOL for oil mixtures, which have been codified in USCG regulations at 33 CFR 155.430, and for which, a similar set of requirements would be needed for non-oily ballast water discharges. Without such an international standard for ballast water connections, implementation of such a requirement would be impractical. Additionally, the configurations of many ports are such that a vessel may berth at any number of locations within the port, necessitating that such reception connection equipment is available at each of these berths and capable of being transferred from that point to the reception facility. As an example of the challenge associated with such a configuration, the Port of Duluth is a single port with 60 docks spanning 49 miles of coastline (Lake Carriers' Association, 2016a).

Also, reception facilities may not provide a complete solution to ballast water treatment. For example, some vessels may need to discharge part of their ballast water before arriving in port so they can conduct cargo operations as soon as possible following arrival at the dock; some vessels need to discharge ballast water to reduce draft before arriving at berth; and lightering vessels may need to discharge ballast as they load cargo at designated anchorages or lightering zones. In each of these instances, some type of reception facility would be required, further complicating the necessary infrastructure to handle discharges from such disparate locations.

The only instance of a ballast water reception facility being used in the United States is in Alaska, specifically to remove oil from ballast water discharges from single hull tanker vessels. Use of facilities such as this, with modifications made specifically to remove living organisms (*e.g.,* filtration with second stage disinfection) might be available for vessels sailing dedicated routes. However, many commercial vessels do not stick to a single voyage pattern (even those usually on dedicated routes) in all instances, which would necessitate either finding a reception facility in the new port(s), rapidly installing a shipboard BWMS, or likely being unable to discharge their untreated ballast water in compliance with the VIDA requirements (which may in effect prevent this vessel from voyaging to that port). Since these changes in voyage patterns are often made on very short notice (often on less than two weeks' notice), it would not be technologically available to install a BWMS on these vessels quickly enough for that new voyage.

EPA evaluated several studies of reception facilities in the United States, including ports in the Great Lakes, Baltimore, MD, California, and internationally, including ports in the Caspian Sea, Netherlands, Brazil, and Croatia. California has led the effort nationally to explore the possibility of reception facilities. In 2013, the California State Lands Commission funded a study to assess ballast water reception facility approaches in California. The report from that study (Glosten Associates, 2018), is currently the most comprehensive review of reception facility options in California. The authors concluded that a network of treatment barges would be the best reception facility approach when compared to land-based treatment to enable vessels to meet California's interim Performance Standards. According to the Study, such an approach would not come without impacts or costs. A barge-based network could lead to increased air emissions and congestion at California's ports. In the case of the South Coast Air Basin, these ballast water reception facilities could increase overall harbor craft air emissions from 2.5 to 5 percent. The 30-year lifecycle cost of building and operating a network of treatment barges is estimated at $1.45 billion. Marine vessel operators will bear an additional $2.17 billion in costs to retrofit vessels to support transfer of ballast to barges. The authors estimated that it will take a minimum of nine years to implement such a treatment network once the funding is secured. Possible next steps identified by the authors include pilot-scale testing of the ballast water treatment methods and scale-up to a treatment barge to assess system performance over various rates of ballast water transfer. As detailed in the final report: ''The first six years will be occupied with the study of ballast water discharges, building and pilot testing of treatment barge prototype(s), development of transfer station standards, communication of requirements to marine vessels, development of the PPPs [public private partnerships], and contracting for the design/build of the treatment barges. Years 7, 8, and 9 will be occupied with phasing in the treatment barge network. Importantly, Year 1 starts only after budgets and plans have been put into place.'' Thus, in the best case, once funding is available, implementation of a barge-based ballast water management approach in California is still nine years away, if that the pilot project demonstrates such an approach is viable. And importantly, as noted in that report, as of today, no such onshore or barge-based reception facilities currently are in operation in the United States (King and Hagan, 2013; Hilliard and Kazansky, 2006; Hilliard and Matheickal, 2010; Brown and Caldwell, 2007; Brown and Caldwell and Bay Engineering, 2008; COWI A/S, 2012; Damen, 2017; Glosten Associates, 2018; Hull & Associates, 2017; Maglic et al., 2015; Pereira and Brinati, 2012; U.S. EPA, 2011b; USCG, 2013).

Another complication of a reception facility approach is that vessel operators in most cases are not the entities that would build and operate such facilities. As such, these reception facilities would likely only be created where an organization, such as a port authority or terminal operator, identifies a financial opportunity from constructing and operating such a facility. It would be highly speculative that any organization would choose to do so. The scale and cost of operating reception facilities at the hundreds of ports nationwide that handle ballast water from tens of thousands of vessels would require billions of dollars and weighs against finding such technology to be available or economically achievable. It also ignores the thousand plus ports worldwide directly or indirectly linked to many of these same vessels that reasonably would want to be able to discharge ballast to a reception facility at any port visited rather than having to also install and operate a BWMS in those areas where a reception facility is not available. As cited in the Second Circuit decision, *Nat. Res. Def. Council* v. *U.S. Envtl. Prot. Agency.,* 808 F.3d 566 (2d Cir. 2015), the SAB scientists pointed out that: ''[S]hipboard treatment and onshore treatment represent distinct approaches to ballast water management that would each require different large investments in infrastructure . . . . Thus *we are almost certain to be stuck for a very long time with whichever approach is used as the BAT* in setting discharge standards in 2013. It is thus of the utmost urgency that a fair and thorough comparison of the two approaches be made at this time.'' Whether the opinion of the SAB is accurate, it is likely that selecting the reception facility approach would require vessels to also install onboard systems for those times when the vessel may need to discharge ballast water in a port that may not have a functioning reception facility. A further complication here is not just in having to install an onboard system for use only some of the time, it is that if the onboard system is not used consistently and sits idle for a significant portion of the time, it is unlikely to work effectively and is more likely to experience mechanical problems due to periods of nonuse. Conversely, a vessel with an onboard system could operate worldwide without having to rely on others for ballast water management. While use of a reception facility assumes a higher level of treatment than can be achieved onboard a vessel, the specific evaluation performed at each of these hypothetical reception facilities may not actually result in significant discharge reductions.

Based on the record before it, EPA has determined that reception facilities are not technologically available or economically achievable at this time. While EPA understands that the use of reception facilities, if available, may be a valid and effective component of ballast water management in certain situations, the challenges in creating such a comprehensive infrastructure nation-wide (and world-wide) make reception facilities simply not technologically available as defined in the CWA. It also appears to have unacceptable non-water quality environmental impacts in some areas. It is logistically more complex than shipboard treatment for the shipping industry to implement and requires vessel as well as port modifications to be accommodated. It is unlikely that ballast water reception facilities could become a national ''one size fits all'' option for ballast water management, principally because it cannot accommodate widely varying trade routes without the availability of reception facilities in most ports. Port-specific conditions may also preclude any technically available and/or economically achievable reception facility alternatives. Integration with port and vessel operations would require careful planning, design, and operation. If in the future reception facilities become available and economically achievable and have acceptable non-water quality environmental impacts in certain locations for certain specialized sectors of the commercial vessel industry EPA would revisit the standards, but, for now, such an option has not been demonstrated to reflect BAT.

C. Vessels Operating Exclusively on the Great Lakes

After careful consideration of all the relevant factors, EPA proposes to subcategorize and not require any vessel operating exclusively on the Great Lakes, regardless of when they were built, to meet the numeric discharge standard and instead to continue to require that these vessels implement best management practices. As required by the VIDA, EPA assessed the best available technology that is economically achievable and determined that the challenges analyzed in the VGP remain true today. This proposed exemption is based on a set of unique circumstances that make ballast water management especially challenging for these vessels. The challenges include issues related to the operational profile and design of these vessels and issues related to the unique nature of the waters of the Great Lakes. A fuller discussion of EPA's analysis appears below.

1. Ballast Water Management of Vessels Operating Exclusively on the Laurentian Great Lakes

The VGP exempted vessels that operate exclusively on the Laurentian Great Lakes, commonly referred to as ''Lakers,'' and built before 2009 from meeting the numeric discharge standard. As defined by the VGP, this includes vessels that operate 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. EPA selected January 1, 2009 as the cutoff date because the IMO originally established this date to require treatment for certain new build vessels. At the time, EPA anticipated that vessels designed to enter the market beginning in 2009 would be prepared to meet the VGP requirements. Since that time, EPA has evaluated the few U.S. and Canadian Lakers that had been built since 2009 and concluded that they were also unable to meet the VGP discharge requirements. Consistent with that conclusion, the USCG regulations do not require non-seagoing vessels, including all Lakers, to meet the numeric discharge standard.

The proposed rule expands the VGP exemption to any vessel operating exclusively on the Great Lakes, regardless of build date, because these vessels share the same challenges in operating BWMS under the environmental conditions of the Great Lakes. The exemption applies to vessels on the Great Lakes that are 3,000 GT ITC (1,600 (GRT) if GT ITC is not assigned) and above, as smaller vessels are exempt under 139.10(d)(2)(i) of the proposed rule as described in VIII.B.1.vii.A. *Vessels Less Than or Equal to 3,000 GT ITC (1,600 GT GRT if GT ITC is not assigned) and That Do Not Operate Outside the EEZ.* For the purposes of the proposed rule and referred to as ''Great Lakes vessels'' in this section, the universe of vessels operating exclusively on the Great Lakes includes two main types of vessels. First, it includes Lakers, as defined in the VGP, as bulk carriers and other similar vessel types (*e.g.,* tank barges) operating exclusively on the Laurentian Great Lakes. Second, it includes any other large vessel, according to the size threshold, that is 3,000 GT ITC (1,600 GRT if GT ITC is not assigned) and above, that voyages exclusively on the Great Lakes, such as ferries. Discussion in this section using the term ''Great Lakes vessels'' does not include seagoing vessels that operate beyond the boundary identified in the VGP and continued for the proposed rule, that being vessels that operate downstream 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.

There are approximately 150 U.S.- and Canadian-flagged Lakers, with approximately 20 of these (mostly Canadian) constructed in 2009 or later (Marinelog, 2016; Lake Carriers' Association, 2016). The U.S. Lakers generally are larger than Canadian Lakers, with many of these vessels being too large to transit through the Welland Canal and the locks on the St. Lawrence Seaway, thus confining their operations to the four upper Great Lakes. Of the approximately 60 U.S.-flagged Lakers operating on the Great Lakes, only about half are small enough to fit through the Welland Canal; although, from 2015 through 2017, U.S. Lakers operated only 28 voyages east of the Welland Canal (Lake Carriers' Association, 2018). Common U.S. Laker routes are ore cargo runs from Lake Superior to U.S. mills in Indiana, Michigan, and Ohio. In contrast, 81 of the 84 Canadian Lakers are small enough to pass through the Welland Canal and locks on the St. Lawrence Seaway (Lake Carriers' Association, 2016). The U.S.-flagged Lakers that are small enough to transit the locks on the St. Lawrence Seaway are not designed to operate in brackish water or saltwater and therefore do not venture east of Quebec City on the St. Lawrence Seaway. Most Canadian Lakers, on the other hand, commonly operate in brackish water or saltwater and their hulls and ballast tanks have corrosion protection that allow them to transit through the locks on the St. Lawrence Seaway to Canadian coastal ports and for some of these vessels, even to overseas ports. However, U.S. and Canadian vessels that operate exclusively on the Great Lakes share several similar constraints with selection of BWMS because of the short voyages, low salinity, very cold water, high dissolved organic carbon content, and low UV transmittance associated with operation solely within the Great Lakes. Similar vessel design issues are present for both the existing U.S. and Canadian fleets with respect to vessel design and operation.

The Second Circuit Court decision held that EPA acted arbitrarily and capriciously when it exempted Lakers built before 2009 (''pre-2009 Lakers'') from the numeric technology-based effluent limitations of the VGP. *Nat. Res. Def. Council* v. *U.S. Envtl. Prot. Agency.,* 808 F.3d 566 (2d Cir. 2015). The court stated that EPA's decision to exempt Lakers was based on a flawed record that failed to consider the possibility of reception facilities, and that the lack of supply of updated shipboard systems was not a legitimate reason to exempt pre-2009 Lakers as the purpose of a BAT standard is to force technology to keep pace with need. *Id.* at 576. The court cited an EPA SAB Report as support for its decision that EPA was arbitrary and capricious because the Report did not declare such treatment impossible. Instead, the SAB concluded ''[a] variety of environmental (*e.g.,* temperature and salinity), operational (*e.g.,* ballasting flow rates and holding times), and vessel design (*e.g.,* ballast volume and unmanned barges) parameters'' should be considered in determining the treatment standard. *Id.* at 577. The court further concluded that EPA failed to conduct an appropriate and factually-supported cost-analysis which might have shown that the cost of subjecting pre-2009 Lakers to the 2013 VGP was not unreasonably high, or, alternatively, that use of reception facilities was economically achievable. *Id.*

To address all of the above issues, EPA assessed the availability of ballast water treatment technology by evaluating the operational and technical considerations for installation and operation of a USCG type-approved BWMS on Great Lakes vessels and alternative approaches that could be used to develop a specific discharge standard for Great Lakes vessels. Specifically, EPA assessed:

- The compatibility of type-approved BWMS to meet the current discharge standard under the environmental conditions of the Great Lakes;
- the operational and technical challenges of the installation of type-approved BWMS given the unique structure of Great Lakes vessels;
- the potential use of current type-approved BWMS on Great Lakes vessels to meet an alternative standard; and
- the availability of other treatment technologies for Great Lakes vessels.

Overall, it was found that ballast water treatment technologies are not available for Great Lakes vessels at this time because of the uniqueness of these vessels and the Great Lakes ecosystem. EPA evaluated the technical reasons why current type-approved BWMS are not compatible with the environmental conditions of the Great Lakes for each category of treatment system. The environmental conditions evaluated include the water's unique ''freshness,'' as opposed to salinity, the temperature of the water, and the turbidity of the ports. The operational and technical conditions evaluated include the length of voyages and its effect on the BWMS holding times required to achieve the discharge standard and the absence of coated ballast tanks in the fleet. Table 2 summarizes information on the critical limitations that each major disinfection method currently faces for use on Great Lakes vessels.

TABLE 2—LIMITATIONS OF BWMS DISINFECTION TYPES FOR COMMERCIAL VESSELS OPERATING ON THE GREAT LAKES

BWMS disinfection method	Limitations for use on the Great Lakes
UV	Areas of the Great Lakes, notably in certain river ports, have high turbidity and high dissolved organic carbon content such as from tannins and humic acid, which inhibits effective UV treatment. In addition, most USCG type-approved UV BWMS require holding times of 72 hours, however common trade routes within the Great Lakes take less than 72 hours with some as little as 2 hours. For this reason, vessels would be required to delay cargo loading and discharge ballast water until the holding time is achieved. Several UV BWMS have since been type-approved with holding times as little as 2.5 hours, highlighting the advance of technology in beginning to overcome some of the operational limitations described.
Electrochlorination	Current USCG type-approved BWMS require a supply of saltwater for generating chlorine. Vessels limited to freshwater environments would need to prepare and bunker a synthetic seawater solution, which would limit cargo capacity. Also, chlorine in uncoated ballast tanks increases corrosion rates to unacceptable levels for the structural integrity of the vessel. Therefore, this technology is not technically available.
Chemical Addition	Current USCG type-approved BWMS allow for the addition of chemicals. However, none of the U.S. Laker fleet that operates exclusively on the Great Lakes have coated ballast tanks. This results in an increase in corrosion rates if corrosive chemicals, particularly oxidants, are used, making this technology technologically unavailable and economically unachievable because the vessel would be taken out of service.
Ozonation	Current USCG type-approved BWMS allow for the addition of ozone. However, none of the U.S. Laker fleet that operates exclusively on the Great Lakes have coated ballast tanks. This results in an increase in corrosion rates, making this technology technologically unavailable and economically unachievable because the vessel would be taken out of service.
Deoxygenation	Current USCG-type-approved BWMS require hold times if using a deoxygenation system. Common trade routes for commercial vessels within the Great Lakes move ballast water from lower ports such as Gary, Burns Harbor, Cleveland and Toledo Transit times for these routes are less than 72 hours (USACE, 2017). To comply with the numeric discharge standard, vessels would need to delay cargo loading and discharge of Great Lakes ballast water until the holding time is achieved if using a deoxygenation system that requires hold times greater than transit times. Additionally, deoxygenation can result in increased corrosion due to anaerobic conditions, and the lack of coated ballast tanks makes this technology unavailable.

Ref: (Keister and Balog, 1992; Tuthill et al., 1998; Lake Carriers' Association, 2017; American Bureau of Shipping, 2015; U.S. Army Corps of Engineers, 2017).

2. Compatibility of BWMS To Meet the Discharge Standard Under Great Lakes Environmental Conditions

The environmental conditions of Great Lakes waters present unique challenges for use of any of the more than 20 USCG type-approved BWMS on Great Lakes vessels. At this time, none of these systems can meet the proposed numeric discharge standard given these conditions. Cold ambient water temperatures on the Great Lakes during the earlier and later portions of the shipping season are below the testing parameters of USCG BWMS type-approval testing and, therefore, BWMS have not been demonstrated to work sufficiently under such conditions to meet the numeric discharge standard. For example, winter icing conditions of the exceptionally fresh waters of the Great Lakes impact the ability to operate a BWMS, such as from ice-plugged BWMS filters. Because of winter ice on the Lakes, the navigation season is not usually year-round. The Soo Locks and Welland Canal close from mid-January to late March, when most vessels are laid up for maintenance. However, cold temperature and icing conditions can persist into the Spring. Water temperatures in the Great Lakes during the shipping season can be as low as 0 °C. Lake Erie is below 5 °C for five months a year, lakes Michigan and Huron for almost half the year, and on Lake Superior 5 °C might not be reached until June and be back below by November. Because of the pressure drop across filters, freezing can occur at temperatures above 0 °C. Several USCG BWMS are not approved for operation at a water temperature of less than 5 °C (Monroy et al., 2017; USCG, 2013).

In addition to cold temperatures, the fresh water of the Great Lakes contains extremely low salinity. USCG type-approval testing for freshwater allows a salinity as low as 0.9 practical salinity units (psu), but Great Lakes water, especially Lake Superior, has a much lower salinity of approximately 0.063 ppt. Several USCG type-approved BWMS require a higher salinity than is found in the Great Lakes. For example, electrochlorination systems were designed to use marine water to provide a chloride source to generate chlorine. The freshwater of the Great Lakes does not provide such a source of saline water, requiring a Laker using such a system to bunker saltwater in an unused holding tank or ballast tank and then use this saltwater to generate chlorine for disinfection while ballasting/deballasting within the Great Lakes. EPA analysis demonstrates that this technology is not practicable and is presently unavailable.

Turbidity, excessive levels of tannins, and filamentous bacteria in some areas of the Great Lakes can inhibit the ability of USCG type-approved BWMS to meet the numeric discharge standard. Several river ports in the Great Lakes contain highly turbid water where ballast water uptake occurs. Typical levels of total suspended solids (TSS) found in U.S. Great Lakes port waters range from 400 mg/L in the Rouge River in Detroit, MI, to 1,000 mg/L in the Cuyahoga River in Cleveland, OH. These levels are much higher than those required for USCG type-approval testing. Similarly, areas of the Great Lakes contain excessive levels of tannins that present a challenge to remove with conventional BWMS filters. Turbidity and excessive levels of tannins in some Great Lakes harbors may significantly reduce filter efficiency and UV light transmittance, creating a situation where both USCG and IMO type-approved filtration and UV BWMS cannot achieve the numeric discharge standard. While these circumstances can also occur in coastal ports, it is expected that many seagoing vessels could use operational practices not available to vessels operating on the

Great Lakes, such as exchange of turbid harbor water for less turbid offshore water, which could be treated effectively by the BWMS. In addition, the Great Lakes contains significant quantities of filamentous bacteria that have been shown to cause significant clogging problems with BWMS filters.

Other ballast water treatment technologies are under development, such as membrane filtration, magnetic separation with filtration, and pasteurization. However, no such systems to-date have been demonstrated as effective ballast water treatment to the satisfaction of the USCG for type-approval. Even if these technologies did gain USCG type-approval, there are challenges in applying their use on the Great Lakes. For example, a pasteurization system is designed for large long-haul vessels and requires multiple voyage days to reach pasteurization temperatures and as such would be limited in its use on the Great Lakes because of the many short voyages for vessels in the Great Lakes. As for filtration and magnetic separation with filtration, freshwater organisms must respond to flocculating agents like that of marine organisms to be effectively removed by these technologies. Unfortunately, to date, this ability has not been shown to exist (ClearBallast, 2012; Bawat, 2016; Voutchkov, 2013).

3. Technical Challenges of the Use of USCG Type-Approved BWMS on Great Lakes Vessels

There are numerous, costly technical challenges to implementing BWMS on Great Lakes vessels. If USCG type-approved systems were installed on Great Lakes vessels to meet the discharge standard, some environmental benefit would be provided from the installation and operation of these type-approved systems; however, disproportionate costs would be incurred by this vessel community due to these technical challenges and the discharge standard would not be met given the known environmental challenges. For example, for some U.S. Lakers, particularly those bulk carriers that are more than 50 years old that have been uniquely constructed and converted over the decades, the cost of achieving the standard would be similar to or maybe even exceed the cost of vessel replacement. EPA evaluated the technical considerations relevant to the installation and operation of BWMS on Great Lakes vessels including vessel size, ballasting volumes and flow rates, ballast pump and piping configurations, space considerations, electrical requirements and corrosion issues. It is important to point out there are significant differences in the construction, size, propulsion configurations, electrical systems and capabilities, cargo off-loading equipment, ballast water movement, and other design aspects between individual vessels. These differences require a vessel-specific analysis to determine the technological availability and optimal method for installing and operating a BWMS. In order to consider these differences, EPA grouped the U.S. Lakers into subcategories based on their characteristics (Table 3).

TABLE 3—SUBCATEGORIES OF U.S. LAKER VESSELS

Subcategory	Number of U.S. Lakers [a]	Build dates	Length	Number ballast tanks	Number ballast pumps	Ballast volume (gallons)	Ballast pumping rate (GPM)
Large Capacity Lakers	14	1972–1981	858–1,000-ft	14–22	4–36	9,414,132–16,406,561	20,000–79,800
Converted bulkers to self-unloading ships, includes barges.	18	1906–1959, converted 1958–2014.	437–806 ft	11–22	2–4 pumps/Engine Room (E.R).	1,411,655–12,283,281	14,000–64,800
Newer build—manifold ballast system.	17	1942 (1991)–2012.	519–770	13–21	2 pumps/E.R.	2,121,000–7,851,433	17,400–40,000
Purpose built barge	6	1941 (1998)–2009.	310–460	6 including FP–17.	1–4 pump	638,274–2,045,053	1,000–10,000
Total	57						

[a] Lake Carriers' Association, 2016. Total number of vessels carrying ballast water, including articulated tug-barges. Does not include tugboats since these vessels do not typically discharge ballast water. Does not include barges A–410 or 397 because they do not carry ballast water.

The capacity of the commercially available, type-approved BWMS selected for a Great Lakes vessel must be compatible with the ballast needs of the vessels, particularly the ballasting rate of the ballast pumps. Particularly for Lakers, high ballasting capacities and flow rates limit the options for selection of some commercially available BWMS. The maximum capacity of commercially available filtration and UV BWMS is 6,000 m^3/hr. U.S. Lakers have ballasting capacities as high as 18,000 m^3/hr and therefore multiple filtration and UV BWMS would be required to accommodate these rates. In the analysis, EPA considered installation of multiple BWMS on a vessel as a means to meet the discharge standard. For example, the large capacity vessels may have a ballast water system configuration that includes individual sea chests, ballast pumps and ballast piping for each individual ballast tank. It can have one or two individual ballast pumps and piping per ballast tank. Four of the U.S.-flagged 1,000-foot Lakers have 18 separate ballast pumps and piping, and one 1,000-foot Laker (*i.e., Stewart J. Cort*) has 36 deep well ballast pumps. The *M/V Indiana Harbor* uses four main ballast pumps (two port and two starboard) to pump a total of 11,810 m^3/hr of ballast water. For this Laker, two BWMS would have to be installed (one port and one starboard), each with a capacity to treat at least 6,000 m^3/hr. The *M/V Paul R. Tregurtha* that has a total ballasting capacity of 18,120 m^3/hr and uses 18 separate ballast pumps and tanks, 18 individual BWMS would be needed, each with a capacity to treat at least 1,100 m^3/hr or the entire ship would need to be re-piped at significant cost and downtime.

Great Lakes vessels are designed to maximize cargo capacity and, therefore, have little to no space available in the engine room or around the self-unloading equipment for a BWMS. Space could be created from existing ballast tanks or cargo holds, although this directly impacts the vessel's cargo hauling capacity and therefore economic viability. Again, EPA analysis included the cost and lost revenue implications of lost cargo space or hauling capacity. Converting ballast tanks to accommodate a BWMS may likely also impact vessel stability and requires a detailed vessel-specific analysis by a marine engineer, naval architect, or similar expert to assess viability of such installation and operation.

Electrical capacity on Great Lakes vessels has been sized to accommodate the loading and unloading equipment that is operational while the vessel is in port. Self-unloading equipment would have to be operated at the same time as the BWMS and, as currently designed, many of these vessels lack electrical capacity for high electrical demand BWMS such as filtration and UV disinfection. Thus, additional electrical generators would be required for operation of the BWMS.

The U.S. Laker fleet has another significant issue with respect to selection of a BWMS: Currently all vessels have uncoated steel ballast tanks. In this manner, U.S. Lakers differ from the Canadian Laker fleet and the oceangoing vessels. This design works for the fleet because the waters of the Great Lakes is so fresh that corrosion is not a concern as these vessels do not operate in brackish or ocean saline waters, where such coating is necessary. Any BWMS that generates chlorine for disinfection by electrochlorination or that doses corrosive treatment chemicals into the ballast water is commercially available in the capacities needed for Lakers and have a lower electrical demand. However, these systems would significantly increase the corrosion rates in the uncoated ballast tanks of existing U.S. Lakers. Coating ballast tanks on existing U.S. Lakers can be done; however, the costs to do so are prohibitively high, and the vessel would require dry-docking for at least a year, a significant lost revenue period, to clean, grind, weld and coat the inside of ballast tanks.

With regards to operational considerations, many inter-lake voyages are shorter than 72 hours (and even as short as 2 hours) and, in these cases, would not provide the required residence time for BWMS technologies that require extended holding times to be effective such as chemical addition, deoxygenation, or UV for many of the USCG type-approved UV-based BWMS U.S. Army Corps of Engineers, 2017). Increasing voyage times by slow steaming to meet minimum hold times for certain BWMS may be possible, but the impact to vessel operations would need to be accounted for in assessing the cost of operation of such systems, including impacts to shippers. In fact, the entire supply chain would be impacted by extra voyage times.

4. Testing of BWMS on the Great Lakes

Testing of various BWMS and their components using ambient Great Lakes water has been conducted at the Great Ships Initiative (GSI) [3] Land-Based Research, Development, Testing and Evaluation Facility located in Duluth-Superior Harbor on Lake Superior. GSI provides freshwater ballast treatment evaluation at three scales—bench, land-based, and on-board ship. GSI, because of its location, uses freshwater from the Great Lakes to evaluate performance of BWMS at removing Great Lakes organisms within the size ranges required in the VGP and USCG discharge standard (using the ETV Protocol) and the IMO protocols for approval of ballast water management systems.

During August through October 2009, the GSI conducted land-based type-approval testing in accordance with IMO G8 guidelines on the Siemens SiCURE™ BWMS (Great Ships Initiative, 2010). The Siemens SiCURE™ BWMS is based on filtration and side-stream electrochlorination of seawater to produce hypochlorite, which is then injected into the incoming ballast water. The results showed that the BWMS functioned properly and was effective at reducing live organism in the regulated size classes at levels below the IMO ballast water performance standard (*i.e.,* Regulation D–2 of the BWM Convention) after the five-day holding time in the fresh water ambient conditions of Duluth-Superior Harbor that had been augmented to achieve IMO challenge conditions. Target bacteria *Escherichia coli* and intestinal enterococci were also discharged at levels below the numeric discharge standard after the 5-day holding time. However, as mentioned previously, electrochlorination requires a bunker of synthetic seawater solution for generating chlorine and can corrode the uncoated tanks of U.S. Lakers.

During September and October 2014, GSI conducted land-based testing of three prototype versions of the chlorine addition-based 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 (Great Ships Initiative, 2015). Only the JFE BallastAce BWMS operated using the TG BallastCleaner® at the higher target TRO concentration of approximately 20 mg/L was able to achieve the USCG discharge standard for living organisms although these concentrations did result in elevated levels of disinfection by-products. This system type can also corrode the uncoated tanks of U.S. Lakers.

Using filtration and UV BWMS can avoid the corrosion concerns. However, testing of the filtration and UV Alfa Laval PureBallast® Version 3 BWMS in Duluth-Superior Harbor in 2010 using ambient Great Lakes water failed to achieve the USCG and IMO numeric discharge standards in the two regulated size classes, 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 algal forms in 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 (Great Ships Initiative, 2011).

5. Consideration of a Type-Approved BWMS Equipment Requirement

EPA also considered an option in which Great Lakes vessels would be required to install, operate, and maintain a USCG type-approved BWMS but not have to meet a discharge standard. This option assumes that the structural challenges of installing, operating and maintaining a USCG type-approved BWMS, particularly for Lakers, could be overcome and would be available and economically achievable. Specifically, consideration was given to an equipment carriage requirement in which a Great Lakes vessel would be required to install, operate and maintain (*i.e.,* carry) a USCG type-approved BWMS, but would not be required to meet a numeric discharge standard acknowledging the unique Great Lakes environmental conditions and vessel voyage patterns. The advantage to this approach is that, although treatment may not be able to consistently meet the discharge standard due to the Great Lakes conditions, some reduction in the discharge of ANS would likely occur.

EPA is not proposing this approach because such a requirement to install a current BWMS without addressing the incompatibility with the environment conditions of the Great Lakes or the technical equipment considerations does not reflect BAT. There is significant uncertainty as to the operational functionality of BWMS in the Great Lakes, particularly when operating conditions extend outside the design parameters of any available treatment systems. For example, given that U.S. Lakers have uncoated ballast tanks, it is expected that many vessel

[3] The Great Ships Initiative, which commented in 2005, is an industry led collaborative effort to address problems of ship-mediated invasive species in the Great Lakes Saint Lawrence Seaway System.

owners would opt for UV-based BWMS to meet such an equipment standard. As shown in the GSI testing of the filtration and UV Alfa Laval PureBallast® Version 3 BWMS in Duluth-Superior Harbor in 2010 using ambient Great Lakes water, the system failed to achieve the USCG and IMO numeric discharge standards in the two regulated size classes due to the filters' ineffectiveness at removing filamentous algal forms and very low ambient UV transmittance of Duluth-Superior Harbor water (naturally caused by tannins) which likely inhibited the effectiveness of the UV disinfection unit (Great Ships Initiative, 2011). All of the other USCG type-approved BWMS systems were evaluated for a carriage requirement and it was found that these other systems face operational challenges similar to the UV system. Clogged filters in turbid ports and under icing conditions could significantly impact vessel operations, even halt operations, if the BWMS ceased working.

In addition, EPA determined that such an equipment requirement does not meet the ''economically achievable'' portion of the BAT requirement for this proposed rule. An equipment standard may require a costly installation and maintenance of a system only to be faced with an imperative for the vessel owner to modify the system to be able to operate the vessel as necessary or even to replace the system with newer technology in the near future. Vessels that operate exclusively in the Great Lakes have a significant lifespan as compared to seagoing vessels due to the freshwater conditions of the Great Lakes. Installation of a BWMS on a Laker, for example, would be based on the life of the BWMS, not the life of the vessel. However, retrofitting a Laker for BWMS is a significantly costly endeavor, particularly for U.S. owned vessels, which as Jones Act vessels, are required to be built in U.S. shipyards or pay a 50 percent U.S. tax for repairs done in a foreign shipyard. For this reason, if a Laker vessel was reconfigured to fit a current USCG type-approved system, retrofitting that same vessel for a newer BWMS that may require a different configuration may be cost prohibitive and impede the deployment of more effective technologies in the future.

There are insufficient data at this time to establish an alternative equipment standard for Great Lakes vessels that is technically available and economically achievable. EPA has determined that implementing a carriage standard may be short-sighted and costly to the vessel community with an unknown level of effectiveness to reduce ANS discharges in the Great Lakes. Additional research is needed before EPA could identify a standard that reasonably satisfies the statutory BAT requirements consistent with Section 903(g)(2)(B)(viii) of the VIDA which establishes a program for EPA, in collaboration with other federal agencies, to research and develop BWMS for use by vessels operating on the Great Lakes.

6. The Availability of Alternative Approaches for Great Lakes Vessels

EPA assessed whether technologies are available other than USCG type-approved BWMS or other BMPs that could be used for Great Lakes vessels. The IMO has approved more than 60 commercially available BWMS. However, as discussed earlier, the IMO type-approval process does not meet EPA and USCG QA/QC criteria and as such, vendors must obtain USCG type-approval for any BWMS to be used in the U.S. beyond the five-year bridge to compliance during which time an IMO type-approved and USCG recognized alternate management system (AMS) may be used. EPA also evaluated the potential for technology transfer from other industries. However, adapting land-based technology for use onboard a vessel entails different criteria and challenges, such as acceptable shipboard materials, safety, hazardous spaces, and vessel stability considerations. For these reasons, no similar technologies have been identified for evaluation against this vessel-based standard, which accounts for vessel design, stability, and safety at sea.

Information on technologies and practices other than type-approved systems is limited but EPA did evaluate alternative options for Great Lakes vessels. The three alternatives considered include (1) use of filtration only, (2) open lake exchange of highly turbid water taken up in river ports, and (3) exempting the use of a ballast water treatment system for certain voyages when the operational parameters of an installed BWMS cannot be met.

i. Filtration

Some research has explored the potential of using filtration-only to treat ballast water; rather than the more common filtration coupled with disinfection. The Great Ships Initiative (GSI) evaluated the performance of eight commercially available filter systems which covered a range of technologies and nominal pore sizes using ambient Duluth-Superior Harbor water and amended intake water to achieve a minimum concentration of 24 mg/L total suspended solids (TSS). Analysis of the GSI filter system performance data shows that regardless of filter pore size, no system can achieve the IMO or USCG numeric discharge standards. According to GSI, the soft-bodied microzooplankton which make up most zooplankton in Duluth-Superior Harbor that straddle the 50μm size range were the most difficult to remove by filtration. Macrozooplankton, which are the least numerous in Duluth-Superior Harbor, were the easiest to remove by filtration (Great Ships Initiative, 2014).

GSI's findings are consistent with other researchers who studied the performance of BWMS filtration systems in the Great Lakes. In 2012, Briski et al. (2014) collected before and after filtration samples from a 40 μm BWMS filtration unit installed on the M/V Richelieu, a 729-foot bulk carrier that typically operates in the Great Lakes and the Atlantic coast of North America. The three shipboard trials conducted dock side in Quebec City, Quebec and Sarnia, Ontario, and at anchor in Thunder Bay, Ontario, found filtration significantly reduced abundance of copepods and cladocerans, but not of juvenile dreissenid veligers and rotifers. Briski et al. concluded that filtration alters the relative abundance of zooplankton, but filtration alone does not reduce introduction risk of any taxonomic group due to the small juvenile stages and dormant eggs which can be passed through BWMS filters (Briski et al., 2014).

EPA determined that filtration alone is not sufficient to meet the numeric discharge standard and there is neither sufficient data at this time to establish an alternative standard for Great Lakes vessels using filtration that would reduce ANS discharge at a known effectiveness level nor information on the practical installation and operation, including cost, of such a filtration alternative.

ii. Open Lake Exchange

As detailed in the sections above, using a UV-based BWMS eliminates the corrosion concerns associated with use of other types of BWMS that rely on oxidizing chemical addition; however, Great Lakes harbors with high sediment loads and excessive levels of tannins, particularly in river ports, significantly reduce UV light transmittance and prevent UV-based BWMS from providing treatment necessary to achieve the discharge standard. EPA considered a practice in which a vessel leaving a turbid port could conduct an exchange after leaving the port (*e.g.,* mid-lake) to flush the turbid water, then use a type-approved BWMS to treat the mid-lake water and any residual ballast water and sediments. However, EPA determined that there is insufficient data to support the effectiveness of such an alternative practice in reducing ANS discharges in the Great Lakes. In addition, more information is needed to ensure any unintended consequences are avoided that could result from transferring river sediment to an open-lake environment. Importantly, it is also not clear that Lakers, which are not built to seagoing standards, would be able to safely conduct open-lake exchange due to concerns regarding vessel stability and increased stress during the ballast exchange process.

iii. Voyage-Specific Exemptions

EPA also considered the option of requiring Great Lakes vessels to meet the numeric discharge standard using a type-approved BWMS, but to allow the vessel to not have to use the system during certain voyages when the vessel is operating outside the design range of the system. For example, the short voyage times of many Lakers inhibit the use of UV disinfection, deoxygenation, or chemical treatment of many BWMS which require a specific holding time (*e.g.,* 72-hour hold time after treatment). An exemption could be given in advance for specific voyages that do not allow sufficient hold time as specified for the BWMS. Short voyages, particularly intra-lake routes, likely pose less of a risk of ballast water spread of ANS, therefore the use of BWMS could be prioritized for inter-lake voyages. In addition, incentives could be explored that encourage vessel owners to modify their voyage pattern to accommodate sufficient holding time for inter-lake voyages.

The same principle could be applied for voyages during cold months when icing condition occur, or the ambient water temperatures fall below the parameters of the BWMS and impede its operation. An exemption could be given in advance for voyages when these temperatures occur during the shipping season. In addition, there may be less biological activity during the colder months of the year and ANS spread could pose less of a risk. This exemption would allow the operation of a BWMS to be prioritized during increased temperatures when risk increases.

In principle, these exemptions are practical approaches that could be beneficial to allow the prioritization of the operation of BWMS when there is a possibility of more ANS discharges, such as during inter-lake voyages or higher temperatures. However, insufficient data exist to support the imposition of an alternative standard for Great Lakes vessels in the proposed rule and also, it is not clear how such an inconsistent management regime would be evaluated for compliance with the standards and enforcement purposes. Additional research is needed to determine the feasibility of such alternatives and the effective reduction of ANS from these practices. For example, one consideration to address is if the BWMS is only operating during certain voyages, the untreated ballast water and sediments in the tank may reduce the BWMS effectiveness during times when the system is required to be operated. In addition, implementation of these exemptions is contingent on the fact that the structural challenges can be overcome to install and operate a BWMS on Lakers as already described. If these structural challenges can be overcome, these exemptions could play a critical role in advancing the use of BWMS on the Great Lakes vessels during times of prioritized risk.

EPA determined that these three alternatives are not sufficient to meet the numeric discharge standard and there is insufficient data at this time to establish an alternative standard or requirement for Great Lakes vessels that would reduce ANS discharges at a known effectiveness level. Additional research is needed to explore these options. Congress clearly acknowledged that there are not currently practicable ballast water management solutions for Lakers and established the Great Lakes and Lake Champlain Invasive Species Program under the VIDA for EPA to develop such solutions.

7. Conclusion

To date, no technologies or management practices beyond those identified previously in the VGP and USCG regulations have been demonstrated to be available and implementable solutions to address ballast water discharges from the universe of vessels that operate exclusively on the Great Lakes. In November 2016, the Great Ships Initiative (GSI) published a briefing paper highlighting the problem and need for pure freshwater testing in the Great Lakes stating that USCG and IMO require, as a part of their testing protocols, ''challenge conditions for organism sizes and densities that are not a good fit for native (Great Lakes) assemblages'' (Great Ships Initiative, 2016). While more research is conducted as authorized by the VIDA, EPA is proposing in this rule to continue to exempt Lakers as well as other vessels that operate exclusively in the Great Lakes from the numeric discharge standard.

EPA believes it is important that new technologies and practices be identified that reduce the discharge of non-indigenous species specifically from Great Lakes vessels and meet the BAT standard. To support the goal of identifying those technologies, EPA is considering whether to require owners/operators of Great Lakes vessels to perform a self-assessment either individually or in partnership with other vessel owners/operators and submit information annually to EPA. Details of the types of information considered and how that information may be used are described in VIII.B.1.vi.C.8.*i. Vessel-Specific Data Submission to Inform Revised Standard for Vessels Operating Exclusively on the Great Lakes.*

It is important that this class of vessels remain intimately involved in the technology development and be the basis for the demand for innovative, cost-effective solutions by working closely with researchers and manufacturers. BWMS may very well be developed in stages for the various types of Great Lakes vessels. For example, the design and construction of a newly built vessel would provide the best opportunity to accommodate sufficient space for electrical and mechanical systems. Marine engineers and naval architects could also specify that ballast tanks be completely welded, all sharp metal edges be rounded, and all metal surfaces within the ballast tanks be coated with a material to prevent corrosion. The goal is that research can focus on development of technology to address the environmental and operational conditions Great Lakes vessels.

The VIDA acknowledges the lack of availability of BWMS for Great Lakes vessels and authorizes EPA within its Great Lakes National Program Office to establish the Great Lakes and Lake Champlain Invasive Species Program. One of that program's purposes is identified to develop, achieve type-approval for, and pilot shipboard or land-based ballast water management systems installed on, or available for use by vessels operating solely within the Great Lakes and Lake Champlain to prevent the spread of ANS within the Great Lakes and Lake Champlain Systems. This program is to be developed in collaboration and consultation with several other federal agencies. As acknowledged by Congress in its inclusion of this provision in the VIDA, this program is expected to play a vital role to advance the development of type-approved ballast water management system for Great Lakes vessels and inform future regulations.

Vendors of BWMS to date have not expended adequate time and resources to advance systems that would work onboard Great Lakes vessels, because this fleet represents such a small percentage of the world-wide market, leaving the owners of these vessels with no alternative to selecting a commercially available system that would achieve the numeric ballast water discharge standard once installed and operated on the Great Lakes. This collaborative research strategy is important to drive the market for this technology given the small number of vessels. For example, the combined U.S. and Canadian Laker fleet is less than 150 vessels compared to the tens-of-thousands of other ocean-going vessels worldwide that are now purchasing and installing systems to meet the U.S. or IMO-based ballast water discharge standards.

Once EPA has data and information that can be used to identify additional BAT approaches for Great Lakes vessels, be it installation of technology or implementation of best management practices, the Agency expects to propose updates to the discharge standard to reflect new BAT-based requirements. Such an update may address the entire universe of vessels that operate exclusively on the Great Lakes, or reasonably could consider the appropriateness of the identified technology or practices to the different segments of the Great Lakes fleet, such as among classes, types, and sizes and between new and existing vessels as provided for under the VIDA. While CWA Section 312(p)(4)(D)(i) calls for EPA to review the discharge standards at least every five years and revise if appropriate, the Agency expects a more fluid assessment of the adequacy of standards for Great Lakes vessels, acknowledging that ballast water management research and development activities described under the Great Lakes and Lake Champlain Invasive Species Program established under the VIDA may provide a sound basis for proposing new or updated standards in less than the five-year statutory review timeframe. In CWA Sections 312(p)(10)(B), the VIDA also creates a role for the states in promulgating enhanced Great Lakes requirements by enacting a process in 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 USCG may only reject the proposed requirement if it is less stringent than existing standards or requirements under this section, inconsistent with maritime safety, or inconsistent with applicable maritime and navigation laws and regulations.

8. EPA Seeks Input on Great Lakes Vessels

i. Vessel-Specific Data Submission To Inform Revised Standard for Vessels Operating Exclusively on the Great Lakes

EPA is seeking input on whether to include in the final rule a provision requiring that vessels operating exclusively on the Great Lakes, conduct a self-assessment either individually or in partnership with other vessels and submit information annually to EPA. EPA would use this information, together with information on the general sources of incompatibility and the challenging environmental conditions of the Great Lakes with installing and operating existing USCG type-approved BWMS, to revise the discharge standards as new technologies become available and economically achievable (and have acceptable non-water quality environmental impacts). This information would also be critical for the Great Lakes and Lake Champlain Invasive Species Program effort to develop practical ballast water management technologies for Lakers. An important aspect of any future analysis of these vessels is to acknowledge that BAT may not result in the same discharge standards for other classes of vessels or that a one-size-fits-all approach for Great Lakes vessels may not be appropriate. This may be because the technologies and practices available and economically achievable for new vessels may be different from those available to existing vessels, or because the best available technology differs by class of vessels (*e.g.,* self-unloading bulkers, tank barges). EPA is committed to performing a full assessment of environmental conditions and vessel ballasting activities in the Great Lakes as necessary to enhance requirements for Great Lakes vessel ballast water management technologies and practices that reduce the discharge of ANS in the Great Lakes. The goal of this effort is to bring all Great Lakes vessels into compliance with a numeric ballast water discharge standard as soon as is possible under the law.

EPA seeks comment on the type of vessel-specific information that would be valuable for Great Lakes vessels to include in their annual submission and for EPA to assess. This information could include: Operational considerations on locations and opportune times to conduct ballast water monitoring; specific details of voyages that impact holding times of certain BWMS; details of loading/unloading logistics that limit ballast water management; and reasons for such limitations, including weather considerations, crew considerations or other operational information. In addition, information could be provided on the characteristics of ports for future opportunities for onshore or barge-based reception facility opportunities. Although EPA could also request financial information, EPA proposes not to do this at this time until EPA identifies a promising candidate technology or suite of technologies for Great Lakes vessels.

ii. Applicability of Ballast Water Discharge Standards to Vessels That Operate Primarily, But Not Exclusively, in the Great Lakes

EPA is seeking input on whether to include in the final rule an extension of the proposed exemptions from the ballast water discharge standards to also include vessels operating primarily, but not exclusively, on the Great Lakes. As written, the proposed rule would require this class of vessels that operate primarily in the Great Lakes but do occasionally voyage to coastal ports outside of the Lakes to both perform a ballast water exchange prior to re-entering the Lakes and to meet the numeric discharge standard for any ballast water, including any unpumpable residual waters and sediments, subsequently discharged within the Great Lakes, similar to requirements applicable to vessels entering the Great Lakes from overseas voyages. EPA is seeking this input acknowledging that the BWMS installed to treat ballast water taken up outside of the Great Lakes will be unlikely to consistently meet the numeric discharge standard for ballast water taken up within the Great Lakes because of the same environmental challenges of operating a BWMS under the conditions of the Great Lakes described for those vessels operating exclusively within the Great Lakes.

With that in mind, EPA is seeking input on whether a vessel that maybe voyages outside the Great Lakes once or twice a year, but in no case more than half of the time, should be required to install a ballast water management system for use during those times when the vessel is discharging ballast water that had been taken on outside of the Great Lakes. The type of information for which EPA is seeking input include the voyage patterns and durations and ballasting and ballast management practices for these vessels both within and outside of the Great Lakes; tank cleaning procedures, frequencies, and locations and the practicability of ballast tank cleanings upon re-entry into the Great Lakes; financial implications for these vessels to install a ballast water treatment system that may have to be replaced within the next five years based on updates to the national discharge standards to future research on appropriate technologies and practices for managing ballast water in the Great Lakes; and the appropriate line of demarcation for the Great Lakes.

The vessels that would be impacted by this option are mostly, if not exclusively, Canadian vessels that voyage to coastal ports outside of the Great Lakes where bulk cargo is reloaded onto seagoing vessels for transport around the world. This portion of the vessel universe includes bulkers, tankers, general cargo vessels, articulated tug-barges, tugboats, river barges, and passenger vessels. Most coastal vessel voyages originate in ports in western Lake Superior and western Lake Erie where bulk cargo including grain and coal is loaded and then transported to Canadian ports along the St. Lawrence Seaway east of Montreal. EPA has limited information on this class of largely Canadian vessels and the nature of their voyage patterns and ballasting activities (Bailey et al., 2012).

As described in VIII.B.1.vi.C.8.i. Vessel-Specific Data Submission to Inform Revised Standard for Vessels Operating Exclusively on the Great Lakes, EPA is committed to performing a full assessment of environmental conditions and vessel ballasting activities in the Great Lakes as necessary to enhance requirements for Great Lakes vessel ballast water management technologies and practices that reduce the discharge of ANS in the Great Lakes with a goal to update the standards at a later date based on the findings from that assessment.

vi. Exemptions From the Numeric Ballast Water Discharge Standard

EPA proposes to exempt certain vessels from the numeric ballast water discharge standard as specified in 139.10(d) of the proposed rule. These exemptions are generally consistent with the VGP and USCG 33 CFR part 151 subparts C and D regulations with some exceptions as described below.

The proposed exclusions in section 139.10(b), VIII.B.1.ii. *Exclusions,* would exclude vessels from the ballast water regulations and all requirements of this part on the basis that those vessels do not contribute significantly to the introduction or spread of ANS. Excluding those vessels minimizes other non-water quality environmental impacts that may result from the operation of ballast water treatment systems, including increased energy usage and increased carbon emissions in instances that outweigh any meaningful benefit from nominal reductions in ANS discharges.

In contrast, the proposed exemptions in section 139.10(d)(3) as described in this section, would exempt vessels from the numeric ballast water discharge standard in section 139.10(d) only. Exempt vessels would still be required to meet the ballast water BMPs described in section 139.10(c) of the proposed rule and the ballast water exchange and saltwater flushing requirements included in section 139.10(e) of the proposed rule, as applicable.

There are six categories of vessels that would be exempt from the discharge standard, and they are: Any vessel that is less than or equal to 3,000 GT ITC (1,600 GRT if GT ITC is not assigned) and that does not operate outside the exclusive economic zone (EEZ); any non-seagoing, unmanned, unpowered barge, except any barge that is part of a dedicated vessel combination such as an integrated or articulated tug and barge unit; any vessel that uptakes and discharges ballast water exclusively in a single COTP Zone; any vessel that does not travel more than 10 NM and does not pass through any locks; any vessel that operates exclusively in the Laurentian Great Lakes; and any vessel in the USCG Shipboard Technology Evaluation Program (STEP). In VIII.B.1.v.C.1. *Ballast Water Management of Vessels Operating Exclusively on the Laurentian Great Lakes,* we explained the exemption for vessels that operate exclusively in the Laurentian Great Lakes. Discussion of all six categories is included below.

A. Vessels Less Than or Equal to 3,000 GT ITC (1,600 GRT if GT ITC Is Not Assigned) and That Do Not Operate Outside the EEZ

The proposed rule would carry forward the existing VGP and USCG 33 CFR 151.2015 exemption from the ballast water numeric discharge standard for vessels that are less than or equal to 3,000 GT ITC (1,600 GRT if GT ITC is not assigned) and that do not operate outside the EEZ. This includes both seagoing and non-seagoing vessels. EPA bases this proposed exemption on the finding that ballast water technologies are not available or economically achievable for this universe of smaller vessels (*e.g.,* tugboats) as to date, ballast water treatment systems generally have been designed for larger vessels or vessels that only uptake or discharge ballast water on either end of longer voyages. EPA did identify one vessel in the 2018 VGP annual reports that meets the exemption characteristics. EPA considered whether a different threshold in terms of size should be used; however, EPA proposes to retain the threshold from the VGP that is also consistent with the existing USCG ballast water regulations.

Therefore, EPA proposes that this class of vessels can minimize the discharge of untreated ballast water through best management practices only, without being required to meet the ballast water numeric discharge standard. It is important to note that this exemption will be reconsidered in the future if technology becomes available for this size class of vessels.

B. Non-Seagoing Unmanned, Unpowered Barges

Most unmanned, unpowered barges operate in internal and coastal waterways (*i.e.,* non-seagoing) to transport low-value bulk items such as grain, coal, and iron ore. These vessels have no on-board crew and do not have infrastructure that allows for complex or energy intensive operations. EPA understands that ballasting for some of these barges is performed in limited instances such as to pass under bridges or to improve stability in bad weather or other rough water. These barges typically do not have dedicated ballast tanks but can use wing tanks (void space) in the hull when ballasting is necessary. Minimal water is used for ballasting. Unmanned, unpowered barges have been recognized as posing unique challenges for managing ballast water. For instance, EPA's SAB notes: ''Inland waterways and coastal barges are not self-propelled, but rather are moved by towing or pushing with tugboats. Because these vessels have been designed to transport bulk cargo, or as working platforms, they commonly use ballast tanks or fill cargo spaces with water for trim and stability, or to prevent excessive motions in heavy seas. However, the application of [Ballast water management systems] on these vessels presents significant logistical challenges because they typically do not have their own source of power or ballast pumps and are unmanned.'' (U.S. EPA, 2011b).

EPA proposes to exempt any non-seagoing, unmanned, unpowered barge, that is not part of a dedicated vessel combination, such as an integrated or articulated tug barge (ATB) unit consisting of two separate vessels that operate in tandem, always together. The 2013 VGP, in Part 2.2.3.5.3.2, exempted all unmanned, unpowered barges from compliance with the numeric ballast water discharge standard; however, the USCG regulations at 33 CFR 151.2015 does not exempt any seagoing vessel 3,000 GT ITC (1,600 GRT if GT ITC is not assigned) and above or that operates outside of the EEZ. As such, the proposed requirement is a harmonization of the VGP and the USCG existing requirements. The record indicates that an unmanned, unpowered barge, when part of a dedicated vessel combination, can install a BWMS as may be necessary to meet the discharge standard and as such these dedicated vessel combinations including an unmanned, unpowered barge are not exempt from compliance with the numeric ballast water discharge standard.

C. Vessels That Uptake and Discharge Ballast Water Exclusively in a Single COTP Zone

Consistent with the provisions of the previous VGP and existing USCG regulations at 33 CFR 151.2015(c) and (d)(3), the proposed rule would exempt from the ballast water numeric discharge standard vessels that uptake and discharge ballast water exclusively in a single COTP Zone, but that may operate in more than one COTP Zone. This exemption retains the BMPs for these vessels to ensure that ballast water is managed appropriately, however acknowledges that in all other instances, the discharge does not significantly contribute to the introduction and spread of ANS.

D. Vessels That Travel No More Than 10 Nautical Miles and Do Not Pass Through Any Locks During Their Voyages

Consistent with the provisions of the previous VGP, the proposed rule would exempt from the ballast water numeric discharge standard vessels that travel no more than 10 NM and do not pass through any locks during their voyages. These vessels (*e.g.,* cross-river ferries) contribute insignificantly to the introduction and dispersal of ANS, however, the implementation of the best management practices for these short-voyage vessels is intended to minimize the contribution of ANS that the vessels could cumulatively have in a region. Exempting these vessels also helps minimize other non-water quality environmental impacts that may result from the operation of ballast water treatment systems, including increased energy usage and increased carbon emissions. 40 CFR 125.3(d)(3). Further, many existing ballast water treatment systems use biocides that need minimum contact time to be effective. Short distance voyages may not provide the time necessary for biocides to be effective. In fact, the discharge of ballast water treated with biocides may contain residuals or byproducts from that treatment, and short voyage times may not permit adequate decay or neutralization.

While at this time EPA is not aware of any specific vessels which currently meet these criteria for the exemption, EPA did not want to inadvertently require ballast water numeric discharge standard be met for such vessels.

E. Vessels That Operate Exclusively in the Laurentian Great Lakes

As described in VIII.B.1.vi.C. *Vessels Operating Exclusively on the Great Lakes,* EPA proposes to subcategorize and not require any vessel that operates exclusively in the Laurentian Great Lakes to meet the numeric ballast water discharge standard. EPA determined that the challenges that existed for pre-2009 Lakers at the time the VGP was issued remain true today not only for bulk carriers but for any vessel operating exclusively in the Laurentian Great Lakes. The details of the circumstances that make ballast water management uniquely challenging for pre-2009 Lakers include issues having to do with the operational profile and design of these vessels and with the unique nature of the waters of the Great Lakes as described in VIII.B.1.vi.C. *Vessels Operating Exclusively on the Great Lakes.* As such, EPA is proposing to expand this exemption from the VGP to any vessel operating exclusively on the Great Lakes, acknowledging that the extreme environmental conditions and operational limitations for pre-2009 Lakers also affect the ability of other vessels that exclusively trade on the Great Lakes to effectively install and operate a BWMS to effectively treat ballast water.

EPA acknowledges this standard is less stringent than the VGP; however, the VIDA provides for less stringent requirements when, as in this case, the Administrator determines that a material technical mistake occurred when promulgating the existing requirement of the VGP. 33 U.S.C. 1322(p)(4)(D)(ii)(II)(bb). EPA made such a material technical mistake when it failed to acknowledge that the extreme environmental conditions and operational limitations that prevented pre-2009 Lakers from treating its ballast water also affect the ability of other Great Lakes vessels from doing the same.

Also, consistent with CWA Section 312(p)(4)(D)(ii)(II)(aa), the Administrator may revise a standard of performance to be less stringent than an applicable existing requirement if information becomes available that was not reasonably available when the Administrator promulgated the initial standard of performance or comparable requirement of the VGP, as applicable (including the subsequent scarcity or unavailability of materials used to control the relevant discharge); and would have justified the application of a less-stringent standard of performance at the time of promulgation. As detailed in VIII.B.1.vi.C.1. *Ballast Water Management of Vessels Operating Exclusively on the Laurentian Great Lakes,* subsequent to issuance of the VGP, EPA evaluated post-2009 Lakers and concluded that they too are unable to meet the VGP discharge requirements, which is new information not reasonably available to the Administrator when EPA issued the VGP.

EPA is not proposing to exclude any vessels from the Great Lakes saltwater flushing and ballast water exchange requirements when such vessels enter the St. Lawrence Seaway through the mouth of the Saint Lawrence River; thus, any vessel operating in the Laurentian Great Lakes that leaves the Lakes and takes on ballast water outside of the Lakes would be required to exchange that ballast prior to re-entering the St. Lawrence Seaway through the mouth of the St. Lawrence River consistent with the Great Lakes requirements in section 139.10(f) of the proposed rule. The Agency is requiring this as specifically established by Congress in the VIDA CWA Section 312(p)(10)(A).

F. Vessels in the USCG Shipboard Technology Evaluation Program (STEP)

The proposed rule would exempt from the ballast water numeric discharge standard a vessel equipped with ballast tanks if that vessel is enrolled by the USCG into the Shipboard Technology Evaluation Program (STEP). This exemption is consistent with existing VGP requirements and USCG 33 CFR part 151 subpart D regulations. The STEP program currently applies and will continue to play a critical role in the development of effective ballast water treatment systems, as with many other related or similar programs the USCG might implement in the future. The program has encouraged pioneering vessel operators to install ballast water treatment systems, contributed to the development of effective sampling methods, and allowed for the collection of valuable shipboard ballast water treatment data needed to evaluate the efficacy of ballast water treatment systems. Furthermore, STEP is a venue for treatment vendors to develop and refine systems that comply with the ballast water numeric discharge standard, can be successfully approved through the USCG type-approval process, and result in the availability of a greater range of systems for vessel owners. Vessels involved in STEP use ballast water treatment technologies that share similarities in capabilities (and in many cases, are the same systems) as those described in the technical reports EPA used to inform the proposed rule. Therefore, EPA proposes to exempt them as they are effectively using treatments systems which reflect BAT.

vii. Numeric Ballast Water Discharge Standard Compliance Dates

EPA is not proposing compliance dates for the numeric ballast water discharge standard; rather, the Agency expects the USCG to include such as part of its VIDA CWA Section 312(p)(5) implementation, compliance, and enforcement rulemaking. The Agency acknowledges and supports continuation of the USCG extension program, in 33 CFR 151.1513 and 151.2036, for those cases where the master, owner, operator, agent, or person in charge of a vessel subject to this subpart can document that, despite all efforts, compliance with the numeric ballast water discharge standard is not possible. The details of such vessel-specific requests are left to the USCG. For perspective, the existing USCG review considers safety and regulatory requirements of electrical equipment, vessel capacity to accommodate BWMS, vessel age, shipyard availability, or other similar factors and extensions are granted for no longer than the minimum time needed, as determined by the USCG, for the vessel to comply with the numeric ballast water discharge standard.

viii. Ballast Water Exchange and Saltwater Flushing

A. Ballast Water Exchange

The proposed rule would require certain vessels to conduct a ballast water exchange as an interim ballast water management measure prior to compliance with the ballast water numeric discharge standard. Except for vessels entering the Great Lakes, vessels on Pacific Region voyages, and vessels with empty ballast tanks, the VIDA did not alter the ballast water exchange requirements in the VGP and USCG regulations at 33 CFR 151.2025. EPA proposes to maintain these requirements that prior to a vessel meeting its compliance date for meeting the numeric ballast water discharge standard, any vessel operating beyond the EEZ and with ballast water onboard that was taken within 200 NM of any shore must either meet the numeric discharge standard or conduct a mid-ocean exchange further than 200 NM from any shore, prior to entering waters of the United States or waters of the contiguous zone. As in the VGP, the exchange must occur as early as practicable in the voyage, so long as the exchange occurs more than 200 NM from shore. This requirement reduces the likelihood of the spread of ANS, most notably prior to a ballast water numeric discharge standard compliance date, by increasing the mortality of living organisms in ballast tanks and ensuring that the discharge contains fewer viable living organisms.

As to the requirements that would apply to vessels entering the Great Lakes and vessels on Pacific Region voyages, those are described in VIII.B.1.x. *Vessels Entering the Great Lakes* and VIII.B.1.xi. *Pacific Region.* The proposed requirements for empty ballast water tanks are described in the next section.

B. Saltwater Flushing for Empty Ballast Tanks

Saltwater flushing is defined as the addition of as much mid-ocean water into each empty ballast tank as is safe for the vessel and crew; and the mixing of the flush water with residual ballast water and sediment through the motion of the vessel; and the discharge of that mixed water, such that the resultant residual water has the highest salinity possible; and is at least 30 parts per thousand. A saltwater flushing may require more than one fill-mix-empty sequence, particularly if only small quantities of water can be safely taken onboard a vessel at one time.

The VIDA expanded the requirements that apply to empty ballast tanks beyond the existing EPA requirements in the VGP and in the USCG regulations. Specifically, CWA Section 312(p)(6)(B) requires that vessels conduct mandatory saltwater flushing of empty ballast tanks that carry unpumpable ballast water and residual sediments. As established by the VIDA, EPA proposes to require that vessels with empty ballast tanks and bound for a port or place of destination subject to the jurisdiction of the U.S. must conduct a saltwater flush no less than 200 NM from any shore, for a voyage originating outside the United States or Canadian EEZ, or no less than 50 NM from any shore, for a voyage originating within the United States or Canadian EEZ, prior to arriving at that port or place of destination.

The saltwater flushing requirement is important as it is a widely-used, low-cost preventative approach that minimizes the risk that ANS will be introduced from unpumpable ballast water and residual sediment. The technologies and practices of saltwater flushing are therefore available, practicable, and economically achievable. Saltwater flushing is most effective at eliminating organisms adapted to freshwater and low salinity environments due to the combined impacts of saltwater shock and physical dilution. However, saltwater flushing should also reduce viable living organisms adapted to estuarine, coastal and marine environments. Saltwater flushing reduces viable living organisms in residual ballast water through dilution. It also reduces organisms in resting stages in the residual sediment. Resting stages of ANS often inhabit the sediment in ballast tanks; thus, a reduction in the number of these organisms will likely reduce the propagule of these potential invaders.

The VIDA also specifies certain exceptions to these saltwater flush requirements. Exceptions are identified if the unpumpable residual waters and sediments were treated by a USCG type-approved BWMS; sourced within the same port or place of destination or contiguous portions of a single COTP Zone; or if the vessel is operating exclusively within the internal waters of the United States or Canada. The VIDA also describes additional exceptions including: If compliance would compromise the safety of the vessel as determined by the USCG; is otherwise prohibited by any federal, Canadian, or international law (including regulations) pertaining to vessel safety; or if design limitations of the vessel prevent a saltwater flush from being conducted.

The saltwater flushing exception in the VIDA based on the safety of the vessel is not included in this proposed rule; rather, EPA expects that such safety concerns will be fully articulated in the USCG implementing regulations as applicable to all types of discharges. Section 139.1(b)(3)of the proposed rule makes very clear that the numeric ballast water discharge standard is not applicable if compliance with such standard would compromise the safety of the vessel or is in the interest of ensuring the safety of life at sea, as determined by the Secretary.

The proposed rule would add a limitation to the design exclusion as established by the VIDA to apply only to existing vessels, defined as a vessel constructed prior to the date identified in the forthcoming USCG implementation regulations as described in section 139.1(e) of the proposed rule. EPA interprets this provision in the VIDA to apply only to existing vessels since the VIDA added permanent exchange requirements, presumably because of the added benefit in performing such an exchange. This limitation is important to create a disincentive to designing and constructing new vessels that are not capable of conducting an exchange or flush. It is critical that new vessels have the capability to conduct exchange and flushing, even if they install a ballast water management system, particularly as a contingency measure if the treatment system fails to operate as expected.

With the exception of Pacific nearshore voyages (as described in the section below), the VGP only specified requirements for saltwater flushing of empty tanks for vessels that are engaged in an international voyage and traverse more than one COTP Zone. These vessels are required to either seal the tank or conduct saltwater flushing of such tanks in an area 200 NM from any shore. The VGP also allowed, except for vessels entering the Great Lakes or in federally-protected waters, a vessel to not deviate from its voyage, or delay the voyage to conduct ballast water exchange or saltwater flushing. However, the VIDA did not include such an exemption and as such an exemption is not included in the proposed rule.

The proposed requirements for saltwater flushing as established by the VIDA would be new for vessels engaged in coast-wise voyages on the East Coast and Gulf Coast within the EEZ and traverse more than a single COTP Zone outside of internal waters. These vessels will now be required to conduct a saltwater flush of empty ballast tanks no less than 50 NM from any shore before arriving at a U.S. port, regardless of whether they must deviate from their voyage to do so.

The oceangoing vessels subject to this requirement are either those that have an empty ballast tank or a tank that contains unpumpable residual water, or are vessels that certify, consistent with USCG regulations, that they have ''No Ballast on Board'' (NOBOB). The USCG and the VGP defined NOBOB vessels as ''those vessels that have discharged ballast water to carry cargo, and as a result, have only unpumpable residual water and sediment remaining in tanks.'' See 70 FR 51832, August 31, 2005.

ix. Vessels Entering the Great Lakes

The proposed rule would require, based on CWA Section 312(p)(10)(A), vessels entering the St. Lawrence Seaway through the mouth of the St. Lawrence River to conduct a complete ballast water exchange or saltwater flush (as appropriate) not less than 200 NM from any shore for a voyage originating outside the EEZ; or not less than 50 NM from any shore for a voyage originating within the EEZ. There are exceptions to these requirements including: If the vessel has no residual ballast water or sediments onboard to the satisfaction of the Secretary; empty tanks are sealed; or ballast water is retained onboard while operating in the Great Lakes. Consistent with the previous requirements in the VGP, the proposed rule does not contain an exception for vessels that use a ballast water management system to treat the ballast water prior to discharge. Therefore, the proposed rule would make permanent the requirement for both exchange and treatment for most vessels entering the Great Lakes.

The VGP required vessels that operate outside the EEZ and more than 200 NM from any shore and then enter the Great Lakes through the St. Lawrence Seaway to conduct ballast water exchange or flushing in addition to treatment, if ballast water uptake occurred within the previous 30 days from a coastal, estuarine, or freshwater ecosystem with a salinity of less than 18 parts per thousand. EPA proposes that this requirement of the VGP is not necessary to include in the proposed rule given that the VIDA statutory requirements are more restrictive than (and supersede) the VGP.

Consistent with the VIDA, the proposed rule would expand the requirement for exchange or saltwater flushing plus treatment for vessels entering the Great Lakes through the St. Lawrence River to a larger universe of vessels, as compared to the previous VGP and USCG 33 CFR part 151 regulations. First, the proposed rule would extend the requirement for exchange plus treatment to vessels with voyages originating within the United States or Canadian EEZ that enter the Seaway; these would be primarily Canadian vessels. Second, the proposed rule would extend the requirement for exchange plus treatment to international vessels with voyages originating from higher salinity ports outside the EEZ; these were not included in the VGP. In 2014 and 2015, a total of 81 unique vessels arrived at U.S. ports in the Great Lakes from oversees on 131 voyages. Most of these voyages departed from European ports (82 percent). However, there is limited data of the salinity of the origination port. Therefore, it is difficult to estimate the affected universe from higher salinity ports that would now be required to do exchange plus treatment. However, many of these vessels may have been conducting exchange plus treatment prior to the compliance dates for these vessels to install a ballast water management system, to ensure compliance with the VGP. Consequently, there may be minimal impact on these vessels.

Existing USCG regulations at 33 CFR 151.1502 require that vessels, after operating on the waters beyond the EEZ during any part of their voyage, that enter through the St. Lawrence Seaway or that navigate north of the George Washington Bridge on the Hudson River, perform a ballast water exchange or saltwater flush regardless of other port calls in the U.S. or Canada during that voyage, except as expressly provided in 33 CFR 151.2015(a). In the proposed rule, EPA does not specifically identify this universe of vessels for having to perform a ballast water exchange or saltwater flush prior to entering the Hudson River or St. Lawrence Seaway, unless the vessel is meeting the ballast water numeric discharge standard (*e.g.,* has installed and is operating a USCG type-approved ballast water management system), as the proposed rule would require such ballast water exchange or saltwater flush for all vessels subject to the ballast water discharge standard. Therefore, while the proposed rule does not call out this universe of vessels specifically, similar requirements are being proposed for these and a larger universe of vessels.

Consistent with the VIDA (CWA Section 312(p)(10)(A)(ii)(I)), the proposed rule would provide additional exceptions to ballast water exchange or saltwater flush requirements for vessels entering the Great Lakes, if compliance would compromise the safety of the vessel; or is otherwise prohibited by any federal, Canadian, or international law (including regulations) pertaining to vessel safety; or if design limitations of an existing vessel prevent a ballast water exchange from being conducted. As described in the previous section, the proposed rule would add a limitation to the design exclusion to apply only to existing vessels, defined as a vessel constructed prior to the date identified in the forthcoming USCG implementation regulations, as described in section 139.1(e) of the proposed rule. This limitation is important to prevent the design and construction of new vessels that cannot conduct an exchange or flush. It is critical that new vessels entering the Great Lakes have this capability, even if they install a ballast water management system, particularly as a contingency measure if the treatment system fails to operate as expected.

x. Pacific Region

The CWA Section 312(p)(10)(C) establishes more stringent Pacific Region requirements for ballast water exchange than currently required in the VGP. As established by the VIDA, the proposed rule would require that any vessel that operates either between two ports within the U.S. Pacific Region; or between ports in the Pacific Region and the Canadian or Mexican Pacific Coast north of parallel 20 degrees north latitude, inclusive of the Gulf of California, must conduct a complete ballast water exchange in waters more than 50 NM from shore. The term ''Pacific Region'' includes the entire EEZ adjacent to the states of Alaska, California, Hawaii, Oregon, and Washington. There are exceptions in the VIDA to these exchange requirements including if the vessel is using a type-approved BWMS or for voyages between or to specific ports in the states of Washington, Oregon, California, Alaska, and Hawaii, and the Port of Los Angeles, the Port of Long Beach, and the El Segundo offshore marine oil terminal, if the ballast water originated from specified areas.

The VIDA also specifies, and the proposed rule would require, that any vessel that transports ballast water sourced from low salinity waters (less than 18 parts per thousand) and in voyages to a Pacific Region port or place of destination with low salinity, must conduct a complete ballast water exchange. The exchange must occur not less than 50 NM from shore, if the ballast water was sourced from a Pacific Region port; or more than 200 NM from shore, if the ballast water was not sourced from a Pacific Region port. These exchange requirements would not apply to any vessel voyaging to the Pacific Region that is using a type-approved BWMS that achieves standards of performance for low salinity water that are more stringent than the existing VGP and USCG ballast water numeric discharge standards. The low salinity water standards of performance as specified in CWA Section 312(p)(10)(C)(iii)(II) are:

(A) Less than 1 organism per 10 cubic meters, if that organism (1) is living or has not been rendered nonviable; and (2) is 50 or more micrometers in minimum dimension;

(B) less than 1 organism per 10 milliliters, if that organism (1) is living or has not been rendered nonviable; and (2) is more than 10, but less than 50, micrometers in minimum dimension; and

(C) concentrations of indicator microbes that are less than (1) 1 colony-forming unit of toxicogenic *Vibrio cholerae* (serotypes O1 and O139) per 100 milliliters or less than 1 colony-forming unit of that microbe per gram of wet weight of zoological samples; (2) 126 colony-forming units of *Escherichia coli* per 100 milliliters; and (3) 33 colony-forming units of intestinal enterococci per 100 milliliters. There are exceptions to these requirements including if the vessel does not have residual ballast water or sediments onboard; empty tanks are sealed; or ballast water is retained onboard.

As established by the VIDA, the proposed rule would exempt vessels from the Pacific Region requirements if any of the following conditions exist: (1) Compliance would compromise the safety of the vessel; (2) design limitations of an existing vessel prevent a ballast water exchange from being conducted; (3) the vessel has no residual ballast water or sediments onboard to the satisfaction of the Secretary, or the vessel retains all ballast water while in waters subject to the requirement; or (4) empty ballast tanks on the vessel are sealed in a manner that ensures that no discharge or uptake occurs and that any subsequent discharge of ballast water is subject to the requirement. As described in the previous ballast water exchange sections, the proposed rule would add a limitation to the design exclusion to apply only to existing vessels, defined as a vessel constructed prior to the date identified in the forthcoming USCG implementation regulations, as described in section139.1(e) of the proposed rule and only as determined by the Secretary. This limitation is important to prevent the design and construction of new vessels that cannot conduct an exchange or flush. It is critical that new vessels voyaging to the Pacific Region have this capability, even if they install a ballast water management system, particularly if the treatment system fails to operate as expected.

As compared to the VGP, the VIDA expanded requirements for the Pacific Region to include exchange or more stringent treatment for low salinity waters. For some vessels the proposed rule requirement to conduct ballast water exchange in the Pacific Region is an interim requirement until a vessel installs a type-approved ballast water treatment system that meets the ballast water discharge standard. However, any vessel that transports low salinity ballast water (less than 18 ppt) and voyages to a low salinity Pacific Region port must continue to conduct a complete ballast water exchange more than 50 NM from shore, unless it has installed a type-approved BWMS that achieves standards of performance, depending on the parameter, up to 100 times more stringent than the existing discharge standard. Currently, there is not a USCG type-approval process for BWMS to demonstrate the ability to achieve this more stringent standard. Therefore, vessels from low salinity waters would need to continue to conduct exchange until such a process is developed and BWMS are approved to meet that more stringent standard.

For the most part, the continental shelf along the Pacific coast is narrow along both North and South America. Deep water environments beyond the continental shelf typically support ecosystems that are quite different than those which exist closer to shore. Due in part to this short width of the continental shelf, relatively deep waters beyond 50 NM from the Pacific shore, exchange at this distance from the Pacific shore will be effective.

In addition, the VIDA described the applicability of the Pacific Region exchange requirements differently as compared to the VGP. The proposed rule implements the VIDA requirements as established by Congress in the statute rather than as written in the VGP. The VGP required exchange for vessels on nearshore voyages which carry ballast water taken on in areas less than 50 NM from any shore. It defined nearshore voyages as those vessels engaged in coastwise trade along the U.S. Pacific coast operating in and between ports in Alaska, California, Oregon and Washington that travel between more than one COTP Zone. The VIDA did not include the stipulation that a vessel voyage must be more than one COTP Zone. In addition, the VIDA includes vessels operating in ports in the state of Hawaii, with certain exceptions, in the exchange requirements which the VGP did not include. The VGP required exchange for all other vessels that sail from foreign, non-U.S Pacific, Atlantic (including the Caribbean Sea), or Gulf of Mexico ports, which do not sail further than 200 NM from any shore, and that discharge or will discharge ballast water into the territorial sea or inland waters of Alaska or off the west coast of the continental U.S. The VIDA did not identify nearshore voyages from outside of the Pacific Region EEZ (although it did include parts of Canada and

Mexico) as required to conduct exchange.

xi. Additional Considerations in Federally-Protected Waters

The proposed rule would require avoiding the discharge or uptake of ballast water in federally-protected waters. This requirement is similar to the existing VGP requirement with one key exception. The proposed standard removes the applicability of this requirement in areas outside the boundaries of a federally-protected water but that nonetheless may directly affect that federally-protected water. EPA is not including this expansion of the affected area based on the Agency's determination that information needed by a vessel operator to make such a "may directly affect" determination is highly dependent on the specific instant at which a ballast water uptake or discharge event is to occur and that the necessary information to make that determination is not readily available and not easily characterized. However, the Agency does recommend that the discharge or uptake of ballast water be conducted as far from federally-protected waters as possible.

2. Bilges

Bilgewater consists of water and residue that accumulates in a lower compartment of the vessel's hull. The source of bilgewater is typically drainage from interior machinery, engine rooms, and decks. Bilgewater contains both conventional and toxic pollutants including oil, grease, volatile and semi-volatile organic compounds, inorganic salts, and metals. Volumes vary with the size of the vessel and discharges typically occur several times per week. Cruise ships have been estimated to generate 25,000 gallons per week for a 3,000 passenger/crew vessel (U.S. EPA, 2008). However, bilgewater treatment technologies can remove pollutants from bilgewater. For example, ultrafiltration can be effective in removing turbidity and suspended solids, organic carbon, and several trace metals (such as aluminum, iron, and zinc) from bilgewater, in addition to oil (Tomaszewska et al., 2005).

Under MARPOL Annex I, all ships of 400 GT ITC and above are required to have equipment installed onboard that limits the discharge of oil to less than 15 ppm when a ship is underway. All vessels of 400 GT ITC and above are also required to have an oil content monitor (OCM), including a bilge alarm, integrated into the piping system to detect whether the treated bilgewater that is being discharged from the bilge separator meets the discharge requirements. Bilge separators, OCMs, and bilge alarms are certified by the USCG to meet 46 CFR part 162 (MARPOL Annex I implementing regulations). Type approval is based on testing of manufacturer-supplied oil pollution control equipment by an independent laboratory, in accordance with test conditions prescribed by the USCG (33 CFR parts 155 and 157 and 46 CFR part 162). Additionally, as appropriate, the discharge of bilgewater also must comply with related requirements in 33 CFR part 151, 40 CFR part 110 and 46 CFR part 162.

The VGP included several requirements for bilgewater that are now proposed as general requirements in the proposed standards in Subpart B—General Standards for Discharges Incidental to the Normal Operation of a Vessel and applicable to all vessels and all discharges. First, the VGP required operators to minimize the discharge of bilgewater by minimizing production, storing bilgewater while operating in the waters of the United States, and discharging the bilgewater to a reception facility. These VGP requirements are consistent with, and incorporated as expected practices of, the proposed general discharge standards in section 139.4(b)(1) that require vessels to minimize discharges. Second, the VGP required vessels greater than 400 GT ITC that regularly sail outside the territorial sea (*i.e.,* at least once per month) to discharge treated bilgewater while underway and if feasible, at least 1 NM from shore. With the slight modification described in the following paragraph, the proposed bilgewater discharge standard is consistent with the VGP requirements. Third, the VGP required certain operators to meet a discharge limit for oil of 15 ppm or to not discharge oil in quantities that may be harmful as defined in 40 CFR 110.3. These VGP requirements are consistent with the proposed general discharge standards in section 139.6(b)(2) that prohibit the discharge of oil in such quantities as may be harmful. As such, the specific discharge standard for bilges does not duplicate these three requirements; rather, bilgewater discharges must meet these requirements as applicable to all vessels and all discharges.

The proposed rule would expand upon the applicability of the requirement to discharge treated bilgewater while underway to all vessels of 400 GT ITC and above, not just those that regularly sail outside the territorial sea. However, the proposed rule provides added flexibility by allowing any vessel, including vessels of 400 GT ITC and above to discharge treated bilgewater any distance from shore (the VGP prohibited these vessels from discharging bilgewater within 1 NM of shore). This modification acknowledges that the VGP requirement for discharging while underway, which was triggered if vessels operate outside of waters subject to the VGP at least monthly is difficult to implement and led to confusion about whether and when a vessel may be authorized to discharge bilgewater when not underway. For additional context, data from the most recent VGP annual reports show that very few vessels in this size class discharge bilgewater, treated or untreated, into waters of the United States. The VGP annual reports for the 2019 operating year show that of the more than 28,000 vessels of 400 gross tonnage and above operating in waters covered by the VGP, more than 99.7 percent of those vessels did not discharge any bilgewater, treated or untreated, into these waters. However, to provide additional opportunities to discharge, the proposed VIDA standards allow all vessels, including vessels of 400 GT ITC and above, to discharge treated bilgewater while underway anywhere, except in federally-protected waters. EPA expects this slight modification to the VGP requirements would clarify the applicability of the requirements but would not impose any significant additional cost burden; rather, it would only require certain vessel operators to adjust the timing and location of bilgewater disposal. Consistent with section 139.1(b)(3) of the proposed standards, an operator of a vessel of 400 GT ITC and above may discharge bilgewater, treated or untreated, while stationary (and not underway) if compliance with this part would compromise the safety of life at sea.

The proposed rule would also continue the requirement from the VGP and require that the discharge of bilgewater must not contain any flocculants or other additives except when used with an oily water separator or to maintain or clean equipment. And consistent with the VGP, the use of any additives to remove the appearance of a visible sheen would be prohibited.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as required by the VGP, EPA proposes additional controls for discharges from bilges into federally-protected waters.

EPA researched the state of bilgewater treatment systems to consider whether a targeted reduction in the bilgewater numeric discharge standard from 15 ppm to 5 ppm oil and grease might have been appropriate (U.S. EPA, 2011c). Previous comments submitted through the VGP comment period in 2013 indicated that technology meeting such a limit appeared to be available for most vessels and economically achievable for at least new vessels. However, those previous comments generally made three major assertions:

1. Before imposing requirements in the U.S., EPA should work with the international community at IMO to explore whether to have more stringent limits for new build vessels;

2. EPA should seek additional information as to whether systems do, in fact, continue to perform as indicated in their type approval data when on-board ships; and

3. Type approved systems capable of meeting a 5 ppm limit are available.

After considering the VGP comments and other relevant information, EPA decided not to propose a 5 ppm numeric discharge standard for several reasons. First, concerns were raised during the VGP comment period regarding whether these systems are, in practice, ''available,'' and function onboard ships as their type approval data indicate they should. Additionally, a 2015 study, identified as the ''MAX1 Studies'' and commissioned by the National Fish and Wildlife Foundation, with oversight from the USCG, reached the conclusion that existing regulations for oily water separators ''. . . are, for the most part, sufficient for their purposes'' and that the focus needs to be on implementation and application of existing regulations. Lastly, assuming that systems are indeed capable of meeting a 5 ppm numeric discharge standard, the standard OCMs in wide use may be unreliable at this low of a detection level and may therefore result in frequent false alarms.

At this time, EPA invites comment on the proposed standard and whether the following should be required by the final rule: (1) Type-approved systems capable of meeting a 5 ppm numeric discharge standard, and (2) OCMs that can consistently and accurately determine oil content at these low detection levels when considering margin for error. The research performed by EPA suggests that OCMs relying on alternative mechanisms other than turbidity/light scattering, such as UV fluorescence, may be more accurate since the monitor can differentiate between oil and other contaminants. EPA invites comment on the cost and availability of such OCMs.

3. Boilers

Boiler blowdown is the discharge of water and constituents from the boiler during regular intervals to avoid concentration of impurities and at intermittent intervals for cleaning or other purposes. Boiler blowdown occurs on vessels with steam propulsion or a steam generator to control anti-corrosion and anti-scaling treatment concentrations and to remove sludge from boiler systems. Routine blowdown involves releasing a volume of about one to ten percent of the water in the boiler system, usually below the waterline to manage the accumulation of solids and buildup of dissolved solids in the boiler water. Frequency of required blowdown varies, typically between once every two weeks to once every couple of months although on some vessels, blowdown may be as frequent as daily or even continuously. The constituents of boiler blowdown discharge vary according to the types of feed water treatment used, but may include toxic pollutants such as antimony, arsenic, cadmium, copper, chromium, lead, nickel, selenium, thallium, zinc, and bis (2-ethylhexyl) phthalate.

EPA endeavored to identify new technology and best management options for discharges from boilers; however, EPA did not identify new information or options. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements, following the procedures described in section 4.2 of the Final 2013 VGP Fact Sheet. Similar to the VGP, the proposed standard would require that the discharge of boiler blowdown be minimized when in port. This requirement acknowledges that blowdown typically must be performed as necessary and that while the amount of blowdown can often be minimized, the timing of such blowdown, in many instances, cannot be safely changed, such as to only those times when a vessel is not in port.

The proposed boiler standard does not carry forward language from the VGP regarding the prohibition on boiler blowdown discharges for vessels greater than 400 gross tonnage which leave the territorial sea at least once per week except in three specific instances: (1) The vessel remained within waters subject to this permit for a longer period than the necessary duration between blowdown cycles; (2) the vessel needed to conduct blowdown immediately before entering drydock; or (3) for safety purposes. EPA opted not to include similar language in the proposed rule because the VGP approach, which was triggered if vessels operate outside of waters subject to the VGP at least once a week, led to confusion about when a vessel may be authorized to discharge boiler blowdown. Rather, the proposed boiler blowdown standard was developed acknowledging that, consistent with the General Operation and Maintenance requirements described in Subpart B, vessel operators would be expected to minimize discharges of blowdown to only those times when necessary and to discharge while the vessel is underway when practical and as far away from shore as practical.

As drafted, and consistent with the VGP, the proposed standard would allow the discharge of boiler blowdown (1) if the vessel remains within waters of the United States and waters of the contiguous zone for a longer period than the necessary duration between blowdown cycles, (2) if the vessel needs to conduct blowdown immediately before entering drydock, or (3) for safety purposes.

This proposed standard is similar to the VGP requirements for blowdown that was applied to vessels greater than 400 GT ITC but expands the requirement to all vessels. EPA proposes the standard with the expectation that all vessels and not just vessels of 400 GT ITC and above can minimize discharges of blowdown and when having to discharge boiler blowdown, can discharge while underway if practical and as far from shore as practical. Based on the VGP experience whereby vessels greater than 400 GT ITC have been meeting this requirement by adjusting the timing and location of blowdown events, EPA expects that (smaller vessels) can similarly change the timing and location of their blowdown events as necessary to minimize the discharge. EPA expects this slight modification to the VGP requirements would reduce the discharge of various pollutants but would not impose any significant additional cost burden; rather, it would only require certain vessel operators to adjust the timing and location of blowdown events.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as required by the VGP, EPA proposes to prohibit the discharge of boiler blowdown into federally-protected waters.

4. Cathodic Protection

Cathodic protection systems are used on vessels to prevent steel hull or metal structure corrosion. The two types of cathodic protection are galvanic (*i.e.,* sacrificial anodes) and impressed current cathodic protection (ICCP). Using the first method, anodes of, typically, magnesium, zinc, or aluminum are ''sacrificed'' to the corrosive forces of the seawater, which creates a flow of electrons to the cathode, thereby preventing the cathode (*e.g.,* the hull) from corroding. Using ICCP, a direct current is passed through the hull such that the electrochemical potential of the hull is sufficiently high enough to prevent corrosion. The discharge from either method of cathodic protection is continuous when the vessel is waterborne. However, galvanic protection discharges include both toxic and nonconventional pollutants such as ionized zinc, magnesium, and aluminum.

EPA endeavored to identify new technology and best management options for discharges resulting from cathodic protection; however, EPA did not identify new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP acknowledging that many of the VGP requirements for cathodic protection are now incorporated into section 139.4 of the proposed rulemaking for general operation and maintenance as applicable to all specific discharges. For example, Part 2.2.7 (Cathodic Protection) of the VGP required that sacrificial anodes must not be used more than necessary to adequately prevent corrosion of the vessel's hull, sea chest, rudder, and other exposed vessel areas. EPA is not including this specific requirement for cathodic protection in section 139.13 of this proposed rulemaking since section 139.4(b)(5)(i) proposes a similar requirement that any materials used onboard, including any sacrificial anodes, that are subsequently discharged be used only in the amount necessary to perform their intended function.

EPA is proposing to continue the requirement from the VGP that any spaces between flush-fit anodes and the backing must be filled. This proposed standard is in consideration of the fact that niche areas on the hull are more susceptible to fouling as well as more difficult to clean and as such can become hotspots for fouling organisms.

EPA is not carrying forward the requirement from the VGP regarding the selection of sacrificial anode systems based on toxicity of the anode. The proposed approach is consistent with the technological evaluation performed for the VGP, which acknowledged that type of anode metal selected based on toxicity (magnesium, then aluminum, then zinc) may not be technologically feasible and/or economically practicable and achievable in many instances. EPA has recently learned of more situations where anode selection based on toxicity presents practical challenges. For example, in harbors or estuaries with high pollutant loads, zinc is the preferred anode material for vessels that spend time in those waters because of concerns with pollutants causing aluminum anodes to passivate and lose effectiveness. While EPA is not continuing this concept from the VGP, the Agency does continue to support operators considering toxicity as part of the anode selection process.

These proposed requirements represent a practicable and achievable approach to reducing discharges from this necessary hull protection operation.

EPA did consider requiring use of ICCP because these systems eliminate or reduce the need for sacrificial anodes. However, there is a risk of overprotecting using these systems (*e.g.,* embrittlement in high-strength vessels) or debonding of protective coatings, and operation of these systems generally should only be installed on vessels that are manned full-time by a highly skilled crew able to carefully monitor and maintain these systems. As such, the Agency recommends, but is not proposing to require, operators consider the use of ICCP in place of or to reduce the use of sacrificial electrodes when technologically feasible (*e.g.,* adequate power sources, appropriate for vessel hull size and design), safe, and adequate to protect against corrosion, particularly for new vessels.

5. Chain Lockers

Chain lockers are the storage area onboard for housing the vessel's anchor and chain. Water, sediment, biofouling organisms, and contaminants can enter and accumulate in the chain locker during anchor retrieval and precipitation events; the accumulation of water and other materials in the chain locker is often referred to as the chain locker effluent. This effluent can contain both conventional and nonconventional pollutants including ANS and residue from the inside of the locker itself, such as rust, paint chips, grease, and zinc. The sump collects these liquids and materials that enter the chain locker prior to discharge or disposal.

EPA endeavored to identify new technology and best management options for discharges from chain lockers; however, EPA did not identify new information or options since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As required by the VGP, EPA proposes that vessel operators must perform BMPs that would reduce or eliminate chain locker effluent discharge. Specifically, EPA proposes that vessel operators must thoroughly rinse the anchor chain of biofouling organisms and sediments each time it is brought out of the water. Additionally, EPA proposes that the discharge of accumulated water and sediment from the chain locker is prohibited when the vessel is in port. Finally, although not required in the VGP, EPA is proposing that for all vessels that operate beyond the waters of the contiguous zone, anchors and anchor chains must be rinsed of biofouling organisms and sediment, prior to entering the waters of the contiguous zone. This requirement is intended to minimize the discharge of biofouling organisms when vessels that operate beyond waters of the contiguous zone re-enter these waters and subsequently drop anchor in waters of the United States or waters of the contiguous zone.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* EPA proposes to prohibit any discharge of accumulated water and sediment from any chain locker into federally-protected waters.

6. Decks

Deck discharges may result from deck runoff, deck wash down, or deck flooding. Deck runoff consists of rain and other precipitation and seawater which washes over the decks or well decks. Deck washdowns consist of cleaners and freshwater or saltwater. Deck flooding generally consists of seawater from the flooding of a docking well (well deck) on a vessel used to transport, load, and unload amphibious vessels, or freshwater from washing the well deck and equipment and vessels stored in the well deck. Deck washdown, runoff, and flooding discharges include those from all deck and bulkhead areas, and associated equipment. The constituents and volumes vary widely, are highly dependent on a vessel's purpose, service, practices, and may include both conventional and nonconventional pollutants such as oil, grease, fuel, cleaner or detergent residue, paint chips, paint droplets, and general debris.

EPA endeavored to identify new technology and best management options for discharges from decks; however, EPA did not identify any technology since the development of the

VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same requirements of the VGP.

EPA proposes that it is infeasible to set a specific numeric discharge standard for discharges from decks and well decks because of the variation in vessel size and associated deck surface area, the types of equipment operated on the deck, and limitations on space for treatment equipment. As such, EPA proposes that BMPs must be implemented to minimize the volume of discharges and the various pollutants from decks.

As required in the VGP, the proposed rule would require vessel operators to properly maintain the deck and bulkhead areas to keep the deck clean; prevent excess corrosion, leaks, and metal discharges; contain potential contaminants to keep them from entering the waste stream; and use environmentally safe products. Properly maintaining the deck would include the use of coamings or drip pans for machinery on the deck that is expected to leak or otherwise release oil, so that any accumulated oils from these areas can be collected and managed appropriately.

As required in the VGP, EPA also proposes that prior to performing a deck washdown and when underway, exposed decks must be kept broom clean, to remove existing debris and prevent the introduction of garbage or other debris into any waste stream. Broom clean means a condition in which the deck shows that care has been taken to prevent or eliminate any visible concentration of debris or garbage. Similarly, discharge of floating solids, visible foam, halogenated phenolic compounds, dispersants, surfactants, and spills must be minimized in any deck washdown water discharged overboard. Additionally, during deck washdown, the proposed rule would require that the washdown be conducted with minimally-toxic, phosphate-free, and biodegradable soaps, cleaners, and detergents. The proposed standard would also require that deck washdowns be minimized in port. Lastly, the proposed rule would require that where applicable by an international treaty or convention or the Secretary, a vessel must be fitted with and use physical barriers (*e.g.,* spill rails, scuppers, and scupper plugs) during any washdown to collect runoff for treatment.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as is required of medium and large cruise ships by the VGP, EPA proposes to prohibit the discharge of deck wash from all vessels into federally-protected waters.

7. Desalination and Purification Systems

Distilling and reverse osmosis plants also known as water purification plants or desalination systems, generate freshwater from seawater for a variety of shipboard applications. These include potable water for drinking, onboard services (*e.g.,* laundry and food preparation), and high-purity feedwater for boilers. The wastewater from these systems is essentially concentrated seawater with the same constituents of seawater, including dissolved and suspended solids and metals; however, anti-scaling, anti-foaming, and acidic treatments and cleaning compounds are also injected into the distillation system, and can be present in the discharge. As such, the wastewater can contain toxic, conventional, and nonconventional pollutants.

EPA endeavored to identify new technology and best management options for discharges from desalination and purification systems; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

EPA is proposing to modify the language used in the VGP associated with toxic and hazardous materials to add more clarity by proposing to prohibit discharges resulting from the cleaning of desalination or purification systems with hazardous or toxic materials.

8. Elevator Pits

Most vessels with multiple decks are equipped with elevators to facilitate the transportation of maintenance equipment, people, and cargo between decks. A pit at the bottom of the elevator collects liquids and debris from elevator operations. The liquid and debris that accumulates in the pits, often referred to as elevator pit effluent, can be emptied by gravity draining, discharged using the firemain, transferred to bilge, or containerized for onshore disposal. The effluent may contain toxic, conventional, and nonconventional pollutants such as oil, hydraulic fluid, lubricants, cleaning solvents, soot, and paint chips.

EPA endeavored to identify new technology and best management options for discharges from elevator pits; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As required by the VGP, EPA proposes to prohibit the discharge of untreated accumulated water and sediment from any elevator pit.

9. Exhaust Gas Emission Control Systems

Exhaust gas emission control systems for reducing sulfur oxides (SO_X) and nitrogen oxides (NO_X) in marine exhaust can produce washwater and residues that must be treated or held for shore-side disposal. Two such systems are exhaust gas cleaning systems (EGCS) and exhaust gas recirculation (EGR) systems.

An EGCS is used primarily to remove SO_X from marine exhaust. Commonly referred to as ‘‘scrubbers,’’ these systems capture contaminants that can end up in washwater and residue that result from the scrubbing process. EGCS washwater is typically treated and discharged overboard. Residues are usually disposed of on-shore once the vessel is in port. Untreated EGCS washwater is more acidic than the surrounding seawater, and it contains toxic, conventional, and nonconventional pollutants including sulfur compounds, polycyclic aromatic hydrocarbons (PAHs), and traces of oil, NO_X, heavy metals, and captured particulate matter. Use of an EGCS to scrub emissions of SO_X also reduces the pH significantly primarily through the formation of sulfuric acid. In addition, the high volume of seawater that some vessels pump for the scrubbing process can result in higher turbidity in nearby waters, particularly in shallow areas.

The use of scrubbers on ships is in large part an outgrowth of international treaties for reducing sulfur emissions from marine exhaust. Under MARPOL standards and subsequent updates, as of January 2020, the highest permissible sulfur content of marine fuel globally is 0.5 percent. The allowable fuel sulfur content for vessels operating in Emission Control Areas has been further restricted to 0.1 percent as of January 2015. The United States is a signatory to the international treaties and is included in the North American Emission Control Area, meaning that the 0.1 percent limit for marine fuel sulfur content is currently in effect for vessels operating in the waters of the United

States or the waters of the contiguous zone.

MARPOL approved the use of an EGCS to achieve the international standards for marine emissions as an alternative to operating on low sulfur fuel. This approval spurred many vessel owners to install scrubbers in lieu of switching to costlier low sulfur fuels. Recent information from the international registrar and classification society Det Norske Veritas and Germanischer Lloyd (DNV GL, 2019) indicates that out of the total vessel universe, there are currently 3,000 ships with installed or firmly planned scrubber systems, with predictions ranging up to as many as 4,000 installations.

The two main ''wet'' scrubber EGCS technologies used on vessels for meeting the MARPOL marine emissions requirements are open-loop and closed-loop systems. Although use of scrubbers on ships is relatively recent, these systems are based on technologies deployed for land-based systems for controlling smokestack emissions and generally transfer well to ship-board use. Open-loop systems remove the contaminants from marine exhaust by running the exhaust through seawater sourced from outside the vessel and then discharging the resulting washwater back out to sea. In contrast, closed-loop systems use freshwater and inject caustic soda to neutralize the exhaust. A small portion of the washwater is bled off and treated to remove suspended solids, which are held for shore-side disposal. While this design is not completely closed-loop, it can operate in zero discharge mode for a period of time. Hybrid scrubbers are systems that can operate either in open- or closed-loop mode. Typically, at sea, these hybrid systems operate in open-loop mode, whereas in nearshore waters, harbors, and estuaries, they operate in closed-loop mode. Dry scrubbers are another type of EGCS; however, these systems do not generate wastewater, and hence would not be subject to these proposed requirements.

EGR systems are used to reduce NO_X emissions in marine exhaust. Vessels often use EGR systems to achieve the mandatory NO_X emissions limits set out in MARPOL Annex VI. These systems minimize NO_X production by cooling part of the engine exhaust gas and then redirecting it back to the engine air intake. The addition of the recirculated engine exhaust reduces the amount of oxygen available for fuel combustion, reducing peak combustion temperatures, resulting in significantly reduced NO_X formation. The cooling of the recirculated exhaust gas causes condensation of water vapor formed during combustion, generating a continuous wastewater stream (bleed-off water) from the condensate. This condensate can contain toxic, conventional, and nonconventional pollutants such as particulates (soot, metals, and hydrocarbons) and sulfur. In some cases, the EGR systems also capture oils, for example from cylinder lubrication, that are emitted from the combustion process which are collected as part of the scavenged air. Excess bleed-off water that accumulates in an EGR system is typically discharged overboard following treatment, and any residues are held for shore-side disposal. On vessels that use high-sulfur fuel and an EGCS, the EGR system bleed-off water is often combined with the EGCS washwater and processed as a combined waste stream.

EPA is proposing a standard for EGCS and EGR discharges based on IMO's guidelines for discharges from these two types of emission control systems. Specifically, the standard is largely based on the IMO 2015 Guidelines for Exhaust Gas Cleaning Systems (Resolution MEPC.259(68) and the IMO 2018 Guidelines for the Discharge of Exhaust Gas Recirculation (EGR) Bleed-Off Water (MEPC 307(73))). The IMO EGCS guidelines mostly focus on the air emissions of scrubbers; however, Section 10 of these guidelines sets out limits for five constituents in scrubber washwater: pH, PAH, turbidity, nitrates, and additives. Section 10 also includes handling and disposal criteria for scrubber residues. While the IMO criteria are guidelines rather than requirements, EPA is proposing to incorporate the discharge requirements of the IMO EGCS guidelines as EPA standards. With respect to discharges from EGR systems, the IMO EGR guidelines were based primarily on the IMO's own 2015 guidelines for EGCS discharges, with a few key differences in recognition of the composition of the EGR bleed-off washwater and the on-board process for handling this waste stream. The proposed standard reflects this parallel structure and retains the minor distinctions in the IMO EGR guidelines to accommodate differences between the two systems.

The proposed standard carries forward most of the VGP EGCS requirements, which were based largely on the 2009 version of the IMO EGCS guidelines. The key difference is that in an effort to harmonize EPA standards with the IMO guidelines to the extent possible, EPA proposes to amend the pH limit for discharges of EGCS washwater to 6.5 and is adding the additional IMO option for determining the limit based on either in-water measurement or a calculation-based methodology. In contrast, the VGP requirement is for EGCS washwater discharges to have a pH of no less than 6.0 as measured at the overboard discharge point. The VGP did not include specific requirements for discharges from EGR systems, in part because international awareness of the environmental effects of these discharges was not at the forefront of concerns relating to implementation of the NO_X emissions standards at the time.

As part of the effort to harmonize the EPA exhaust gas emission control systems discharge standards under the VIDA with the IMO guidelines, EPA has also reworded the phrasing of the proposed standard to harmonize more closely with the language in the IMO guidelines. In this context, EPA notes that in the exception proposed in section 139.18(b)(1)(i)(A) pertaining to the pH limit, the use of the word ''transit'' refers specifically to when a vessel is underway as part of entering or exiting port. Similarly, EPA notes that in section 139.18(b)(1)(i)(B), the pH discharge limit as determined either by measurement or computation applies to the vessel both when stationary as well as when underway. EPA elected not to include these clarifications so as to not diverge from the language in the IMO guidelines, but was able to confirm through consultation with IMO experts and technical staff that they reflect the original intent of the IMO guidelines.

As EPA acknowledged in the factsheet accompanying the 2013 VGP, the reason the VGP established a different pH limit for EGCS discharges from the IMO was that the NPDES permitting framework requires discharge limits to be set at the point of discharge. At the time, EPA determined that the 6.0 limit applied at the point of discharge maximized consistency with the IMO guideline for a pH of 6.5 four meters from the hull by accounting for the buffering ''likely to occur within the 4-meter range.'' Under the VIDA, in contrast, EPA no longer needs to account for the buffering because EPA is now proposing a standard of performance rather than a limit for a permit. The discharge standard continues to include the additional provision, consistent with the IMO guideline, that the maximum difference allowed between inlet and outlet during maneuvering and transit is 2.0 pH units.

EPA previously presented its BAT analysis for the EGCS limits for the other four parameters—PAH, nitrates, turbidity, and additives—as part of the NPDES permit issuance process. That analysis is not revisited here since the only part of the proposed standard that differs from the 2013 VGP is the pH limit for EGCS washwater and that does not represent a change in a BAT factor such that revisiting the BAT analysis is necessary. EPA refers readers to the original BAT analysis accompanying the 2013 VGP for additional information.

EPA's BAT analysis determined that use of EGCS technologies to meet the proposed EGCS standard is economically achievable for several reasons. As was true when EPA first issued the VGP EGCS requirements in 2013, EGCS manufacturers already design their systems to meet the IMO guidelines, so any numeric discharge standard imposed by turning these guidelines into regulatory requirements will not result in any additional financial burden to operators. Second, given the current price differential between high and low sulfur fuels, use of an EGCS allows vessel operators to realize significant cost savings when using lower grade fuel with scrubbers compared to using more expensive, higher grade fuels with lower sulfur content. EPA also notes that the proposed pH numeric discharge standard will result in less confusion for the shipping community by harmonizing EGCS requirements with international guidelines as set out by IMO.

The Agency considered several other options for regulating EGCS discharges. However, existing technology alternatives to the proposed EGCS discharge standard are either impractical or expensive. For example, increased use of neutralization chemicals would introduce significant occupational and passenger safety issues because of chemical storage and handling issues. Modifying existing open-loop systems to hybrid systems (*i.e.,* that can also run in a closed-loop mode) would be another option; however, this retrofitting could cost an additional $3–5 million per vessel beyond the capital expenditures that vessel owners have already incurred for installing scrubbers in anticipation of the 2020 marine exhaust emissions limits. Yet another alternative would be to require vessels to switch from scrubbers to low sulfur fuel while in U.S. waters. Some vessels with scrubbers already switch to low sulfur fuels when in harbors or waters with sensitive ecosystems either in response to requests from port authorities or because of company policies to minimize seawater agitation. However, using low sulfur fuels for extended periods of time can be expensive. For example, EPA received estimates from cruise ship operators that suggests incremental costs per vessel for switching to low sulfur fuel can be as much as an additional $67,000 per week.

Another option considered was to ban discharges from scrubbers outright (*i.e.,* establish a zero-discharge standard for scrubbers). In fact, several port authorities and flag states, including Norway (''heritage fjords''), Fujairah (United Arab Emirates), Marseille, and Singapore have already banned use of open-loop scrubbers or discharges from open-loop scrubbers (U.S. EPA, 2020a). These restrictions are typically precautionary rather than based on data or modeling in the specific ports or regions in question (U.S. EPA, 2020a), leading the Agency to conclude that insufficient data exist at this time to warrant prohibiting these discharges under the Clean Water Act. Technical committees at the IMO are currently revisiting the need to perform additional assessments of environmental impacts from EGCS discharges, and EPA will continue to monitor the availability of research findings compiled in connection with these discussions.

EPA's proposed exhaust gas emission control standard also includes requirements for discharges of EGR bleed-off water and residues in recognition of the fact that they can exhibit low pH and contain other toxic, conventional, and nonconventional pollutants covered under the CWA. The requirements mirror those in the 2018 IMO EGR guidelines in that they largely include the same limits as listed in the 2015 IMO guidelines for EGCS discharges. EPA determined that shipboard technology for meeting these limits is readily available since the international marine community needed to address the requirements upon publication of the 2018 IMO EGR guidelines. As such, EPA has determined that the existing technology for meeting the limits is economically achievable, and EPA notes that the IMO has not received any indication from the maritime community that achieving the limits resulted in any undue economic burden or that alternative technologies for handling the EGR waste stream exist that merit investigation. The proposed standard includes the same prohibition as found in the IMO EGR guidelines for discharges of EGR bleed-off captured in holding tanks. The applicability of EPA proposed standard for EGR bleed-off however, would exclude when the vessel is underway and operating on fuel that meets the MARPOL Annex VI sulfur emissions requirements in effect starting in 2020. The applicability is slightly different from that in the IMO EGR guidelines which prohibit such discharges in harbors, estuaries, and polar waters whether underway or not. EPA is proposing to apply this standard consistent with how the Agency assessed and applied other requirements in the proposed rule; namely, the proposed standard considers whether a vessel is in port, underway, or outside of the waters of the United States and the waters of the contiguous zone. Lastly, the proposed standard for EGR does not include the IMO guideline exception for oil content in EGR bleed-off water since the same oil content numeric discharge standard is already required separately in section 139.6 of the proposed rule for all incidental discharges.

10. Fire Protection Equipment

Fire protection equipment includes all components used for fire protection including firemain systems, sprinkler systems, extinguishers, and firefighting agents such as foam. Firemain systems draw in water through the sea chest to supply water for fire hose stations, sprinkler systems, or firefighting foam distribution stations. Firemain systems can be pressurized or non-pressurized and are necessary to ensure the safety of the vessel and crew. The systems are also tested regularly to ensure that the system will be operational in an emergency. Additionally, firemain systems have numerous secondary purposes onboard vessels, such as for deck and equipment washdowns, machinery cooling water, and ballasting. However, whenever the firemain system is used for a secondary purpose, any resulting incidental discharge would be required to meet the proposed national standard of performance for secondary use (*e.g.,* deck runoff). Firemain water can contain a variety of constituents, including copper, zinc, nickel, aluminum, tin, silver, iron, titanium, and chromium. Many of these constituents can be traced to the corrosion and erosion of the firemain piping system, valves, or pumps.

Firefighting foams (fluorinated and non-fluorinated) can be added to a firemain system and mixed with seawater to address emergencies onboard a vessel. The constituents of firefighting foam can vary by manufacturer but can include persistent, bioaccumulative, toxic, and non-biodegradable ingredients. Discharges of firefighting foam can also contain phthalate, copper, nickel, and iron, which can be constituents in the composition of firemain piping. Fluorinated firefighting foam contains per- and poly-fluoroalkyl substances (PFAS) or their precursors; examples include aqueous film forming foam, alcohol resistant aqueous film forming foam, film-forming fluoroprotein foam, fluoroprotein foam, alcohol-resistant fluoroprotein foam, and other fluorinated compounds. Non-fluorinated firefighting foam does not contain per- and poly-fluoroalkyl substances or their precursors; examples include protein foam, alcohol-resistant protein foam, synthetic fluorine free foam, and synthetic alcohol-resistant fluorine free foam. PFAS such as perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), among others, are persistent, bioaccumulative, and potentially toxic and carcinogenic chemical compounds. Information regarding the presence of fluorinated surfactants and toxic or hazardous substances in firefighting foam are typically found on the safety data sheets for individual products. Additionally, other types of foams exist that can be used in fire equipment systems that are not intended for fire suppression but are designed for testing and training. These foams are often called testing or training foams, tend to be less expensive, and can mimic the properties of firefighting foams.

Consistent with the VGP, EPA is proposing requirements that apply to discharges from fire protection equipment during testing, training, maintenance, inspection, or certification. The proposed standard would not apply to the use of fire protection equipment in emergency situations or when compliance with such would compromise the safety of the vessel or life at sea (See section 139.1(b)(3)).

EPA proposes to prohibit any discharge from fire protection equipment during testing, training, maintenance, inspection, or certification in port with the exclusion of any USCG-required inspection or certification. EPA also proposes to prohibit the discharge of fluorinated firefighting foam during testing, training, maintenance, inspection, or certification with the exclusion of any USCG-required inspection or certification. Other options exist for testing, training, or maintenance such as testing without foam, collecting the foam such that it is not discharged, or, when foam is required, using a non-fluorinated foam (FFFC, 2020; NFPA, 2016). And according to the National Fire Protection Association (NFPA) there are many firefighting foams and training foams that are non-fluorinated that can be used for testing, training, and maintenance (FFFC, 2020; NFPA, 2016). However, the USCG has indicated that for certain USCG-required inspections and certifications discharges must occur in port and need to use fluorinated foams.

EPA also considered proposing more stringent requirements than the VGP in relation to the discharge of firefighting foam. Specifically, EPA explored proposing requirements that would include product substitution to use firefighting foams that do not contain bioaccumulative or toxic or hazardous materials. EPA has used product substitution for other technology-based rules such as those that apply to oil and gas. See 40 CFR part 435. As such, EPA considered, for the purposes of testing, training, maintenance, inspection or certification, also prohibiting the discharge of non-fluorinated firefighting foams that contain bioaccumulative or toxic or hazardous materials (as identified in 40 CFR 401.15 or defined in 49 CFR 171.8). Based on the *Best Practice Guidance for Use of Class B Firefighting Foams* from the Fire Fighting Foam Coalition (FFFC, 2020), NFPA codes and standards—NFPA 11—*Standards for Low-, Medium-, and High-Expansion Foam* (NFPA, 2016), and discussions with the USCG, testing and training methods exist that limit or eliminate the need to discharge foam (FFFC, 2020; NFPA, 2016). Specifically, in many situations it may be possible to perform these activities by only using water (water equivalency method), collecting the foam, or using non-fluorinated training foam that does not contain bioaccumulative or toxic or hazardous materials. EPA reviewed numerous foam Safety Data Sheets for bioaccumulative or toxic or hazardous materials and identified several potential foam options that vessels owners and operators may be able to use if the Agency moved forward with this approach in the final rule (EPA, 2020).

However, EPA was unable to compile adequate information on the availability and economic achievability considerations of using non-fluorinated foams that do not contain bioaccumulative or toxic or hazardous materials to justify proposing a requirement that would limit the types of non-fluorinated foams that could be used for testing, training, maintenance, inspection or certification. As such, EPA is soliciting feedback and additional information on the availability and economic achievability of expanding the prohibition on the discharge of firefighting foam to include non-fluorinated foam that contains bioaccumulative or toxic or hazardous materials. If it is found to meet the applicable statutory requirements, the final standard would prohibit the discharge of both fluorinated foams and non-fluorinated foams that contain bioaccumulative or toxic or hazardous materials during testing, training, maintenance, inspection or certification with the exception of USCG-required inspection and certification. Specifically, EPA is interested in feedback on: (1) The availability of non-fluorinated foams, training foams, or surrogate test liquids that do not contain bioaccumulative or toxic or hazardous materials that can satisfy firefighting testing, training, and maintenance needs, (2) the extent to which vessels are already using these alternative foams, (3) the extent to which vessels are already performing testing, training, and maintenance using only water, (4) the number of vessels and types of systems that are not able to use the water-equivalency method, (5) the extent to which the vessel community is collecting foam prior to discharge, (6) economic considerations associated with prohibiting the discharge of these types of non-fluorinated firefighting foams, and any other information that would support the Agency's determination of whether to expand the prohibition of the discharge of firefighting foams to include non-fluorinated foams that contain bioaccumulative or toxic or hazardous materials.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as required by the VGP, EPA proposes additional controls for discharges from fire protection equipment for testing, training, and maintenance purposes for vessels operating in federally-protected waters.

11. Gas Turbines

Gas turbines are used on some vessels for propulsion and electricity generation. Occasionally, they must be cleaned to remove by-products that can accumulate and affect their operation. The by-products and cleaning products can include toxic and conventional pollutants including salts, lubricants, combustion residuals, naphthalene, and other hydrocarbons. Additionally, due to the nature of the materials being cleaned, there is a higher probability of heavy metal concentrations. Rates and concentrations of gas turbine wash water discharge vary according to the frequency of washdown and under most circumstances vessel operators can choose where and when to wash down gas turbines.

EPA endeavored to identify new technology and best management options for discharges from gas turbines; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/

BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As was required by the VGP, EPA proposes requirements that apply to discharges from the washing of gas turbine components. EPA proposes to prohibit the discharge of untreated gas turbine washwater unless determined to be infeasible.

12. 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. Some vessels have the capacity to collect and hold graywater for later treatment and discharge. Vessels that do not have graywater holding capacity continuously discharge it to receiving waters. The volume of graywater generated by a vessel is dependent on the number of passengers and crew. It is estimated that, in general, 30 to 85 gallons of graywater is generated per person per day. Estimates of graywater generation by cruise ships that can accommodate approximately 3,000 passengers and crew range from 96,000 to 272,000 gallons of graywater per day or 1,000,000 gallons per week.

Many elements of the proposed standard, including certain BMPs, mirror those found in the VGP. For example, under the proposed General Operation and Maintenance standard the operators of all vessels are required to minimize the discharge of graywater. Minimization can include reducing the production of graywater, holding the graywater onboard, or using a reception facility. Additionally, as required by the VGP, minimally-toxic, phosphate-free, and biodegradable soaps, cleaners, and detergents must be used if they enter the graywater system. The proposed standard also requires vessels to minimize the introduction of kitchen oils and food and oil residue to the graywater system. Also, as would be required for all discharges in section 139.4(b)(2) of the proposed rule, vessels must discharge while underway when practical and as far from shore as practical. This storage requirement is particularly relevant for graywater as many vessels have graywater storage capabilities onboard that allow for graywater to be stored and either discharged to a reception facility or held until underway and as far from shore as practical.

For non-Great Lakes vessels, the numeric effluent requirements from the VGP have remained the same with one exception. The proposed standard does not include the percent removal requirements for BOD and TSS from the VGP. The percent removal requirement, which is based on secondary treatment regulations for domestic sewage, is not necessary for graywater discharges because there is greater ability to control the contribution of BOD and TSS onboard a vessel.

As in the VGP, EPA is not proposing graywater discharge standards for commercial vessels in the Great Lakes consistent with CWA Section 312(a)(6) that specifies the term ''sewage,'' with respect to commercial vessels on the Great Lakes, shall include graywater. As such, graywater discharges from commercial vessels on the Great Lakes are subject to the requirements in CWA Sections 312(a)–(m) and the implementing regulations at 40 CFR part 140 and 33 CFR part 159.

Non-commercial vessels operating on the Great Lakes may only discharge graywater if the discharge is treated such that it does not exceed 200 fecal coliform forming units per 100 milliliters and contains no more than 150 milligrams per liter of suspended solids. This is because the Agency determined that graywater treatment using an existing system meeting the 40 CFR part 140 standards represents the appropriate level of control for those vessels operating in the Great Lakes that do not hold their graywater for onshore disposal. Hence, either treatment devices or adequate holding capacity are available and used for managing graywater from vessels operating on the Great Lakes.

As in the VGP, the numeric discharge standard would apply to the discharge from any passenger vessel with overnight accommodations for 500 or more passengers (identified as a ''large cruise ship'' in the VGP), as well as any passenger vessel with overnight accommodations for 100–499 passengers (identified as a ''medium cruise ship'' in the VGP) unless the vessel was constructed before December 19, 2008 and does not voyage beyond 1 NM from shore, such as is often the situation for older river cruise vessels.

In preparing the proposed standard, EPA endeavored to identify new technology and BMPs for graywater discharges or applicability of existing technologies and practices to different classes of vessels than had been subject to similar requirements in the VGP. Hereafter, this section describes proposed requirements for graywater systems that are new or modified from the VGP. First, EPA proposes to prohibit the discharge of graywater within 3 NM from shore for any vessel that voyages at least 3 NM from shore and has remaining available graywater storage capacity, unless the discharge meets the standards in section 139.21(f) of the proposed rule. Similarly, EPA proposes to prohibit the discharge of graywater within 1 NM from shore from any vessel that voyages at least 1 NM but not more than 3 NM from shore and has remaining available graywater storage capacity, unless the discharge meets the standards in section 139.21(f) of the proposed rule. Also, EPA is proposing that the discharge of graywater from any new vessel of 400 gross tonnage (GT ITC) and above, and any new ferry authorized by the USCG to carry 250 or more people would be required to meet the numeric discharge standard in section 139.21(f) of the proposed rule. Such vessels could be equipped either with a treatment system or sufficient storage capacity to retain all graywater onboard while operating in waters subject to the proposed rule. The costs of these proposed requirements as compared to those in the VGP are described in the regulatory impact analysis for the proposed rule. EPA expects these new requirements would reduce the discharge of various pollutants without a significant increase in compliance costs. EPA believes the proposed standard, while more stringent than existing requirements under the VGP, is appropriate and has been demonstrated to be technologically available and economically achievable. Based on VGP reporting data, between one-third and one-half of manned vessels of 400 GT ITC or above that are not cruise ships or ferries are equipped with a treatment system for graywater, graywater mixed with sewage, or a combined treatment system that may treat graywater. As such, the data for existing vessels indicate that it is an appropriate requirement for new build vessels in this category to install a treatment system or storage capacity. EPA expects that vessels built with storage capacity may be serviced by stationary and mobile (*e.g.,* trucks and barges) pumpout facilities that currently receive sewage and graywater from vessels and welcomes public comment on the availability of such facilities for vessels unable to install treatment systems.

Additionally, as required by the VGP, EPA proposes additional controls for discharges of graywater for vessels operating in federally-protected waters as discussed in VIII C. *Discharges*

Incidental to the Normal Operation of a Vessel—Specialized Areas.

In evaluating options for graywater treatment, EPA reaffirmed that treatment of commingled graywater and sewage by an ''advanced wastewater treatment system (AWTS),'' a sophisticated marine sanitation device, produces significant constituent reductions in the resulting effluent. AWTS differ from traditional treatment systems in that they generally employ enhanced methods for treatment, solids separation, and disinfection, such as through the use of membrane technologies and UV disinfection. AWTS are currently in wide use and economically achievable for certain vessel classes. For example, the Cruise Lines International Association (2019) reports that 68 percent of member lines' global fleet capacity is currently served by AWTS. Also, all new ships on order by member lines will be equipped with AWTS. In Alaska, under the existing ''Large Cruise Ship General Permit,'' certain large commercial passenger vessels may only discharge wastewater (including sewage and graywater) that has been treated by an AWTS or equivalent system. As such, the numeric discharge standard included in the proposed standard, which was also present in the VGP, is based on the performance of these treatment systems.

The proposed time period for the application of the numeric discharge standard for graywater differs from that presented earlier for ballast tanks. For graywater systems, EPA proposes a monthly average numeric discharge standard, a commonly used metric for establishing numeric effluent discharge limits. While daily maximums are also frequently used, EPA is not proposing to include daily maximums in the standard. Monitoring discharges onboard a vessel presents unique challenges compared to monitoring discharges from land-based facilities for which numeric effluent discharge limits are typically established. For ballast tanks, however, EPA proposes the use of instantaneous maximums. As indicated in the ballast tanks section, the challenges associated with collecting and testing representative samples of ballast water at the time of discharge required a different approach. Systems that are designed to meet an instantaneous maximum require a higher level of control, and therefore less variability, in the system. Since the discharge of ballast water carries the risk of establishing ANS, the use of an instantaneous maximum is preferred over the use of a long-term average where the upper bounds of variability in the discharge may be problematic.

Graywater discharges, on the other hand, do not carry the same level of risk. As such, the numeric discharge standard proposed in section 139.21(f) uses monthly averages to allow for the variability that is expected in a well-operated treatment system. At the same time, the monthly averages require the vessel operator to remain vigilant to ensure that, despite this variability, discharges consistently meet the numeric limit. Vessels to which the standard applies would be expected to operate treatment systems that can consistently achieve compliance with the monthly average based on the vessel's expected loadings. Pursuant to the general operation and maintenance standards of the proposed rule, vessels are expected to discharge while underway when practical and as far from shore as practical. This encourages commingling of the graywater constituents and further decreases the risks associated with variability in the system. EPA recognizes that the option to install AWTS or sufficient holding capacity may be unavailable for certain vessels for such reasons as cost, stability of the vessel, or space constraints. As such, EPA does not propose that all vessels be required to treat graywater discharges to the limits found in section 139.21(f) of the proposed rule.

13. Hulls and Associated Niche Areas

Coatings

Vessel hulls are often coated with antifouling compounds to prevent or inhibit the attachment and growth of biofouling organisms. Selection, application, and maintenance of an appropriate coating type and thickness according to vessel profile is critical to effective biofouling management, and therefore preventing the introduction and spread of ANS from the vessel hull and associated niche areas. Multiple types of coatings are available for use, including hard, controlled depletion or ablative, self-polishing copolymer, and fouling release coatings. Coatings may employ physical, biological, chemical, or a combination of controls to reduce biofouling. Those that contain biocides prevent the attachment of biofouling organisms to the vessel surface by continuously leaching substances that are toxic to aquatic life. The most commonly used biocide is copper. Manufacturers may also combine copper with other biocides, often termed ''booster biocides,'' to increase the effectiveness of the coating. Cleaning the coating results in pulses of biocide into the environment, particularly if surfaces are cleaned within the first 90 days following application.

The proposed rule would require that the selection of a coating for the hull and associated equipment must be specific to the vessel's operational profile, including biocidal coatings, that have effective biocide release rates and components that are biodegradable once separated from the vessel surface. Operational profile factors can influence biofouling rates and include the vessel speed during a typical voyage, aquatic environments traversed, type of surface painted, typical water flow for any hull and niche areas, planned periods between drydock, and expected periods of inactivity or idleness. Generally, an optimal biocide will have broad spectrum activity, low mammalian toxicity, low water solubility, no bioaccumulation up the food chain, no persistence in the environment, and compatibility with raw materials (IMO, 2002). EPA is aware that non-biocidal coatings are available, and vessels that typically operate at high speeds may effectively manage biofouling with fouling release coatings. Additionally, vessels traveling in waters with lower biofouling pressure and those that spend less time at dock are expected to have a lower biofouling rate and should select either non-biocidal coating or coatings with low biocide discharge rates. However, these coatings may not be suitable for all operational profiles.

Adhering to manufacturer specifications is necessary to ensure the longevity and effectiveness of the coating and is considered best practice. If a coating is not properly selected, applied, or maintained, it will likely show signs of deterioration, such as indications of excessive cleaning actions (*e.g.,* brush marks) or blistering due to the internal failure of the paint system. Such excessive deterioration may allow for biofouling organisms to grow on exposed surfaces, increasing the risk of introduction and spread of ANS. Improper application and maintenance of the coating may also increase the discharge of particles into the aquatic environment and degradation of the integrity of wetted surfaces. The VGP required that any antifouling coatings be applied, maintained, and removed consistent with the FIFRA label, if applicable. The proposed rule would similarly require that coatings be applied, maintained, and reapplied consistent with manufacturer specifications, including the thickness, the method of application, and the lifespan of the coating. One way to achieve this proposed requirement is to schedule the in-service period of the coating to match the vessel's drydock cycles. Larger vessels, particularly those used in the carriage of goods, are required to adhere to requirements for safety inspections and maintenance activities that dictate how frequently they must be drydocked. Factoring this schedule into the coating selection ensures the coating will sufficiently protect the vessel for the period needed without creating additional leachate or wastes.

Tributyltin (TBT) Requirements

The International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) was adopted in 2001 and came into force in 2008. The United States became a contracting party to the AFS Convention on November 21, 2012. Domestically, the Clean Hull Act of 2009 implements the requirements of the AFS Convention. Consistent with the AFS Convention, the Clean Hull Act, and the VGP, the proposed rule reaffirms that coatings on vessel hulls must not contain TBT or any other organotin compound used as a biocide. Additionally, the proposed rule states that any vessel hull previously applied with a hull coating containing TBT (whether or not used as a biocide) or any other organotin compound (if used as a biocide) must either maintain an effective overcoat on the vessel hull so that no TBT or other organotin leaches from the vessel hull or remove any TBT or other organotin compound from the vessel hull. EPA is unaware of any non-biocidal use of TBT which would result in a residual presence in antifouling paints; therefore, EPA reaffirms a zero-discharge standard of TBT from vessel hulls. EPA expects that few, if any, vessels have exposed TBT coatings on their hulls and that a zero-discharge standard for all organotin compounds, including TBT, is technologically achievable based on the availability of other antifouling coating options. This standard is also economically achievable because few, if any, vessels still use TBT as an antifoulant.

Other less toxic organotin compounds such as dibutyltin oxide are used in small quantities as catalysts in some biocide-free coatings. One class of biocidal-free coatings, which are sometimes referred to as fouling release coatings, produce a non-stick surface to which fouling organisms cannot firmly adhere. To function properly, the coating surface must remain smooth, intact, and not leach into the surrounding water. Because these less toxic organotins are used as a catalyst in the production of biocide-free coatings, such production may result in trace amounts of organotin in antifouling coatings. Consistent with the AFS Convention, the Clean Hull Act, and the VGP, EPA proposed rule would authorize the use of non-biocidal coatings that contain trace amounts of catalytic organotin (other than TBT) if the trace amounts of organotin are not used as a biocide. When used as a catalyst, EPA proposed rule states that an organotin compound must contain less than 2,500 mg total tin per kilogram of dry paint and must not be designed to slough or otherwise peel from the vessel hull, noting that incidental amounts of a coating discharged by abrasion during cleaning or after contact with other hard surfaces (*e.g.,* moorings) are acceptable.

Cybutryne Requirements

Cybutryne, commonly known as Irgarol 1051, is a biocide that functions by inhibiting the electron transport mechanism in algae, thus inhibiting growth. There are numerous commercially-available antifoulants that are similar in cost and have a much lower negative impact on the aquatic environment (IMO, 2018). Restrictions on cybutryne are already in place in a number of countries globally, and cybutryne is therefore less widely used in comparison to other antifoulants (IMO, 2017). Coatings that do not contain cybutryne are both technologically available and economically achievable. Therefore, EPA proposes to prohibit the application of cybutryne-containing coatings on hulls and niche areas. In cases where cybutryne coatings have been applied previously to a vessel, EPA proposes an effective overcoat must be applied and maintained so that no cybutryne leaches from the vessel hull, noting that incidental amounts of coating discharged by abrasion during cleaning or after contact with the other hard surfaces are acceptable. EPA is aware that overcoats are commercially available.

Copper Requirements

Copper, primarily in the form of cuprous oxide, is the most common biocide in antifouling coatings, accounting for approximately ninety percent of the volume of sales of specialty antifouling biocides in the United States (U.S. EPA, 2018). Copper is a broad-spectrum biocide that effectively prevents both micro- and macrofouling. Copper is considered less harmful to the aquatic environment than TBT-containing compounds, but its use has nevertheless contributed to loadings in copper-impaired waters. Consistent with the VGP, EPA proposes to require that, as appropriate based on vessel class and operations, alternatives to copper-based coatings be considered for vessels spending 30 or more days per year in copper-impaired waters or using these waters as their home port. However, despite the potential impacts of copper-based coatings, there is a concern that replacement of copper with other biocides may cause different, and potentially more harmful, environmental impacts. EPA determined that there are no direct substitutions for copper as a biocide that are as affordable or as effective, without posing similar risks to non-target aquatic species (U.S. EPA, 2018). As such, EPA is not proposing to require the selection of an alternative antifouling coating to copper antifouling coating for vessels.

The significance of the discharges from a biocidal coating depends not only on the substance used, but also on the ''leaching rate'' of the biocide (IMO, 2009). In other words, the rate of discharge or entry into the environment from the coating itself. While the rate at which copper leaches from coatings is relatively slow (average discharge rates range from 3.8–22 $\mu g/cm^2/day$), copper-containing coatings can account for significant accumulations of metals in receiving waters of ports where numerous vessels are present (Valkirs et al., 2003; Zirino and Seligman, 2002). EPA is aware that maximum leach rates for copper-based antifouling paints on recreational vessels have been established both federally and locally. However, EPA does not currently have the data available to establish a leach rate that would be appropriate for the wide variety of vessels covered under the VIDA. Therefore, the proposed rule does not require a specific, maximum copper leach rate for antifouling coatings, acknowledging that use of antifouling coatings is also regulated in the United States. through FIFRA. At this time, EPA invites comment as to what maximum leach rates would sufficiently prevent biofouling while restricting the discharge of copper into the aquatic environment, recognizing that different leach rates may be required depending on the vessel profile, and according to the differentiations designated by the VIDA (*e.g.,* vessel size, class, type, and age).

Cleaning

Most commercial vessels are required to undertake periodic hull surveys as part of International Association of Classification Societies rules and in accordance with IMO conventions. Whenever possible, EPA suggests that drydock cleaning is the preferred BMP to in-water hull and niche cleaning. Drydock schedules should be factored into the inspection and management of areas susceptible to biofouling.

EPA recognizes that in many instances it is not technologically available or economically achievable for a vessel to be drydocked outside of the regular schedule to clean biofouling from the hull or niche areas. Some vessels are too large to be regularly removed from the water, and any repair or maintenance required on the hull or niches must occur while the vessel is pier-side between drydockings. Therefore, EPA believes the Act does not require the prohibition of in-water cleaning at this time. In-water cleaning that is conducted as a preventative measure can be an important component of biofouling management. Preventative in-water cleaning is the frequent, gentle cleaning of the vessel hull and appendages to prevent the growth of biofouling organisms, with minimal impacts to the antifouling system. However, EPA also recognizes that there may be places where in-water cleaning should not occur, notably in federally-protected waters, based on the unique resources present in those areas.

Studies have estimated that even a biofilm can increase the drag on a vessel by up to 25 percent (Townsin, 2003; Schultz, 2007). Predictive analytics have shown that frequent cleaning reduces fuel consumption and that increasing cleaning to an interval of approximately six months can save hundreds of thousands of dollars per vessel in fuel costs (Marr, 2017). Therefore, conducting preventative cleaning can reduce drag, enhance operations, and reduce the discharge of ANS. Additionally, preventative cleaning has been shown to effectively reduce biofouling without significantly increasing biocide loading into the aquatic environment (Tribou and Swain, 2017). In contrast, macrofouling requires more abrasive removal techniques, which may damage the antifouling coating, resulting in a higher tendency for subsequent biofouling as well as a larger pulse of biocides and particles into the aquatic environment. Additionally, macrofouling (FR >20) is composed of more diverse and mature organisms and, depending on geographic origin, may present a greater risk of discharging ANS than a slime layer.

The VGP required that vessel owners/operators minimize the transport of attached living organisms when traveling into U.S. waters from outside the Economic Exclusive Zone or between COTP Zones using techniques such as selecting and maintaining an appropriate anti-fouling management system; in water inspections, cleaning, and maintenance of hulls; and thorough hull and niche area cleaning when the vessel is in drydock. The VGP also required that vessel owners/operators who remove biofouling organisms from hulls while the vessel is waterborne employ methods that minimize the discharge of fouling organisms and antifouling coatings. Such methods include the use of appropriate cleaning brush or sponge rigidity to minimize removal of antifouling coatings and biocide releases into the water column; limiting the use of hard brushes and surfaces for the removal of hard growth; and when available and feasible, use of a vacuum or other control technology to minimize the release or dispersion of antifouling coatings and fouling organisms into the water column. The VGP also prohibited the in-water cleaning of hulls coated with copper-based anti-fouling paints in copper-impaired waters within the first 365 days after paint application unless there is a significant visible indication of hull fouling.

Consistent with the VGP, EPA is proposing that vessel hulls and niche areas must be cleaned regularly to minimize biofouling (*i.e.,* grooming or preventative cleaning). Regular cleaning to minimize biofouling is considered an industry best practice, in large part due to the economic incentive involved: Costs associated with regular in-water cleaning, including the cleaning services, disruptions to a ship's schedule, and staff time, are outweighed by the fuel savings that result from a low fouling rating (FR) as that term is defined in the proposed regulations; reductions in fouling from FR–20 to FR–10 have been estimated to generate hundreds of thousands of dollars in fuel savings annually per ship. Several mechanisms are utilized by vessel owners to determine the necessary intervals of such cleanings, including regular inspections, ISO standard 19030 measurements of hull and propeller performance, and/or advanced data analytics. Further, many technologies are available for preventative in-water cleaning, including diver-operated technologies or remotely operated vehicles. A review of the market of hull cleaning robots sponsored by the USCG in 2016 identified no fewer than 15 technologies capable of conducting in-water cleaning of vessel hulls. More recently, remotely operated vehicles for preventative cleaning have also been developed as equipment attached to the vessel itself, enabling flexibility in cleaning schedule along a vessel's route.

Additionally, consistent with the VGP, the proposed rule would also require that the cleaning methods used cause no or minimal damage to the underlying coating, ensuring that the coating is not degraded and the release of biocide into the aquatic environment is minimized. These requirements are considered best practice and would ensure the longevity and effectiveness of the coating and minimize the pollutant loading into the surrounding environment.

EPA is also proposing to prohibit in-water cleaning of biofouling that exceeds a fouling rating of FR–20, except in the following two circumstances: (1) When the fouling is local in origin and cleaning does not result in the substantial removal of a biocidal antifouling coating, as indicated by a plume or cloud of paint; or (2) 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. Pursuant to this proposed standard, fouling is considered to be local if a vessel follows a 'clean-before-you-go' strategy, whereby in-water cleaning is conducted prior to leaving a port on fouling accumulated in that port. If IWCC systems are used, discharge of any wastes filtered or otherwise removed from the system is prohibited. Also, understanding that IWCC systems may not be available in many ports, EPA recommends, but does not propose to require, the use of IWCC systems for removal of local macrofouling.

IWCC systems reduce the discharge of fouling organisms and coating particles into the surrounding environment, and allow solids removed from the vessel hulls to be collected and disposed of onshore. Cleaning of hulls and niche areas, such as with IWCC systems, is necessary for vessel maintenance, and therefore the discharge of treated or filtered effluent from these systems is considered incidental to the normal operation of a vessel and authorized under the VIDA. IWCC discharges result ''from a protective, preservative . . . application to the hull of the vessel'' (33 U.S.C. 1322(a)(12)(A)(i)). Vessels following effective biofouling management strategies generally should be able to maintain fouling at or below an advanced slime layer. Therefore, use of such IWCC systems would primarily occur either to remove fouling that is local in origin (*e.g.,* after periods of idleness) or in contingency scenarios. Technologies to remove and capture biofouling have emerged since the last VGP issuance. These technologies are available and becoming common practice globally. To date, EPA has identified four companies that have designed IWCC systems, operating in more than 15 countries and across six continents. This international information is relevant to this sector because a significant number of vessels to which this rule applies operate internationally. EPA anticipates that this technology will continue to improve and become more widely available. Similar to proactive cleaning, IWCC devices are advertised as being capable of providing hundreds of thousands of dollars in fuel savings annually to many vessel owners and operators, and thus there is an economic incentive independent of this rule driving their use. Additionally, the shipping industry has outlined the lack of approved in-water cleaning facilities as an impedance to effective biofouling management, resulting in ships increasingly cleaning offshore and in open waters, which bring added safety concerns. The primary challenge with using an IWCC is not the lack of technologies themselves, but regulatory frameworks that do not allow for these technologies to be used in various areas around the world. Removal of regulatory obstacles associated with the use of IWCC will afford vessel owners and operators with the opportunity to realize operational savings associated with maintaining a clean hull. As such, EPA expects that regular cleaning of biofouling consisting of FR–20 or below, in combination with the potential for controlled cleaning of biofouling exceeding FR–20 through IWCC devices, represents best available technology economically achievable to control the release of ANS and biocides from vessel hulls and associated niche areas, with likely long term cost savings to the vessel industry.

In line with the VGP, EPA is also proposing to minimize discharges of copper to aquatic ecosystems by restricting the in-water cleaning of vessels coated with copper-based antifouling paints in copper-impaired waters within the first 365 days after paint application. The proposed rule would allow in-water cleaning of copper-based coatings in copper-impaired waters within the 365 days following application only in circumstances when an IWCC system consistent with the aforementioned specifications is used. EPA understands that biocidal coatings are generally designed to remain free of fouling for the 365 days after application, prior to requiring in-water hull cleaning. Additionally, the majority of copper-impaired waters within the United States are streams, creeks, and rivers which generally have lower fouling pressure in comparison to warmer, marine waterbodies, and therefore vessels primarily operating in these waters would likely not require cleaning within the 365 days following application of the coating. For vessels operating in the few copper-impaired areas of coastal waterbodies in the United States, there remains the option to either conduct cleaning at a nearby, non-impaired port or to employ the use of an IWCC system as described above. Although it is unlikely that a vessel with a copper-based coating will have to clean within a copper-impaired water during the 365 days following application, EPA has further determined that there are alternatives to copper-based coatings that are available for use, which, over the coating lifespan would result in costs comparable to copper-based coatings.

Additionally, EPA proposes to prohibit in-water cleaning on any section of a biocidal antifouling coating which has shown significant deterioration since the most recent application of the coating. Such a level of deterioration indicates failure at the anticorrosive/antifouling interface which can result in a soft blister that is more likely to be broken by cleaning. Cleaning of paint that has reached this level may cause rupturing of paint blisters, which not only results in discharges of coating particles, but also increases the rate of damage to the anti-fouling system more generally. In turn, the exposed surface is subject to increased fouling and risk of corrosion. EPA expects that an antifouling system selected in accordance with the vessel's operating profile, and cleaned with minimally abrasive cleaning methods, should not present signs of significant deterioration at the anticorrosive/antifouling interface, therefore adherence to this standard is achievable by following the coating and cleaning practices in the proposed guidelines.

Consistent with proposed requirements for detergents used for deck washdown in this proposed rule and the VGP, EPA proposes that cleaning agents used on vessel surfaces that maintain direct contact with ambient waters, such as the scum lines of the hull, must be minimally-toxic, phosphate-free, and biodegradable. Finally, as proposed in section 139.40, EPA proposes additional controls for discharges from in-water cleaning when vessels are operating in federally-protected waters.

14. Inert Gas Systems

Inert gas is used on tankers for several reasons, with one of the primary uses being to control the oxygen levels in the atmosphere in the cargo and ballast tanks to prevent explosion and suppress flammability. Inert gas system discharges consist of scrubber washwater and water from deck water seals when used as an integral part of the inert gas system.

EPA endeavored to identify new technology and best management options for inert gas system discharges; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As required by the VGP, EPA proposes that all inert gas scrubber washwater and water from deck seals must meet all of the requirements identified in the general discharge standards, and notably, requirements for oily discharges, including requirements set forth in MARPOL Annex I, EPA oil regulations, and USCG oil regulations as appropriate for the vessel.

15. Motor Gasoline and Compensating Systems

Motor gasoline and compensating discharge is the discharge of seawater that is taken into motor gasoline tanks to replace the weight of fuel as it is used and eliminate free space where vapors could accumulate. The compensating system is used for fuel tanks to supply pressure for the gasoline and to keep the tank full to prevent potentially explosive gasoline vapors from forming. The seawater is discharged when the vessel refills the tanks with gasoline or when performing maintenance. The discharge can contain both toxic and conventional pollutants including residual oils or traces of gasoline constituents, which can include alkanes, alkenes, aromatics (*e.g.,* benzene, toluene, ethylbenzene, phenol, and naphthalene), metals, and additives. Most vessels by design do not produce this discharge.

EPA endeavored to identify new technology and best management options for motor gasoline and compensating discharges; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As required by the VGP, EPA proposes that all motor gasoline and compensating discharge must meet the requirements identified in the general discharge standards, and notably, requirements for oily discharges, including requirements set forth in MARPOL Annex I, EPA oil regulations, and USCG oil regulations as appropriate for the vessel.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as required by the VGP, EPA proposes several additional controls for discharges from motor gasoline and compensating systems from a vessel operating in federally-protected waters.

16. Non-Oily Machinery

Non-oily machinery wastewater is the combined wastewater from the operation of distilling plants, water chillers, valve packings, water piping, low- and high-pressure air compressors, propulsion engine jacket coolers, fire pumps, and seawater and potable water pumps. Non-oily machinery wastewater systems are intended to keep wastewater from machinery that does not contain oil separate from wastewater that has oil content. Non-oily machinery wastewater discharge rates vary by vessel size and operation type, ranging from 100 to 4,000 gallons per hour. Constituents of non-oily machinery wastewater discharge can include a suite of conventional and nonconventional pollutants including metals and organics.

EPA endeavored to identify new technology and best management options for discharges of non-oily machinery wastewater; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

As required by the VGP, EPA proposes that the discharge of untreated non-oily wastewater and packing gland or stuffing box effluent that contains toxic or bioaccumulative additives or the discharge of oil in such quantities as may be harmful is prohibited.

17. Pools and Spas

Cruise ships and other vessels occasionally have pools or spas onboard that use water treated with chlorine or bromine as a disinfectant. When pools or spas are drained, the water is discharged overboard or sent to an advanced wastewater treatment system. The discharge water can contain nonconventional pollutants such as bromine and chlorine.

EPA endeavored to identify new technology and best management options for pool and spa wastewater; however, EPA did not identify any new technology since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing substantively similar requirements as the VGP. EPA determined the dechlorination limits by using those established for ballast water treatment systems and by evaluating comments submitted by the public on the 2008 and 2013 VGPs that indicated such limits are achievable. Furthermore, the proposed numeric discharge standard is consistent with common dechlorination limits from shore-based sewage treatment facilities.

The proposed standard would require vessel operators to discharge while underway and dechlorinate and/or debrominate any pool or spa water, except for unintentional or inadvertent releases from overflows across the decks and into overboard drains, prior to discharging overboard. To be considered dechlorinated, the total residual chlorine in the pool or spa effluent must be less than 100µg/L. To be considered debrominated, the total residual oxidant in the pool or spa effluent must be less than 25µg/L. Additionally, the proposed standard would require the discharge of pool and spa water overboard to occur while the vessel is underway unless determined infeasible by the Secretary.

Finally, as discussed in VIII C. *Discharges Incidental to the Normal Operation of a Vessel—Specialized Areas,* and as required by the VGP, EPA proposes additional controls for discharges from pools and spas from vessels operating in federally-protected waters.

18. Refrigeration and Air Conditioning

Condensation from cold refrigeration or evaporator coils of air conditioning systems drips from the coils and collects in drip troughs which typically channel to a drainage system. The condensate discharge may contain toxic, conventional, and nonconventional pollutants including detergents, seawater, food residue, and trace metals. This waste stream can easily be segregated from oily wastes, and toxic or hazardous materials and safely discharged, channeled, or collected for temporary holding until disposed of onshore or drained to the bilge.

EPA endeavored to identify new technology and best management options for refrigeration and air conditioning condensate; however, EPA did not identify any new technology or management options since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing substantively similar requirements as the VGP.

As required by the VGP, EPA proposes to prohibit the discharge of refrigeration and air conditioning condensate directly overboard that contacts toxic or hazardous materials.

19. Seawater Piping

Seawater piping systems, including sea chests and grates, are a niche area that have the potential to harbor and discharge a large quantity of ANS, which are a nonconventional pollutant. Niche areas represent a challenge for biofouling management as they are generally more difficult to access and are protected from hydrodynamic forces, facilitating the accumulation and survivorship of fouling organisms. Niche areas account for approximately 10 percent of the total wetted surface area of a vessel (Moser et al., 2017). However, over 80 percent of species sampled in vessel biofouling studies were found in niche areas (Bell et al., 2011). Therefore, while the relative surface area of niche areas in proportion to the hull may be low, the risk of such areas contributing to the discharge of ANS is significant. Additionally, seawater piping systems on commercial vessels may provide water uptake for firefighting response, engine cooling, and ballast water. Ensuring that these systems are unobstructed from macrofouling organisms is vital to ship operations, including the structural integrity of the vessel and the safety of the crew.

The VGP required vessel owners/operators to remove fouling organisms from seawater piping on a regular basis and dispose of removed substances in accordance with local, state, and federal regulations. The VGP also prohibited the discharge of removed fouling organisms into regulated waters. Additionally, the VGP required a drydock inspection report noting that the sea chest and other surface and niche areas of the vessel have been inspected for attached living organisms, and those organisms have been removed or neutralized.

EPA proposes any vessel with a seawater piping system (sea chests, grates, and any sea-piping) that accumulates biofouling that exceeds a fouling rating of FR–20 must be fitted with a Marine Growth Prevention System (MGPS).

The most common MGPS for seawater includes sacrificial anodic copper systems and chlorine-based dosing systems. Such systems are already widely in use and available. EPA recognizes that there may be a variety of systems capable of addressing biofouling in seawater systems, and an effective, preventative biofouling management strategy may include a combination of different systems. EPA therefore expanded the definition of an MGPS for this standard to also include chemical injection; electrolysis, ultrasound, ultraviolet radiation, or electrochlorination; application of an antifouling coating; or use of cupro-nickel piping. Due to the many options available and the wide extent of their current use, EPA considers the MGPS options provided to be best available technology.

An MGPS can vary widely in operational characteristics and placement suitability. EPA proposes that the MGPS selection must consider the level, frequency, and type of expected biofouling and the design, location, and area in which the system will be used. For example, it has been suggested that an MGPS installed in the sea chest provides protection to both the sea chest and internal pipework, while one installed in the strainer may only protect the internal pipework. Furthermore, anti-fouling coating selection and application should be appropriate to the material of the piping and level of waterflow to which the coated area is subjected. Based on the potential differences in profile of the coated areas, the coating applied to a seawater system may be different from the coating applied to the vessel hull. EPA recommends that the MGPS should be selected, installed, and maintained according to the manufacturer specifications.

Upon identification that biofouling exceeds a level of FR–20 despite preventative measures, then reactive measures must be used to remove biofouling. Such measures can include freshwater flushing or chemical dosing. For example, vessels that use seawater cooling systems to condense low pressure steam from propulsion plants or generator turbines already practice freshwater flushing as a means of removing biofouling. However, discharges resulting from reactive measures to remove macrofouling are prohibited in port.

When these vessels are in port for more than a few days, the main steam plant is shut down and does not circulate. This can cause an accumulation of biological growth within the system; consequently, a freshwater layup is carried-out by flushing the seawater in the system with potable or surrounding freshwater (*e.g.,* lake water) and thoroughly cleaning the system. EPA expects the frequency at which reactive measures should be used will be vessel-specific and therefore is not proposing a specific time interval. Time intervals should be determined based on a vessel's operational profile. Finally, as proposed in section 139.40, EPA proposes additional controls for discharges from seawater piping systems when vessels are operating in federally-protected waters.

Seawater piping discharges also include non-contact engine cooling water, hydraulic system cooling water, refrigeration cooling water, and freshwater lay-up wastewater. Such systems use ambient water to absorb the heat from heat exchangers, propulsion systems, and mechanical auxiliary systems. The water is typically circulated through an enclosed system that does not come in direct contact with machinery, but still may contain sediment from water intake, traces of hydraulic or lubricating oils, and trace metals leached or eroded from the pipes within the system. Additionally, because it is used for cooling, the effluent will have an increased temperature. Cooling water can reach high temperatures with the thermal difference between seawater intake and discharge typically ranging from 5 °C to 25 °C, with maximum temperatures reaching 140 °C. EPA is aware that use of shore-power may reduce the discharges of seawater from cooling system; however, EPA recognizes that shore-power may not be available in many locations, may not be sufficient for the electricity needs of the vessel, and may not be compatible with the vessel's systems. Therefore, currently, EPA is not proposing to require the use of shore-power to reduce thermal discharges from seawater piping systems.

20. Sonar Domes

Sonar dome discharge consists of leachate from anti-fouling materials into the surrounding seawater and the discharge of seawater or freshwater retained within the sonar dome. Sonar domes house detection, navigation, and ranging equipment and are filled with water to maintain their shape and pressure. They are typically found on research vessels but may occur on other vessel classes. Sonar dome discharge occasionally occurs when the water in the dome is drained for maintenance or repair; discharge rates are estimated to range from 300 to 74,000 gallons from inside the sonar dome for each repair event. This discharge from inside the dome may include toxic pollutants including zinc, copper, nickel, and epoxy paints. Additionally, discharge occurs when materials leach from the exterior of the dome. Components that may leach into surrounding waters include antifouling agents, plastic, iron and rubber.

EPA endeavored to identify new technology and best management options for sonar domes; however, EPA did not identify any new technology or management options since the development of the VGP. As such, EPA relied on the BPT/BCT/BAT analysis that led to the development of the VGP requirements and is proposing to require substantively the same standard of performance required by the VGP.

EPA proposes to prohibit the discharge of water during maintenance or repair from inside the sonar domes. Additionally, the proposed standard would prohibit the use of bioaccumulative biocides when non-bioaccumulative alternatives are available.

C. Discharges Incidental to the Normal Operation of a Vessel—Federally-Protected Waters Requirements

The VIDA, in CWA Section 312(p)(4)(B)(iii), specifies that EPA must propose national standards of performance that are no less stringent than the VGP requirements relating to effluent limits and related requirements, including with respect to waters subject to Federal protection, in whole or in part, for conservation purposes (with limited exemptions for new information or to correct mistakes or misinterpretations made in previous requirements in the VGP). Therefore, EPA proposes to prohibit or limit discharges in federally-protected waters consistent with the VGP requirements established for ''waters federally-protected for conservation purposes.'' EPA proposes that the designated federally-protected waters for this rulemaking consist of the areas of waters listed in Appendix G of the VGP (National Marine Sanctuaries, Marine National Monuments, National Parks, National Wildlife Refuges, National Wilderness Areas, or parts of the National Wild and Scenic Rivers System) plus any additional individual waters that have been added to these nationally-recognized waters since the establishment of the VGP Appendix G; this updated list of waters is proposed in Appendix A of Part 139 in this rulemaking. Federally-protected waters are likely to be of high quality and consist of unique ecosystems which may include distinctive species of aquatic animals and plants. Furthermore, as protected areas, these waters are more likely to have a greater abundance of sensitive species of plants and animals that may have trouble surviving in areas with greater anthropogenic impact. Such waters are important to the public at large, as evidenced by the waters' special status or designation by the Federal government as National Marine Sanctuaries, Marine National Monuments, National Parks, National Wildlife Refuges, National Wilderness Areas, or parts of the National Wild and Scenic Rivers System.

To develop the list of applicable ''federally-protected waters,'' for the VGP, EPA reviewed several federal authorities that protect waters that are known to be of high value or sensitive to environmental impacts, such as those administered by the Bureau of Land Management (BLM), the National Park Service (NPS), the United States Fish and Wildlife Service (FWS), the Forest Service (USFS), and the National Oceanic and Atmospheric Administration (NOAA). These areas, identified in Appendix G of the VGP, include:

• National Marine Sanctuaries—as designated under the National Marine Sanctuaries Act (16 U.S.C. 1431 *et seq.*) and implementing regulations found at 15 CFR part 922 and 50 CFR part 404. Maps and a list of national marine sanctuaries are currently available at *https://sanctuaries.noaa.gov.*

• Marine National Monuments—as designated by presidential proclamation under the Antiquities Act of 1906 (54 U.S.C. 320301 et seq). Maps and a list of marine national monuments are currently available at *https://fisheries.noaa.gov.*

• National Parks (including National Preserves and National Monuments)—as designated under the National Park Service Organic Act, as amended (54 U.S.C. 100101 *et seq.*) within the National Park System by the NPS within the U.S. Department of the Interior. Maps and a list of national parks are currently available at *https://www.nps.gov/findpark.index.htm.*

• National Wildlife Refuges (including Wetland Management Districts, Waterfowl Production Areas, National Game Preserves, Wildlife Management Area, and National Fish and Wildlife Refuges)—as designated under the National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq). Maps and a list of national wildlife refuges are currently available at *https://www.fws.gov/refuges.*

• National Wilderness Areas—as designated under the Wilderness Act of 1964 (16 U.S.C. 1131 et seq). Section 4(c) of the Wilderness Act strictly prohibits motorized vehicles, vessels, aircrafts or equipment for the purposes of transport of any kind within the boundaries of all wilderness areas (16 U.S.C. 1133(c)). Exceptions to this Act include motorized vehicle use for the purposes of gathering information on minerals or other resources; for the purposes of controlling fire, insects, or disease; and in wilderness areas where aircraft or motorized boat use have already been established prior to 1964. Maps and a list of national wilderness areas are available at *https://www.wilderness.net.*

• National Wild and Scenic Rivers—as designated under the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq). Maps and a list of national wild and scenic rivers are currently available at *https://www.rivers.gov.*

EPA does not propose to include Outstanding National Resource Waters (ONRWs) on the list of federally-protected waters in this proposed rule as these are State or Tribal water quality-based designations under the antidegradation policy of the CWA. CWA Section 312(p)(9) establishes state authorities under the VIDA and CWA Section 312(p)(10) establishes specific regional requirements and neither section includes nor references the ONRWs established under the VGP.

As required by the VGP, EPA proposes to include discharge requirements for vessels operating in federally-protected waters as designated in Appendix A. These requirements are in addition to any applicable general or specific discharge requirements in Subparts B and C of the proposed rule. The following paragraphs describe the additional discharge requirements established when a vessel is operating in federally-protected waters.

Ballast Tanks: EPA proposes that, generally consistent with section 2.2.3.3. of the VGP, the discharge or uptake of ballast water must be avoided in federally-protected waters, except for those vessels operating within the boundaries of any national marine sanctuary that preserves shipwrecks or maritime heritage in the Great Lakes, including Thunder Bay National Marine Sanctuary and Underwater Preserve, as necessary to allow for safe and efficient vessel operation, unless the designation documents for such sanctuary do not allow taking up or discharging ballast water in such sanctuary, pursuant to the Howard Coble Coast Guard and Maritime Transportation Act of 2014, Public Law 113–281, title VI, sec. 610, as amended by the Coast Guard Reauthorization Act of 2015, Public Law 114–120, title VI, sec. 602).

Bilges: EPA proposes that, consistent with section 2.2.2 of the VGP, for any vessel of 400 GT ITC (400 GRT if GT ITC is not assigned) and above, the discharge of bilgewater is prohibited.

Boilers: EPA proposes that, consistent with section 2.2.6 of the VGP, any discharge from a boiler into federally-protected waters is prohibited. This requirement acknowledges that small volumes of routine blowdown may be discharged because of design and operational considerations of the boiler if compliance with this part would compromise the safety of life at sea consistent with exclusion from these discharge standards in section 139.1(b)(3) of the proposed rule.

Fire Protection Equipment: EPA proposes that, generally consistent with section 2.2.5 of the VGP for aqueous film forming foam and section 2.2.12 of the VGP for firemain systems, the discharge from fire protection equipment during training, testing, maintenance, inspection, and certification into federally-protected waters is prohibited and the discharge of fluorinated foam in federally-protected waters is prohibited.

Graywater: EPA proposes that, consistent with section 2.2.15 of the VGP, the discharge of graywater into federally-protected waters is prohibited from any vessel with remaining available graywater storage capacity.

Motor Gasoline and Compensating Discharge: EPA proposes that, consistent with section 2.2.16 of the VGP, the discharge of motor gasoline and compensating discharges into federally-protected waters is prohibited.

Additionally, EPA proposes to include several new or modified discharge requirements for vessels operating in federally-protected waters. EPA proposes that these additional requirements are technologically available because the waters that are ''federally protected'' waters are limited and thus vessels are able to operate without discharging in these protected waters. For example, a vessel traveling through the Florida Keys National Marine Sanctuary can ordinarily wait to discharge accumulated water and sediment from any chain locker or chemically-dosed seawater piping until no longer in those federally-protected waters. EPA proposes that the requirement is economically achievable because EPA does not have any information indicating that vessels undertaking an activity such as holding would incur costs.

Chain Lockers: EPA proposes that the discharge of accumulated water and sediment from any chain locker into federally-protected waters is prohibited.

This is a proposed new requirement that acknowledges that cleanout of chain lockers is not a time sensitive activity and as such, can be scheduled at times when a vessel is outside of these sensitive waters.

Decks: EPA proposes that the discharge of deck washdown into federally-protected waters is prohibited. This proposed requirement extends coverage from certain vessels in the VGP to all vessels that acknowledges that washing of decks is an activity that can be scheduled for times when a vessel is outside of these sensitive waters.

Hulls and Associated Niche Areas: EPA proposes that the discharge from in-water cleaning of vessel hulls and niche areas into federally-protected waters is prohibited. This is a new requirement that acknowledges in-water cleaning of vessel hulls and niche areas is an activity that can be scheduled for times when the vessel is outside of these sensitive waters.

Pools and Spas: EPA proposes that the discharge of pool or spa water into federally-protected waters is prohibited. This proposed requirement extends coverage from medium and large cruise ships to all vessels with pools or spas and acknowledges that these discharges can be scheduled for times when the vessel is outside of these sensitive waters.

Seawater Piping Systems: EPA proposes that the discharge of chemical dosing, as required in section 139.28 of the proposed rule, into federally-protected waters is prohibited. This is a new requirement that acknowledges chemical dosing and the resultant discharge is an activity that can be scheduled for times when the vessel is outside of these sensitive waters.

EPA specifically solicits comment on the use of the VGP's Appendix G water areas and more specifically the list of waters in Appendix A as the proposed static list of federally-protected waters, including whether specific designations of waters should be added to or excluded from the proposed list. EPA also specifically solicits comments on the additional discharge requirements proposed for vessels operating in federally-protected waters.

D. Discharges Incidental to the Normal Operation of a Vessel—Previous VGP Discharges No Longer Requiring Control

EPA proposes to exclude fish hold effluent and small boat engine wet exhaust as independent discharges incidental to the normal operation of a vessel under the proposed rule.

Fish hold is the area where fish are kept once caught and kept fresh during the remainder of the vessel's voyage before being offloaded to shore or another tender vessel. The fish hold is typically a refrigerated seawater holding tank, where the fish are kept cool by mechanical refrigeration or ice. With the exception of ballast water, CWA Section 312(p)(2)(B)(i)(III) excludes from these proposed regulations discharges incidental to the normal operation of a fishing vessel; therefore, EPA proposes that although this discharge was included in the VGP, it should not be a discharge incidental to the normal operation of a vessel subject to these regulations.

Small boat engines use ambient water that is injected into the exhaust for cooling and noise reduction purposes. Similar to fishing vessels, with the exception of ballast water, CWA Section 312(p)(2)(B)(i)(III) excludes from these proposed regulations discharges incidental to the normal operation of a vessel less than 79 feet; therefore, EPA proposes that although this discharge was included in the VGP, it should not be a discharge incidental to the normal operation of a vessel subject to these regulations.

IX. Procedures for States To Request Changes to Standards, Regulations, or Policy Promulgated by the Administrator

A. Petition by a Governor for the Administrator To Establish an Emergency Order or Review a Standard, Regulation, or Policy

Under CWA Section 312(p)(7)(A), a Governor of a state may submit a petition to the Administrator to issue an emergency order or to review any standard of performance, regulation, or policy if there exists new information that could reasonably result in a change. A petition must be signed by the Governor (or a designee) and must include the purpose of the petition (request for emergency order or to review of any standard of performance, regulation, or policy); any applicable scientific or technical information that forms the basis of the petition; and the direct and indirect benefits if the requested petition were to be granted by the Administrator. The Administrator shall grant or deny the petition and either issue the relevant emergency order or submit a Notice of Proposed Rulemaking to the **Federal Register** for comment for a change in any standard of performance, regulation, or policy.

EPA specifically solicits comment on the proposed process for Governors to solicit the issuance of an emergency order or to review any standard of performance, regulation of policy, including whether a more detailed process should be developed.

B. Petition by a Governor for the Administrator To Establish Enhanced Great Lakes System Requirements

CWA Section 312(p)(10)(B) creates a process for establishing enhanced federal standards or requirements to apply within the Great Lakes System in lieu of any comparable standards or requirements promulgated under CWA Section 312(p)(4)–(5). Any Governor of a Great Lakes State (or the Governor's designee) may initiate the process by submitting a petition for an enhanced standard to the other Great Lakes States Governors, as well as the as the Executive Director of the Great Lakes Commission and the Director of EPA's Great Lakes National Program Office. The petition must seek the endorsement of fellow governors for an enhanced standard of performance or other requirement with respect to any discharge that is subject to regulation under CWA Section 312(p) that occurs in the Great Lakes System. A petition shall include an explanation regarding why the applicable standard of performance or other requirement is at least as stringent as a comparable standard of performance or other requirement in the final rule; in accordance with maritime safety; and in accordance with applicable maritime and navigation laws and regulations. After involving the Great Lakes Commission, the requisite number of Governors may jointly submit to the Administrator and the Secretary an endorsement of a proposed standard of performance or other requirement to apply within the Great Lakes System.

Upon receipt of the proposed standard of performance or requirement from a Great Lakes Governor, the Administrator shall submit, after consultation with the USCG, a notice to the **Federal Register** that provides an opportunity for public comment on the proposed standard of performance or requirement. In addition, the Administrator shall commence a review of the proposed standard of performance or requirement to determine if it is at least as stringent as the comparable CWA Section 312(p) standard. During review, pursuant to CWA Section 312(p)(10)(B)(iii)(III)(bb), the Administrator shall consult with the Secretary, the Governor of each Great Lakes State, and representatives from the Federal and provincial governments of Canada; shall take into consideration any relevant data or public comments received; and shall not take into consideration any preliminary assessment by the Great Lakes

Commission or dissenting opinion submitted by a Governor of a Great Lake State. Not later than 180 days after receipt of the proposed standard of performance or requirement, the Administrator, in concurrence with the Secretary, shall approve or disapprove the proposal. If the proposal is disapproved, the Administrator shall submit a notice of determination to the **Federal Register** that describes the reasons why the standard of performance or requirement is less stringent or inconsistent with applicable maritime and navigational laws and provide any recommendations for modification of the proposal. If the Administrator approves a proposed standard of performance or other requirement, the Administrator shall submit a notice of the determination to the Governor of each Great Lakes State and to the **Federal Register**. Additionally, the Administrator shall establish by regulation the proposed standard of performance for the Great Lakes.

EPA specifically solicits comment on the process to request enhanced Great Lakes system requirements, including the extent to which EPA should provide further details in the final rule considering the details already included in the VIDA.

C. Application by a State for the Administrator To Establish a State No-Discharge Zone

Under CWA Section 312(p) states have an opportunity to apply to EPA to prohibit one or more discharges incidental to the normal operation of a vessel, whether treated or not, into specified waters, if the state determines that the protection and enhancement of the quality of some or all of its waters require greater environmental protection.

Pursuant to CWA Section 312(p)(10)(D)(iii)(I), a discharge prohibition established by EPA through regulation would not apply until after the Administrator reviews the state application, makes a determination with concurrence from the USCG, publishes a proposed rule for comment, and publishes a regulation establishing that (1) the prohibition would protect and enhance the quality of the specified waters; (2) adequate facilities for the safe and sanitary removal of the discharge incidental to the normal operation of a vessel are reasonably available for the waters to which the prohibition would apply; and (3) the discharge can safely be collected and stored until a vessel reaches a discharge facility or other location. If the no-discharge zone concerns ballast water discharges regulated under CWA Section 312(p), then the Administrator must also determine that adequate facilities are reasonably available after considering at a minimum water depth, dock size, pumpout capacity and flow rate, availability of year round operations, proximity to navigational routes, the ratio of pumpout facilities to vessels in operation in those specified waters. The VIDA also provides that the prohibition for ballast water discharges will not unreasonably interfere with the safe loading and unloading of cargo, passengers, or fuel.

EPA proposes that a state application for such a prohibition must include (i) a signature by the Governor; (ii) a certification that the protection and enhancement of the waters for which the state is seeking a prohibition require greater environmental protection than the applicable national standard of performance provides; (iii) a detailed analysis of how the requested prohibition for each individual discharge requested will protect the waters for which the state is seeking a prohibition; (iv) a table identifying types and number of vessels operating in the waterbody and a table identifying the types and number of vessels that will be the subject of the prohibition; (v) a map detailing the location, operating hours, draught requirements, and service capabilities of commercial and recreational pump-out facilities (both mobile and stationary) available to receive each individual discharge in the waters for which the state is seeking a prohibition; (vi) a table identifying the location and geographic area of each proposed no-discharge zone; and (vii) a detailed analysis of how the vessels subject to the prohibition may be impacted with regards to collection capability, storage capability, need for retrofitting, travel time to facility, and safety concerns.

EPA is proposing that these additional procedures because its history with CWA Section 312 sewage no-discharge zones suggests that the statutory language does not provide enough detail or description to clearly define a workable process without additional clarification.

EPA specifically solicits comment on the no-discharge zone application process.

X. Implementation, Compliance, and Enforcement

CWA Section 312(p)(5) directs the USCG to develop implementing regulations governing the design, construction, testing, approval, installation, and use of marine pollution control devices as are necessary to ensure compliance with the national standards of performance presented in the proposed rule. Additionally, the USCG shall promulgate requirements to ensure, monitor, and enforce compliance of the proposed standards. As such, the proposed rule does not include implementation, compliance, or enforcement provisions.

XI. Regulatory Impact Analysis

EPA projects that the incremental costs and benefits arising from the proposed rule will be minor and that the vessel community will experience a net savings of $12.4 million annually. This regulatory relief is principally the result of the VIDA exclusion of small vessels and fishing vessels from federal incidental discharge requirements (*e.g.,* CWA permits and national discharges standards), except for ballast water. When compared to the current VGP requirements, this exclusion will ultimately reduce burden on more than 155,000 vessels.

EPA estimates that 66,000 U.S.- and 16,000 foreign-flagged vessels will need to comply with the proposed standards once finalized. In addition to its assessment of the cost impacts specifically to the 66,000 U.S.-flagged vessels, EPA also examined the cost impacts to the approximately 500 foreign-flagged vessels that are U.S.-owned.

The cost analysis, found in the Regulatory Impact Analysis (RIA) located in the rulemaking docket, uses compliance with the VGP and the sVGP, as well as other regulations and industry standards, (*i.e.,* the *status quo* that existed prior to the passage of the VIDA) as the analytic baseline. The analysis compares baseline cost impacts experienced by the regulated community immediately prior to passage of the VIDA legislation to projected cost impacts expected as a result of the proposed new EPA standards. The VIDA repealed the sVGP effective immediately upon signature, while stipulating that VGP requirements are to remain in place until the new VIDA program is fully in force and effective. This analysis accounts for both the impacts of the proposed new EPA standards as well as the regulatory relief expected as a result of the VIDA exclusion of small vessels and fishing vessels from the discharge requirements, except for ballast water, and the corresponding repeal of the sVGP.

The cost analysis groups the proposed rule's major impacts into four categories. The first category of impacts is comprised of new standards in the proposed rule that result in incremental costs compared to existing VGP requirements. In this category, EPA is proposing two new discharge requirements, one for graywater systems and one for seawater piping systems, that together are projected to result in incremental costs of $4.3 million annually. The second category describes proposed standards that are not expected to result in incremental costs compared to the VGP baseline since they reflect practices already in place on vessels as a result of other regulations and industry standards. The third category describes changes mandated by Congress directly in the VIDA that are projected to result in incremental costs to the regulated community. These provisions impose new ballast water requirements nationally and regionally in the Pacific Region and the Great Lakes. The estimated incremental cost for vessels to meet these Congressionally-mandated provisions is $5.5 million annually. The fourth category is the reduction in costs projected to result from the VIDA exclusion of small vessels and fishing vessels from the discharge requirements, except for ballast water, and the corresponding repeal of the sVGP. EPA estimates that this regulatory relief will result in annual cost savings of nearly $22.2 million to the vessel community.

To evaluate the potential impact of the proposed rule on small entities, EPA used a cost-to revenue test to evaluate potential severity of economic impact on vessels owned by small entities. The test calculates annualized pre-tax compliance cost as a percentage of total revenues and uses a threshold of 1 and 3 percent to identify entities that would be significantly impacted if this proposed rule were to go final. EPA projects the potential impacts would not exceed these conventional cost/revenue thresholds. In addition, the Agency completed estimates of the paperwork burden associated with the proposed rulemaking. These estimates project the annualized paperwork burden on states that voluntarily petition EPA for any one of the following: Establishment of no-discharge zones, review of national standards of performance, issuance of emergency orders, and establishment of enhanced Great Lakes System requirements.

EPA also assessed the environmental impacts from this proposal. The Agency does not expect the proposed rule to change environmental benefits significantly compared to those realized by the VGP since the existing VGP requirements are largely proposed to be adopted as the new discharge standards. EPA notes that the VIDA exclusion of small vessels and fishing vessels, except for ballast water, and the corresponding repeal of the sVGP could potentially lead to a reduction in environmental benefits to the extent that affected vessels no longer adhere to practices previously required under the sVGP. In particular, the RIA examines possible losses in benefits from the elimination of the sVGP discharge management requirements for bilgewater, graywater, and anti-fouling hull coatings.

EPA did not evaluate the cost impacts from changes in monitoring, reporting, self-inspection, or recordkeeping associated with the VIDA re-allocation of EPA and USCG authorities and responsibilities. The USCG will present an analysis of these impacts, and other relevant impacts, in documentation supporting their rulemaking for the USCG portions of the CWA Section 312(p) program.

The RIA is available in the docket for this proposed rulemaking. EPA solicits comment on all aspects of its RIA including the underlying assumptions and methodology.

XII. 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 13563: Improving Regulation and Regulatory Review

The proposed rule is a significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review because it raises novel legal or policy issues. Any changes made in response to OMB recommendations have been documented in the public docket for this proposed rule.

In addition, EPA prepared an analysis of the potential impacts associated with this proposed rule. The regulatory impact analysis is available in the public docket for this proposed rule, and both costs and benefits are summarized in Section XI. *Regulatory Impact Analysis.*

B. Executive Order 13771: Reducing Regulation and Controlling Regulatory Costs

The proposed rule is expected to be an Executive Order 13771 deregulatory action. Details on the estimated cost savings of this proposed rule can be found in EPA's analysis of the potential costs and benefits associated with this action.

C. Paperwork Reduction Act

This proposed rule, once finalized by EPA and implemented through corresponding USCG requirements addressing implementation, compliance, and enforcement, would impose an information collection burden to states under the PRA. The information collection activities in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the PRA. The Information Collection Request (ICR) document that EPA prepared has been assigned EPA ICR number 2605.01. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here.

Background

EPA has regulated discharges incidental to the normal operation of vessels under the CWA Section 402 NPDES permitting program since 2008. The information collection burden associated with EPA's regulation of those activities are included as part of the Information Collection Request (ICR) for the NPDES Program, OMB Control No. 2040–0004.

The current inventory of vessels included in the NPDES ICR includes 72,942 vessels covered under the VGP and 137,739 small vessels covered under the Small Vessel General Permit (sVGP). That ICR identifies a total of 292,466 responses annually specific to the VGP and sVGP with a total annual burden of 269,919 hours for activities including: Reporting (Notice of Intent, Notice of Termination, annual report); inspection (routine, annual, and drydock) and monitoring; and recordkeeping.

As described below, the enactment of the VIDA in 2018 authorized EPA and the USCG to establish a new regulatory framework for the discharges covered by the VGP which will result in a change in the type of information collected, the Agency responsible for collecting the information, and ultimately the information collection burden.

Upon enactment of the VIDA (December 4, 2018), the sVGP was repealed and incidental discharges from small vessels and fishing vessels less than 79 feet with the exception of ballast water were excluded from requirements established under the VIDA. Thus, any monitoring and reporting burden beyond those for ballast water for small vessels or fishing vessels less than 79 feet in length was terminated. Additionally, once EPA develops new national standards of performance for discharges incidental to the normal operation of a vessel (as is being proposed in this rulemaking) and the USCG establishes requirements that address implementation, compliance, and enforcement of the national standards, the information collection burden established under the EPA VGP will be terminated and the information collection burden will be modified as described below.

Proposed Rule

As detailed in CWA Section 312(p)(5), upon implementation of monitoring, reporting, and recordkeeping requirements by the USCG, the paperwork requirements for vessel owners and operators would need to be reported to the USCG and not to EPA. As such it is expected that much of the existing paperwork burden on vessel owners and operators under the VGP requirements would be managed by the USCG upon implementation of their specific reporting and monitoring requirements. Therefore, the proposed rule would not impose a new paperwork burden on vessel owners and operators.

However, the proposed rule would impose a new information collection burden on states seeking to petition EPA to establish different national standards of performance including enhanced standards in the Great Lakes, issue emergency orders, or establish no-discharge zones. EPA does not anticipate an information collection burden on states until the USCG has established final implementing requirements (required by the VIDA as soon as practicable but not later than two years after the EPA discharge standards proposed in this rulemaking are finalized). After such time, the information collection burden relates to the voluntary preparation and submission of petitions by states and is therefore an intermittent activity.

The ICR submitted for approval to the OMB as part of this rulemaking reflects an anticipated burden to states in the third year of the three-year ICR cycle. This includes one petition of each type: Modification of national standards of performance, issuance of emergency orders, and establishment no-discharge zones. EPA does not expect petitions for enhanced Great Lakes System requirements during this ICR cycle. The type and level of detail of information that a state would need to generate to petition EPA under CWA Section 312(p) is most analogous to the information prepared for an application to EPA under the existing CWA Section 312 ICR (OMB control number 2040–0187), which includes state activities related to petitioning EPA for no-discharge zones for sewage and discharges incidental to the normal operation of vessels of the Armed Forces. For incidental discharges from vessels of the Armed Forces, states may also petition EPA for review of standards. Because of the parallels in discharge types and state activities, EPA used the burden estimates in the existing ICR to inform the expected burden for this proposed rule. Looking ahead, EPA proposes that this new ICR be combined with the existing CWA Section 312 ICR (OMB control number 2040–0187) expected to be renewed in August 2022. This would create a single ICR that would include the information collection burden for all three vessel programs under CWA Section 312 (sewage, vessels of the Armed Forces, and commercial vessels).

The hour and cost estimates, summarized below, include such activities as reviewing the relevant regulations and guidance documents, gathering and analyzing the required information, and preparing and submitting the application.

Respondents/affected entities: State governments (SIC code 9511, NAICS code 924110) are the only respondents to the data collection activities described in this ICR.

Respondent's obligation to respond: Preparation and submission of a petition is a voluntary action that may be undertaken by the respondent. This is not a reporting requirement, nor are there any deadlines associated with these petitions.

Estimated number of respondents: Three respondents are anticipated during this three-year ICR cycle.

Frequency of response: Three petitions are anticipated during this three-year ICR cycle, each in the third year, including one petition each for establishment of a no-discharge zone, review of standards, and issuance of an emergency order.

Total estimated burden: Approximately 82 hours per year.

Total estimated cost: $4,560 per year, including $150 annualized operation & maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9.

Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to *https://www.reginfo.gov/public/do/PRAMain.* This particular information collection request can be located by selecting ''Currently under 30-day Review—Open for Public Comments'' or by using the search function. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than November 25, 2020. EPA will respond to any ICR-related comments in the final rule.

D. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act or any other statute, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

EPA certifies that this action will not have a significant economic impact on a substantial number of small entities under the RFA. Although the proposed rule will impose requirements on any small entity that operates a vessel subject to the standards, EPA used a cost-to-revenue test to evaluate potential severity of economic impact on vessels owned by small entities. EPA determined that the projected cost burden would not exceed the conventional cost/revenue thresholds used for small entity impact screening analyses (costs greater than 1 percent and 3 percent of annual revenue). Details of the screening analysis are presented in the section entitled ''*Small Business Impacts*'' in the RIA accompanying the proposed rule.

E. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538, requires federal agencies, unless otherwise prohibited by law, to assess the effects of their regulatory actions on state, local, and tribal governments, and the private sector. An action contains a federal mandate if it may result in expenditures of $100 million or more (annually, adjusted for inflation) for state, local, and tribal governments, in the aggregate, or the private sector in any one year ($160 million in 2018). 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.

F. Executive Order 13132: Federalism

Under Executive Order 13132, EPA may not issue an action with federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments or EPA consults with state and local officials early in development of the action.

EPA has concluded that this action has federalism implications for the following reason. The VIDA added a new CWA Section 312(p)(9)(A) that specifies 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 9th, 2019 in Washington, DC to allow states and local officials to have meaningful and timely input into the development of EPA rulemaking.

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.

Additionally, pursuant to the terms of Executive Order 13132 and Agency policy, a federalism summary impact statement is required in the final rule to summarize not only the issues and concerns raised by state and local government commenters during the proposed rule's development, but also to 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.

G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This proposed action has tribal implications as specified in Executive Order 13175. See 65 FR 67249, November 9, 2000. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. Tribes may primarily be interested in this action because commercial vessels may operate in or near tribal waters. Additionally, Tribes may have TAS under Section 309 of the CWA. To that end, 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 this action by sending a ''Notice of Consultation and Coordination'' letter on June 18, 2019, to all 573 federally recognized tribes. The letter invited tribal leaders and designated consultation representatives to participate in the tribal consultation and coordination process, which 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.

EPA incorporated the feedback it received from tribal representatives in the proposed rule. Records of the tribal informational webinar, and a consultation summary summarizing the written and verbal comments submitted by tribes are included in the public docket for this proposed rule. The Agency specifically solicits additional comment on this proposed rule from tribal officials.

H. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. See 62 FR 19885, April 23, 1997. The proposed national standards of performance are designed to control discharges incidental to the normal operation of a vessel that could adversely affect human health and the environment. The proposed rule is intended to reduce discharges to receiving waters that could affect any person using the receiving waters, regardless of age.

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

This action is not a ''significant energy action'' as defined by Executive Order 13211 because it is not likely to have a significant adverse effect on the supply, distribution or use of energy. See 66 FR 28355, May 22, 2001. 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.

J. National Technology Transfer and Advancement Act

The proposed rule would establish national standards of performance but does not establish environmental monitoring or measurement requirements and thus does not include technical standards. Similarly, EPA proposes not to identify specific, prescribed analytic methods. Rather, the national standards of performance in this proposed rule would be the basis of USCG implementing regulations with respect to inspections, monitoring, reporting, sampling, and recordkeeping to ensure, monitor, and enforce compliance with these standards. The applicability of the National Technology Transfer and Advancement Act is appropriately assessed as part of that USCG rulemaking as established in CWA Section 312(p)(5)(A).

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

EPA proposes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898. See 59 FR 7629, February 16, 1994. 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 proposed rule will 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. Overall, the proposed rule would reduce the amount of pollution entering waterbodies from vessels, which will yield health benefits and improve the recreational utility of waterbodies where vessels are subject to the proposed standards.

XIII. References

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List of Subjects in 40 CFR Part 139

Environmental protection, commercial vessels, coastal zone, incidental discharges.

Andrew Wheeler,
Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR subchapter D by adding part 139 to read as follows:

PART 139—DISCHARGES INCIDENTAL TO THE NORMAL OPERATION OF VESSELS

Subpart A—Scope

Sec.
139.1 Coverage.
139.2 Definitions.
139.3 Other Federal laws.

Subpart B—General Standards for Discharges Incidental to the Normal Operation of a Vessel

139.4 General operation and maintenance.
139.5 Biofouling management.
139.6 Oil management.

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Subpart A—Scope

§ 139.1 Coverage.

(a) *Vessel discharges.* Except as provided in paragraph (b) of this section, this part applies to:

(1) Any discharge incidental to the normal operation of a vessel; and

(2) Any discharge incidental to the normal operation of a vessel (such as most graywater) that is commingled with sewage, subject to the conditions that:

(i) Nothing in this part prevents a state from regulating sewage discharges; and

(ii) Any such commingled discharge must comply with all applicable requirements of:

(A) This part; and

(B) Any law applicable to the discharge of sewage.

(b) *Exclusions.* This part does not apply to any discharge:

(1) Incidental to the normal operation of:

(i) A vessel of the Armed Forces subject to 33 U.S.C. 1322(n);

(ii) A recreational vessel subject to 33 U.S.C. 1322(o);

(iii) A small vessel or fishing vessel, except that this part applies to any discharge of ballast water from a small vessel or fishing vessel; or

(iv) A floating craft that is permanently moored to a pier, including a floating casino, hotel, restaurant, or bar; or

(2) That results from, or contains material derived from, an activity other than the normal operation of the vessel, such as material resulting from an industrial or manufacturing process onboard the vessel; or

(3) If compliance with this part would compromise the safety of life at sea.

(c) *Area of coverage.* The standards in this part apply to any vessel identified in paragraph (a) of this section, not otherwise excluded in paragraph (b) of this section, while operating in the waters of the United States or the waters of the contiguous zone.

(d) *Effective date.* (1) The standards in this part are effective beginning on the date upon which regulations promulgated by the Secretary governing the design, construction, testing, approval, installation, and use of marine pollution control devices as necessary to ensure compliance with the standards are final, effective, and enforceable.

(2) As of the effective date identified in paragraph (d)(1) of this section, the requirements of the Vessel General Permit and all regulations promulgated by the Secretary pursuant to Section 1101 of the Nonindigenous Aquatic Nuisance Prevention and Control Act of

1990 (16 U.S.C. 4711), including the regulations contained in 46 CFR 162.060 and 33 CFR part 151 subparts C and D, as in effect on December 3, 2018, shall be deemed repealed and have no force or effect.

§ 139.2 Definitions.

The following definitions apply for the purposes of this part. Terms not defined in this section have the meaning as defined under the Clean Water Act (CWA) and applicable regulations.

Administrator means the Administrator of the Environmental Protection Agency. (source: CWA section 101(d)).

Aquatic Nuisance Species (ANS) means a nonindigenous species that threatens the diversity or abundance of a native species; the ecological stability of waters of the United States or the waters of the contiguous zone; or a commercial, agricultural, aquacultural, or recreational activity that is dependent on waters of the United States or the waters of the contiguous zone. (source: CWA section 312(p)(1)(A)).

Ballast tank means any tank or hold on a vessel used for carrying ballast water, whether or not the tank or hold was designed for that purpose. (source: 33 CFR 151.1504).

Ballast water means any water, to include suspended matter and other materials taken onboard a vessel, to control or maintain trim, draught, stability, or stresses of the vessel, regardless of the means by which any such water or suspended matter is carried; or during the cleaning, maintenance, or other operation of a ballast tank or ballast water management system of the vessel. The term does not include any substance that is added to that water that is directly related to the operation of a properly functioning ballast water management system. (source: CWA section 312(p)(1)(B)).

Ballast water exchange means the replacement of ballast water in a ballast tank using one of the following methods:

(1) Flow-through exchange, in which ballast water is flushed out by pumping in mid-ocean water at the bottom of the tank if practicable, and continuously overflowing the tank from the top, until three full volumes of tank water have been changed.

(2) Empty and refill exchange, in which ballast water is pumped out until the pump loses suction, after which the ballast tank is refilled with water from the mid-ocean. (source: CWA section 312(p)(1)(D)).

Ballast water management system means any marine pollution control device (including all ballast water treatment equipment, ballast tanks, pipes, pumps, and all associated control and monitoring equipment) that processes ballast water to kill, render nonviable, or remove organisms; or to avoid the uptake or discharge of organisms. (source: CWA section 312(p)(1)(E)).

Bioaccumulative means the failure to meet one or more of the criteria established in the definition of *Not Bioaccumulative.*

Biodegradable for the following classes of substances, means (all percentages are on a weight/weight concentration basis):

(1) *For oils:* At least 90% of the formulation (for any substances present above 0.1%) demonstrates, within 28 days, either the removal of at least 70% of dissolved organic carbon (DOC), production of at least 60% of the theoretical carbon dioxide, or consumption of at least 60% of the theoretical oxygen demand). Up to 5% of the formulation may be non-biodegradable but may not be bioaccumulative. The remaining 5% must be inherently biodegradable.

(2) *For greases:* At least 75% of the formulation (for any substances present above 0.1%) demonstrates, within 28 days, either the removal of at least 70% of DOC, production of at least 60% of the theoretical carbon dioxide, or consumption of at least 60% of the theoretical oxygen demand). Up to 25% of the formulation may be non-biodegradable or inherently biodegradable but may not be bioaccumulative.

(3) *For soaps, cleaners, and detergents:* A product that demonstrates, within 28 days, either the removal of at least 70% of DOC, production of at least 60% of the theoretical carbon dioxide, or consumption of at least 60% of the theoretical oxygen demand.

(4) *For biocides:* A compound or mixture that, within 28 days, demonstrates removal of at least 70% of DOC and production of at least 60% of the theoretical carbon dioxide.

Biofouling means the accumulation of aquatic organisms such as micro-organisms, plants, and animals on surfaces and structures immersed in or exposed to the aquatic environment. (source: Modified from IMO MEPC.207(62)).

Broom clean means a condition in which care has been taken to prevent or eliminate any visible concentration of tank or cargo residues, so that any remaining tank or cargo residues consist only of dust, powder, or isolated and random pieces, none of which exceeds one inch in diameter. (source: Modified from 33 CFR 151.66).

Captain of the Port (COTP) zone means such zone as established by the Secretary pursuant to sections 92, 93, and 633 of title 14, United States Code. (source: CWA section 312(p)(1)(J)).

Commercial vessel means, except as the term is used in § 139.10(g), any vessel used in the business of transporting property for compensation or hire, or in transporting property in the business of the owner, lessee, or operator of the vessel. (source: CWA section 312(a)(10)). As used in § 139.10(g), the term *commercial vessel* means a vessel operating between:

(1) Two ports or places of destination within the Pacific Region; or

(2) A port or place of destination within the Pacific Region and a port or place of destination on the Pacific Coast of Canada or Mexico north of parallel 20 degrees north latitude, inclusive of the Gulf of California. (source: CWA section 312(p)(10)(C)(i)).

Constructed in respect of a vessel means a stage of construction when:

(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% of the estimated mass of all structural material of the vessel, whichever is less; or

(4) The vessel undergoes a major conversion. (source: 33 CFR 151.1504).

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone. (source: CWA section 502(9)).

Discharge means ''discharge incidental to the normal operation of a vessel'' as defined in this section.

Discharge incidental to the normal operation of a vessel means a discharge, including—

(1) Graywater, bilge water, cooling water, weather deck runoff, ballast water, oil water separator effluent, and any other pollutant discharge from the operation of a marine propulsion system, shipboard maneuvering system, crew habitability system, or installed major equipment, such as an aircraft carrier elevator or a catapult, or from a protective, preservative, or absorptive application to the hull of the vessel; and

(2) A discharge in connection with the testing, maintenance, and repair of a system described in clause (1):

(i) Whenever the vessel is waterborne; and does not include—

(A) A discharge of rubbish, trash, garbage, or other such material discharged overboard;

(B) An air emission resulting from the operation of a vessel propulsion system, motor driven equipment, or incinerator; or

(3) A discharge that is not covered by § 122.3 of this chapter (as in effect on February 10, 1996). (source: CWA section 312).

Discharge of oil in such quantities as may be harmful means any discharge of oil, including an oily mixture, in such quantities identified in 40 CFR 110.3 and excluding those discharges specified in 40 CFR 110.5.

Empty ballast tank means a tank that has previously held ballast water that has been drained to the limit of the functional or operational capabilities of the tank (such as loss of pump suction); is recorded as empty on a vessel log; and may contain unpumpable residual ballast water and sediment. (source: CWA section 312(p)(1)(K)).

Environmentally Acceptable Lubricant (EAL) means a lubricant, including any oil or grease, that is ''biodegradable,'' ''minimally-toxic,'' and ''not bioaccumulative,'' as these terms are defined in § 139.2.

Exclusive Economic Zone (EEZ) means the area established by Presidential Proclamation Number 5030, dated March 10, 1983 which extends from the base line of the territorial sea of the United States seaward 200 nautical miles, and the equivalent zone of Canada. (source: 33 CFR 151.1504).

Existing vessel means a vessel constructed, or where construction has begun, prior to the date identified in regulations promulgated by the Secretary as described in § 139.1(e).

Federally-protected waters means any waters of the United States or the waters of the contiguous zone subject to federal protection, in whole or in part, for conservation purposes, located within any area listed in Appendix A, as designated under:

(1) National Marine Sanctuaries designated under the National Marine Sanctuaries Act (16 U.S.C. 1431 *et seq.*);

(2) Marine National Monuments designated under the Antiquities Act of 1906;

(3) A unit of the National Park System, including National Preserves and National Monuments, designated by the National Park Service within the U.S. Department of the Interior;

(4) A unit of the National Wildlife Refuge System, including Wetland Management Districts, Waterfowl Production Areas, National Game Preserves, Wildlife Management Areas, and National Fish and Wildlife Refuges designated under the National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997;

(5) National Wilderness Areas designated under the Wilderness Act of 1964 (16 U.S.C. 1131–1136); and

(6) Any component designated under the National Wild and Scenic Rivers Act of 1968, 16 U.S.C. 1273.

Fouling rating means the scale developed by the U.S. Navy (Naval Ships' Technical Manual, Chapter 81, Waterborne Underwater Hull Cleaning of Navy Ships, Revision 5, S9086–CQ–STM–010, 2006) that assigns a fouling rating (FR) number to the 10 most frequently encountered biofouling patterns. Numbers are assigned on a scale from 0 to 100, in 10-point increments, with the lowest number representing a clean hull and the higher numbers representing biofouling organism populations of increasing variety and severity.

Graywater means drainage from dishwater, shower, laundry, bath, and washbasin drains. It does not include drainage from toilets, urinals, hospitals, animal spaces, and cargo spaces. (source: 33 CFR 151.05).

Great Lakes means Lake Ontario, Lake Erie, Lake Huron (including Lake Saint Clair), Lake Michigan, Lake Superior, and the connecting channels (Saint Mary's River, Saint Clair River, Detroit River, Niagara River, and Saint Lawrence River to the Canadian border), and includes all other bodies of water within the drainage basin of such lakes and connecting channels. (source: CWA section 118(a)(3)(B)).

Great Lakes State means any of the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. (source: CWA section 312(p)(1)(M)).

Gross Register Tonnage (GRT) means the gross tonnage measurement of the vessel under the Regulatory Measurement System. (source: 46 CFR 69.9).

Gross Tonnage ITC (GT ITC) means the gross tonnage measurement of the vessel under the Convention Measurement System. (source: 46 CFR 69.9).

Impaired waterbody means a waterbody identified by a state, tribe, or EPA pursuant to section 303(d) of the CWA as not meeting applicable state or tribal water quality standards (these waters are called ''water quality limited segments'' under 40 CFR 130.2(j)) and includes both waters with approved or established Total Maximum Daily Loads (TMDL) and those for which a TMDL has not yet been approved or established.

Inherently biodegradable means the property of being able to be biodegraded when subjected to sunlight, water, and naturally occurring microbes to the following level: Greater than 70% biodegraded after 28 days using OECD Test Guidelines 302C or greater than 20% but less than 60% biodegraded after 28 days using OECD Test Guidelines 301 A–F.

Internal Waters means:

(1) With respect to the United States, the waters shoreward of the territorial sea baseline, including waters of the Great Lakes extending to the maritime boundary with Canada, and

(2) With respect to any other nation, the waters shoreward of its territorial sea baseline, as recognized by the United States. (source: Modified from 33 CFR 2.24 as referenced in CWA section 312(p)(1)(O)).

Live or living, notwithstanding any other provision of law (including regulations), does not:

(1) Include an organism that has been rendered nonviable; or

(2) Preclude the consideration of any method of measuring the concentration of organisms in ballast water that are capable of reproduction. (source: CWA Section 312(p)(6)(D)(i)).

Major conversion means a conversion of an existing vessel:

(1) That substantially alters the dimensions or carrying capacity of the vessel; or

(2) That changes the type of the vessel; or

(3) The intent of which, in the opinion of the government of the country under whose authority the vessel is operating, is substantially to prolong its life; or

(4) Which otherwise so alters the vessel that, if it were a new vessel, it would become subject to relevant provisions of MARPOL not applicable to it as an existing vessel. (source: 33 CFR 151.05).

Marine Growth Prevention System (MGPS) means an anti-fouling system used for the prevention of biofouling accumulation in seawater piping systems and sea chests. (source: Modified from IMO MEPC.207(62)).

Marine Pollution Control Device (MPCD) means any equipment or management practice (or combination of equipment and management practice) for installation and use onboard a vessel that is: Designed to receive, retain, treat, control, or discharge a discharge incidental to the normal operation of a vessel; and determined by the Administrator and the Secretary to be the most effective equipment or management practice (or combination of equipment and a management practice) to reduce the environmental impacts of the discharge, consistent with the factors considered in developing the standards in this part. (source: CWA section 312(p)(1)(P)).

Master means the officer having command of a vessel. (source: 46 CFR 10.107).

Mid-ocean means greater than 200 nautical miles (NM) from any shore, except when a ballast water exchange or saltwater flush outside of 50 NM is authorized in this part, then it means greater than 50 NM from any shore. For regular maintenance of ballast tanks to remove sediments, it means outside the waters of the United States or the waters of the contiguous zone.

Minimally-Toxic means, for lubricants (all percentages are on a weight/weight basis):

(1) If both the complete formulation and the main constituents (that is constituents making up greater than or equal to 5% of the complete formulation) are evaluated, then the acute aquatic toxicity of lubricants, other than greases and total loss lubricants, must be at least 100 mg/L and the LC50 of greases and total loss lubricants must be at least 1000 mg/L; or

(2) If each constituent is evaluated, rather than the complete formulation and main constituents, then for each constituent present above 0.1%: Up to 20% of the formulation can have an LC50 greater than 10 mg/L but less than 100 mg/L and an NOEC greater than 1 mg/L but less than 10 mg/L; up to 5% of the formulation can have an LC50 greater than 1 mg/L but less than 10 mg/L and an NOEC greater than 0.1 mg/L but less than 1 mg/L; and up to 1% of the formulation can have an LC50 less than 1 mg/L and an NOEC less than 0.1 mg/L.

Minimally-toxic, phosphate-free, and biodegradable means properties of a substance or mixture of substances that:

(1) Have an acute aquatic toxicity value corresponding to a concentration greater than 10 ppm;

(2) Do not produce residuals with an LC50 less than 10 ppm;

(3) Are not bioaccumulative;

(4) Do not cause the pH of the receiving water to go below 6.0 or above 9.0;

(5) Contain, by weight, 0.5% or less of phosphates or derivatives of phosphate; and

(6) Are biodegradable.

Minimize means to reduce or eliminate to the extent achievable using any control measure that is technologically available and economically practicable and achievable and supported by demonstrated best management practices such that compliance can be documented in shipboard logs and plans.

Niche Areas means areas on a ship that may be more susceptible to biofouling due to different hydrodynamic forces, susceptibility to coating system wear or damage, or being inadequately, or not, painted (*e.g.,* sea chests, bow thrusters, propeller shafts, inlet gratings, drydock support strips) (source: MEPC.207(62)).

Not bioaccumulative means any of the following:

(1) The partition coefficient in the marine environment is log KOW less than 3 or greater than 7;

(2) The molecular mass is greater than 800 Daltons;

(3) The molecular diameter is greater than 1.5 nanometer;

(4) The bioconcentration factor (BCF) or bioaccumulation factor (BAF) is less than 100 L/kg; or

(5) The polymer with molecular weight fraction below 1,000 g/mol is less than 1%.

Oil means oil of any kind or in any form, including but not limited to any petroleum, fuel oil, environmentally acceptable lubricant, sludge, oil refuse, and oil mixed with wastes other than dredged spoil. (source: CWA section 311(a)(1)).

Oily mixture means a mixture, in any form, with any oil content, including, but not limited to:

(1) Slops from bilges;

(2) Slops from oil cargoes (such as cargo tank washings, oily waste, and oily refuse);

(3) Oil residue; and

(4) Oily ballast water from cargo or fuel oil tanks. (source: 33 CFR 151.05).

Oil-to-Sea interface means any seal or surface on ship-board equipment where the design is such that oil or oily mixtures can escape directly into surrounding waters. Oil-to-sea interfaces are found on equipment that is subject to submersion as well as equipment that can extend overboard.

Organism means an animal, including fish and fish eggs and larvae; a plant; a pathogen; a microbe; a virus; a prokaryote (including any archean or bacterium); a fungus; and a protist. (source: CWA section 312(p)(1)(R)).

Pacific region means any Federal or state water adjacent to the State of Alaska, California, Hawaii, Oregon, or Washington; and extending from shore. The term includes the entire exclusive economic zone (as defined in Section 1001 of the Oil Pollution Act of 1990 (33 U.S.C. 2701)) adjacent to each Pacific Region State. (source: CWA section 312(p)(1)(S)).

Port or place of destination means a port or place to which a vessel is bound to anchor, to moor, or be otherwise secured. (source: CWA section 312(p)(1)(T)).

Reception facility refers to any fixed, floating, or mobile facility capable of receiving wastes and residues from ships and fit for that purpose. (source: Modified from MEPC.1/Circ.834/Rev.1).

Render nonviable means, with respect to an organism in ballast water, the action of a ballast water management system that renders the organism permanently incapable of reproduction following treatment. (source: CWA section 312(p)(1)(U)).

Saltwater flush means the addition of as much mid-ocean water into each empty ballast tank of a vessel as is safe for the vessel and crew; and the mixing of the flush water with residual ballast water and sediment through the motion of the vessel; and the discharge of that mixed water, such that the resultant residual water remaining in the tank has the highest salinity possible; and is at least 30 parts per thousand. A saltwater flush may require more than one fill-mix-empty sequence, particularly if only small quantities of water can be safely taken onboard a vessel at one time. (source: CWA section 312(p)(1)(V)).

Scheduled drydocking means hauling out of a vessel or placing a vessel in a drydock or slipway for an examination of all accessible parts of the vessel's underwater hull and all through-hull fittings and does not include emergency drydocking and emergency hull repairs. (source: Modified from 46 CFR 31.10–21).

Seagoing vessel means a vessel in commercial service that operates beyond either the boundary line established by 46 CFR part 7 or 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. It does not include a vessel that navigates exclusively on internal waters. (source: Modified from 33 CFR 151.2005).

Secretary means the Secretary of the department in which the Coast Guard is operating. (source: CWA section 312(p)(1)(W)).

Small vessel or fishing vessel means a vessel with a vessel length that is less than 79 feet; or a fishing vessel, fish processing vessel, or fish tender vessel (as those terms are defined in Section 2101 of title 46, United States Code), regardless of the vessel length. (source: CWA section 312(p)(1)(Y)).

Toxic or hazardous materials means any toxic pollutant as defined in 40 CFR 401.15 or any hazardous material as defined in 49 CFR 171.8.

Underway means a vessel is not at anchor, or made fast to the shore, or aground. (source: 33 CFR 83.03).

Vessel General Permit (VGP) means the permit that is the subject of the notice of final permit issuance entitled ''Final National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges Incidental to the Normal Operation of a Vessel'' (78 FR 21938 (April 12, 2013)). (source: CWA section 312(p)(1)(Z)).

Vessel length means the horizontal distance between the foremost part of a vessel's stem to the aftermost part of its stern, excluding fittings and attachments. (source: 33 CFR 151.05).

Visible sheen means, with respect to oil and oily mixtures, a silvery or metallic sheen or gloss, increased reflectivity, visual color, iridescence, or an oil slick on the surface of the water.

Voyage means any transit by a vessel traveling from or destined for any United States port or place.

§ 139.3 Other Federal laws.

(a) Except as expressly provided in this part, nothing in this part affects the applicability to a vessel of any other provision of Federal law, including:

(1) Sections 311 and 312 of the Federal Water Pollution Control Act (33 U.S.C. 1321 *et seq.* and 33 U.S.C. 1322 *et seq.*), also known as the CWA;

(2) The Act to Prevent Pollution from Ships (33 U.S.C. 1901 *et seq.*);

(3) Title X of the Coast Guard Authorization Act of 2010 (33 U.S.C. 3801 *et seq.*), also known as the Clean Hulls Act;

(4) The Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 *et seq.*); and

(5) The National Marine Sanctuaries Act (16 U.S.C. 1431 *et seq.*) and implementing regulations found at 15 CFR part 922 and 50 CFR part 404.

(b) Nothing in this part affects the authority of the Secretary of Commerce or the Secretary of the Interior to administer any land or waters under the administrative control of the Secretary of Commerce or the Secretary of the Interior, respectively.

(c) Nothing in this part shall be construed to affect, supersede, or relieve the master of any otherwise applicable requirements or prohibitions associated with a vessel's right to innocent passage as provided for under customary international law.

Subpart B—General Standards for Discharges Incidental to the Normal Operation of a Vessel

§ 139.4 General operation and maintenance.

(a) The requirements in paragraph (b) of this section apply to any discharge incidental to the normal operation of a vessel subject to regulation under this part.

(b) Vessels must implement the following practices:

(1) Minimize discharges.

(2) Discharge while underway when practical and as far from shore as practical.

(3) Addition of any materials to a discharge, other than for treatment of the discharge, that is not incidental to the normal operation of the vessel is prohibited.

(4) Dilution of any discharge for the purpose of meeting any standard in this part is prohibited.

(5) Any material used onboard that will be subsequently discharged (*e.g.,* disinfectants, cleaners, biocides, coatings, sacrificial anodes) must:

(i) Be used only in the amount necessary to perform the intended function of that material;

(ii) Not contain any materials banned for use in the United States; and

(iii) If subject to FIFRA registration, be used according to the FIFRA label. Proper use includes labeling requirements for proper application sites, rates, frequency of application, and methods; maintenance; removal; and storage and disposal of wastes and containers.

(6) Any toxic or hazardous materials onboard which might wash overboard or dissolve as a result of contact with precipitation or surface water spray must be stored in appropriately sealed, labeled, and secured containers and be located in areas of the vessel that minimize exposure to ocean spray and precipitation consistent with vessel design, unless the master determines this would interfere with essential vessel operations or safety of the vessel or would violate any applicable regulations that establish specifications for safe transportation, handling, carriage, and storage of toxic or hazardous materials.

(7) Containers holding toxic or hazardous materials must not be overfilled and incompatible materials must not be mixed in containers.

(8) The overboard discharge or disposal of containers with toxic or hazardous materials is prohibited.

(9) Prior to washing the cargo compartment or tank and discharging washwater overboard, any cargo compartment or tank must be in broom clean condition or its equivalent, to minimize any remaining residue from these areas.

(10) Topside surfaces (*e.g.,* exposed decks, hull above waterline, and related appurtenances) must be maintained to minimize the discharge of cleaning compounds, paint chips, non-skid material fragments, and other materials associated with exterior surface preservation.

(11) Painting techniques on topside surfaces must minimize the discharge of paint.

(12) Discharge of unused paint and coatings is prohibited.

(13) Any equipment that may release, drip, leak, or spill oil or oily mixtures, fuel, or other toxic or hazardous materials that may be discharged, including to the bilge, must be maintained to minimize or eliminate the discharge of pollutants.

§ 139.5 Biofouling management.

(a) The requirements in paragraph (b) of this section apply to any vessel subject to regulation under this part.

(b) A vessel-specific biofouling management plan must be developed and followed with a goal to prevent macrofouling, thereby minimizing the potential for the introduction and spread of ANS. A biofouling management plan is a holistic strategy that considers the operational profile of the vessel, identifies the appropriate antifouling systems, and details the biofouling management practices for specific areas of the vessel. The plan elements must prioritize procedures and strategies to prevent macrofouling.

§ 139.6 Oil management.

(a) The requirements in paragraphs (b) through (d) of this section apply to vessel equipment and operations that use or discharge oil or oily mixtures.

(b) The following discharges are prohibited:

(1) Used or spent oil no longer being used for its intended purpose; and

(2) Oil in such quantities as may be harmful.

(c) During fueling, maintenance, and other vessel operations, control and response measures must be used to prevent, minimize, and contain spills and overflows.

(d) An environmentally acceptable lubricant (EAL) must be used in any oil-to-sea interface unless such use is technically infeasible.

Subpart C—Standards for Specific Discharges Incidental to the Normal Operation of a Vessel

§ 139.10 Ballast tanks.

(a) *Applicability.* Except for any vessel otherwise excluded in paragraph (b) of this section, the requirements in paragraphs (b) through (h) of this section apply to any vessel equipped with one or more ballast tanks.

(b) *Exclusions.* The requirements of § 139.10 do not apply to the following vessels:

(1) A vessel that continuously takes on and discharges ballast water in a flow-through system, if the Administrator determines that system cannot materially contribute to the spread or introduction of ANS;

(2) A vessel in the National Defense Reserve Fleet scheduled for disposal, if the vessel does not have an operable BWMS;

(3) A vessel that discharges ballast water consisting solely of water taken onboard from a public or commercial source that, at the time the water is taken onboard, meets the applicable requirements or permit requirements of the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*) or Health Canada's *Guidelines for Canadian Drinking Water Quality;*

(4) A vessel that carries all permanent ballast water in sealed tanks that are not subject to discharge except under emergency circumstances; or

(5) A vessel that only discharges ballast water to a reception facility.

(c) *Ballast Water Best Management Practices (BMPs).* (1) Any vessel equipped with ballast tanks must minimize the discharge and uptake of ANS by adhering to the following practices:

(i) Ballast tanks must be periodically flushed and cleaned to remove sediment and biofouling organisms;

(ii) When practicable and available, high sea suction must be used when in port or where clearance to the bottom of the waterbody is less than 5 meters to the lower edge of the sea chest;

(iii) When practicable, ballast water pumps must be used in port instead of draining by gravity to empty ballast tanks; and

(iv) Any sea chest screen must be maintained and fully intact.

(2) Discharge of any sediment or water from ballast tank cleaning is prohibited.

(3) Discharge or uptake of ballast water must be avoided in areas with coral reefs; discharge and uptake should be conducted as far from coral reefs as possible.

(4) A vessel-specific ballast water management plan must be developed and followed to minimize the potential for the introduction and spread of ANS. A ballast water management plan is a holistic strategy that considers the operational profile of the vessel and the appropriate ballast water management practices and systems.

(d) *Ballast Water Discharge Standard.* Unless exempted in paragraph (d)(3) of this section, any ballast water discharge must meet the following numeric discharge standard:

(1) Biological parameters (expressed as instantaneous maximums).

(i) Organisms greater than or equal to 50 micrometers in minimum dimension: Less than 10 living organisms per cubic meter.

(ii) Organisms less than 50 micrometers and greater than or equal to 10 micrometers: Less than 10 living organisms per milliliter (mL).

(iii) Toxicogenic *Vibrio cholerae* (serotypes O1 and O139): Less than 1 colony forming unit (cfu) per 100 mL.

(iv) *Escherichia coli:* A concentration of less than 250 cfu per 100 mL.

(v) Intestinal enterococci: A concentration of less than 100 cfu per 100 mL.

(2) Biocide parameters (expressed as instantaneous maximums).

(i) Chlorine dioxide: For any discharge from a BWMS using chlorine dioxide, chlorine dioxide must not exceed 200 μg/L.

(ii) Total residual oxidizers: For any discharge from a BWMS using chlorine or ozone, total residual oxidizers must not exceed 100 μg/L.

(iii) Peracetic acid: For any discharge from a BWMS using peracetic acid, peracetic acid must not exceed 500 μg/L.

(iv) Hydrogen peroxide: For any discharge from a BWMS using peracetic acid, hydrogen peroxide must not exceed 1,000 μg/L.

(3) Exemptions: The ballast water discharge standards in paragraphs (d)(1) and (2) of this section do not apply to any vessel that:

(i) Is less than or equal to 3,000 GT ITC (1,600 GRT if GT ITC is not assigned), and does not operate outside of the EEZ;

(ii) Is a non-seagoing, unmanned, unpowered barge, except any barge that is part of a dedicated vessel combination such as an integrated or articulated tug and barge unit;

(iii) Takes on and discharges ballast water exclusively in the contiguous portions of a single COTP Zone;

(iv) Does not travel more than 10 NM and passes through no locks;

(v) Is a vessel 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;

(vi) Is enrolled in the USCG Shipboard Technology Evaluation Program (STEP); or

(vii) Discharges ballast water prior to an applicable ballast water discharge standard compliance date established in regulations promulgated by the Secretary as described in 139.1(d).

(e) *Ballast Water Exchange and Saltwater Flushing.* Except for any vessel identified in paragraph (e)(3), (f), or (g) of this section, prior to an applicable ballast water discharge standard compliance date established in regulations promulgated by the Secretary as described in § 139.1(d), any vessel must meet the requirements in paragraphs (e)(1) and (2) of this section.

(1) Any vessel that carries ballast water taken on in areas less than 200 NM from any shore that will subsequently operate outside the EEZ and more than 200 NM from any shore must:

(i) Conduct ballast water exchange in waters not less than 200 NM from any shore prior to discharging that ballast water; and

(ii) Commence ballast water exchange not less than 200 NM from any shore and as early in the vessel voyage as practicable.

(2) For any ballast tank that is empty or contains unpumpable residual water on a vessel bound for a port or place of destination subject to the jurisdiction of the United States, the master must, prior to arriving at that port or place of destination, either:

(i) Seal the tank so that there is no discharge or uptake and subsequent discharge of ballast water, or

(ii) Conduct a saltwater flush:

(A) Not less than 200 NM from any shore for a voyage originating outside the United States or Canadian EEZ; or

(B) not less than 50 NM from any shore for a voyage originating within the United States or Canadian EEZ.

(3) Exceptions: Paragraphs (e)(1) and (2), do not apply under any of the following circumstances:

(i) If the unpumpable residual waters and sediments of an empty ballast tank were subject to treatment, in compliance with applicable requirements, through a BWMS approved or accepted by the Secretary;

(ii) Except as otherwise required under this part, if the unpumpable residual waters and sediments of an empty ballast tank were sourced solely within:

(A) The same port or place of destination; or

(B) Contiguous portions of a single COTP Zone;

(iii) If complying with an applicable requirement of this paragraph (e):

(A) Would compromise the safety of the vessel; or

(B) Is otherwise prohibited by any Federal, Canadian, or international law (including regulations) pertaining to vessel safety;

(iv) If design limitations of an existing vessel prevent a ballast water exchange or saltwater flush from being conducted in accordance with this paragraph (e); or

(v) If the vessel is operating exclusively within the internal waters of the United States and Canada.

(f) *Vessels entering the Great Lakes.* (1) Ballast Water Exchange—Except as provided in paragraph (f)(2) of this section, any vessel entering the St. Lawrence Seaway through the mouth of the St. Lawrence River must conduct a complete ballast water exchange or saltwater flush:

(i) Not less than 200 NM from any shore for a voyage originating outside the EEZ; or

(ii) Not less than 50 NM from any shore for a voyage originating within the EEZ.

(2) Exceptions: The requirements of paragraph (f)(1) of this section do not apply to any vessel if:

(i) Complying with paragraph (f)(1) of this section:

(A) Would compromise the safety of the vessel; or

(B) Is otherwise prohibited by any Federal, Canadian, or international law (including regulations) pertaining to vessel safety.

(ii) Design limitations of an existing vessel prevent a ballast water exchange from being conducted in accordance with an applicable requirement of paragraph (f)(1) of this section.

(iii) The vessel has no residual ballast water or sediments onboard.

(iv) The vessel retains all ballast water while in waters subject to the requirement.

(v) The empty ballast tanks on the vessel are sealed in a manner that ensures that no discharge or uptake occurs, and any subsequent discharge of ballast water is subject to the requirement.

(g) *Pacific waters.* (1) Ballast Water Exchange:

(i) Except as provided in paragraphs (g)(1)(ii) and (g)(3) of this section, any vessel that operates either between two ports or places of destination within the Pacific Region; or a port or place of destination within the Pacific Region and a port or place of destination on the Pacific Coast of Canada or Mexico north of parallel 20 degrees north latitude, inclusive of the Gulf of California, must conduct a complete ballast water exchange in waters more than 50 NM from shore.

(ii) Exemptions: The requirements of paragraph (g)(1)(i) of this section do not apply to any vessel:

(A) Using, in compliance with applicable requirements, a type-approved BWMS approved or accepted by the Secretary.

(B) Voyaging:

(*1*) Between or to a port or place of destination in the State of Washington, if the ballast water to be discharged from the commercial vessel originated solely from waters located between the parallel 46 degrees north latitude, including the internal waters of the Columbia River, and the internal waters of Canada south of parallel 50 degrees north latitude, including the waters of the Strait of Georgia and the Strait of Juan de Fuca;

(*2*) Between ports or places of destination in the State of Oregon, if the ballast water to be discharged from the commercial vessel originated solely from waters located between the parallel 40 degrees north latitude and the parallel 50 degrees north latitude;

(*3*) Between ports or places of destination in the State of California within the San Francisco Bay area east of the Golden Gate Bridge, including the Port of Stockton and the Port of Sacramento, if the ballast water to be discharged from the commercial vessel originated solely from ports or places within that area;

(*4*) Between the Port of Los Angeles, the Port of Long Beach, and the El Segundo offshore marine oil terminal, if the ballast water to be discharged from the commercial vessel originated solely from the Port of Los Angeles, the Port of Long Beach, or the El Segundo offshore marine oil terminal;

(*5*) Between a port or place of destination in the State of Alaska within a single COTP Zone;

(*6*) Between ports or places of destination in different counties of the State of Hawaii, if the vessel conducts a complete ballast water exchange in waters that are more than 10 NM from shore and at least 200 meters deep; or

(*7*) Between ports or places of destination within the same county of the State of Hawaii, if the vessel does not transit outside state marine waters during the voyage.

(2) Low-Salinity Ballast Water:

(i) Except as provided in paragraphs (g)(2)(ii) and (g)(3) of this section, a complete ballast water exchange must be conducted for any commercial vessel that transports ballast water sourced from waters with a measured salinity of less than 18 parts per thousand and voyages to a Pacific Region port or place of destination with a measured salinity of less than 18 parts per thousand:

(A) Not less than 50 NM from shore, if the ballast water was sourced from a Pacific Region port or place of destination.

(B) More than 200 NM from shore, if the ballast water was not sourced from a Pacific Region port or place of destination.

(ii) Exception: The requirements of paragraph (g)(2)(i) of this section do not apply to any vessel voyaging to a port or place of destination in the Pacific Region that is using, in compliance with applicable requirements, a type-approved BWMS accepted by the Secretary, or a type-approved BWMS approved by the secretary to achieve the following numeric discharge standard for biological parameters (expressed as instantaneous maximums):

(A) Organisms greater than or equal to 50 micrometers in minimum dimension: Less than 1 living organism per 10 cubic meters.

(B) Organisms less than 50 micrometers and greater than or equal to 10 micrometers: Less than 1 living organisms per 100 milliliters (mL).

(C) Toxicogenic *Vibrio cholerae* (serotypes O1 and O139): Less than 1 colony forming unit (cfu) per 100 mL or less than 1 cfu per gram of wet weight of zoological samples.

(D) *Escherichia coli:* Less than 126 cfu per 100 mL.

(E) Intestinal enterococci: Less than 33 cfu per 100 mL.

(3) General Exceptions: The requirements of paragraphs (g)(1) and (2) of this section do not apply to a commercial vessel if:

(i) Complying with the requirement would compromise the safety of the commercial vessel.

(ii) If design limitations of an existing vessel, prevent a ballast water exchange from being conducted in accordance with paragraphs (g)(1) and (2) of this section, as applicable.

(iii) The commercial vessel:

(A) Has no residual ballast water or sediments onboard; or

(B) Retains all ballast water while in waters subject to those requirements.

(iv) Empty ballast tanks on the commercial vessel are sealed in a manner that ensures that:

(A) No discharge or uptake occurs; and

(B) Any subsequent discharge of ballast water is subject to those requirements.

(h) *Federally-protected waters.* Additional standards applicable to discharges from ballast tanks when a vessel is operating in federally-protected waters are contained in § 139.40(b).

§ 139.11 Bilges.

(a) The requirements in paragraphs (b) through (d) of this section apply to discharges from the bilge consisting of water and residue that accumulates in a lower compartment of the vessel's hull below the waterline. This includes any water and residue from a cargo area that comes into contact with oily materials or a below-deck parking area or other storage area for motor vehicles or other motorized equipment.

(b) The discharge of bilgewater from any vessel must not contain any flocculants or other additives except when used with an oily water separator or to maintain or clean equipment. The use of any additives to remove the appearance of a visible sheen is prohibited.

(c) For any vessel of 400 GT ITC (400 GRT if GT ITC is not assigned) and above, the discharge of bilgewater must occur when the vessel is underway.

(d) Additional standards applicable to discharges from bilges when a vessel is operating in federally-protected waters are contained in § 139.40(c).

§ 139.12 Boilers.

(a) The requirements in paragraphs (b) and (c) of this section apply to discharges resulting from boiler blowdown.

(b) The discharge from boiler blowdown must be minimized when in port.

(c) Additional standards applicable to discharges from boilers when a vessel is operating in federally-protected waters are contained in § 139.40(d).

§ 139.13 Cathodic protection.

(a) The requirements in paragraph (b) of this section apply to discharges resulting from a vessel's cathodic corrosion control protection device, including sacrificial anodes and impressed current cathodic protection systems.

(b) Spaces between any flush-fit anode and backing must be filled to remove potential hotspots for biofouling organisms.

§ 139.14 Chain lockers.

(a) The requirements in paragraphs (b) through (e) of this section apply to accumulated precipitation and seawater that is emptied from the compartment used to store the anchor chain on a vessel.

(b) Anchors and anchor chains must be rinsed of biofouling organisms and sediment when the anchor is retrieved.

(c) The discharge of accumulated water and sediment from any chain locker is prohibited in port.

(d) For all vessels that operate beyond the waters of the contiguous zone, anchors and anchor chains must be rinsed of biofouling organisms and sediment prior to entering the waters of the contiguous zone.

(e) Additional standards applicable to a discharge from chain lockers when a vessel is operating in federally-protected waters are contained in § 139.40(e).

§ 139.15 Decks.

(a) The requirements in paragraphs (b) through (i) of this section apply to the overboard discharge of washdown and runoff, including but not limited to precipitation and sea water, from decks, well decks, and bulkhead areas.

(b) Coamings or drip pans must be used for machinery that is expected to leak or otherwise release oil on the deck; accumulated oil must be collected.

(c) Where required by an applicable international treaty or convention or the Secretary, the vessel must be fitted with and use physical barriers (*e.g.,* spill rails, scuppers and scupper plugs) to collect runoff for treatment during any washdown.

(d) Control measures must be used to minimize the introduction of on-deck debris, garbage, residue, and spill into deck washdown and runoff.

(e) Vessel decks must be kept in broom clean condition whenever the vessel is underway and prior to any deck washdown.

(f) Deck washdowns must be minimized in port.

(g) The discharge of floating solids, visible foam, halogenated phenolic compounds, dispersants, surfactants, and spills must be minimized in any deck washdown.

(h) Any soap, cleaner, or detergent used for deck washdown must be minimally-toxic, phosphate-free, and biodegradable.

(i) Additional standards applicable to discharges from decks when a vessel is operating in federally-protected waters are contained in § 139.40(f).

§ 139.16 Desalination and purification systems.

(a) The requirements in paragraph (b) of this section apply to discharges from onboard desalination and purification systems used to generate freshwater from seawater or otherwise purify water.

(b) The discharge resulting from the cleaning of desalination and purification systems with toxic or hazardous materials is prohibited.

§ 139.17 Elevator pits.

(a) The requirements in paragraph (b) of this section apply to the liquid that accumulates in, and is discharged from, the sumps of elevator wells on vessels.

(b) The discharge of untreated accumulated water and sediment from any elevator pit is prohibited.

§ 139.18 Exhaust gas emission control systems.

(a) *Applicability.* The requirements in paragraphs (b) through (e) of this section apply to discharges from the operation and cleaning of any exhaust gas cleaning system (EGCS) and exhaust gas recirculation (EGR) system.

(b) *Discharge requirements.* Unless excluded in paragraph (c) of this section, any discharge identified in paragraph (a) of this section must meet the following discharge requirements.

(1) *pH.* (i) The discharge must meet one of the following requirements:

(A) The discharge must have a pH of no less than 6.5 as measured at the vessel's overboard discharge point with the exception that during maneuvering and transit, the maximum difference of two pH units is allowed between inlet water and overboard discharge values; or

(B) The pH discharge limit is the value that will achieve a minimum pH of 6.5 at 4 meters from the overboard discharge point with the ship stationary. This overboard pH discharge limit is to be determined at the overboard discharge monitoring point and is to be recorded as the vessel's discharge limit. The overboard pH can be determined either by means of direct measurement, or by using a calculation-based methodology (computational fluid dynamics or other equally scientifically established empirical formulas).

(ii) The pH numeric discharge standard may be exceeded for up to 15 minutes in any 12-hour period.

(2) *PAHs (Polycyclic Aromatic Hydrocarbons).*

(i) The maximum continuous PAH concentration in the discharge must be no greater than 50 µg/L PAHphe (phenanthrene equivalence) above the inlet water PAH concentration. The PAH concentration in the discharge must be measured downstream of the water treatment equipment and upstream of any dilution (or other reactant dosing unit, if used).

(ii) The 50 µg/L numeric discharge standard is normalized for a discharge flow rate of 45 tons(t)/MWh where the MW refers to the Maximum Continuous Rating or 80% of the power rating of the fuel oil combustion unit. This numeric discharge standard is adjusted upward or downward for varying discharge flow rates, pursuant to Table 1 to paragraph (b)(2)(ii) of this section.

TABLE 1 TO PARAGRAPH (b)(2)(ii)

Flow rate (t/MWh)	Numeric discharge standard (µg/L PAHphe equivalents)	Measurement technology
0–1	2,250	Ultraviolet light.
2.5	900	Ultraviolet light.
5	450	Fluorescence [a].
11.25	200	Fluorescence.
22.5	100	Fluorescence.
45	50	Fluorescence.
90	25	Fluorescence.

[a] For any Flow Rate greater than 2.5 t/MWh, Fluorescence technology must be used.

(iii) The continuous PAHphe numeric discharge standard may be exceeded by 100% for up to 15 minutes in any 12-hour period.

(3) *Turbidity/suspended particulate matter.*

(i) The washwater treatment system must be designed to minimize suspended particulate matter, including heavy metals and ash.

(ii) The maximum continuous turbidity in the discharge must be no greater than 25 FNU (formazin nephlometric units) or 25 NTU (nephlometric turbidity units) or equivalent units above the inlet water turbidity. However, to account for periods of high inlet turbidity, readings must be a rolling average over a 15-minute period to a maximum of 25 FNU with the discharge measured downstream of the water treatment equipment and upstream of dilution (or reactant dosing, if used).

(iii) The continuous turbidity numeric discharge standard may be exceeded by 20% for up to 15 minutes in any 12-hour period.

(4) *Nitrates:*

(i) The washwater treatment system must prevent the discharge of nitrates beyond that associated with a 12% removal of NO_X from the exhaust, or beyond 60 mg/L normalized for a discharge rate of 45 tons/MWh, whichever is greater.

(c) *Applicability.* The discharges of EGR bleed-off water from vessels that are underway and operating on fuel that meets the emissions requirements for sulfur starting in 2020 as specified in MARPOL Annex VI are excluded from paragraph (b) of this section.

(d) *Prohibition.* The discharge of EGR bleed-off water retained onboard in a holding tank that does not meet the discharge requirements in paragraph (b) of this section, is prohibited.

§ 139.19 Fire protection equipment.

(a) The requirements in paragraphs (b) through (d) of this section apply to the discharge from fire protection equipment. As specified in § 139.1(b)(3), these requirements do not apply to discharges from fire protection equipment when used for emergencies or when compliance with such requirements would compromise the safety of the vessel or life at sea.

(b) The discharge from fire protection equipment during testing, training, maintenance, inspection, or certification, excluding USCG-required inspection and certification, is prohibited in port and must not contain any fluorinated firefighting foam.

(c) Additional requirements applicable to discharges from fire protection equipment when a vessel is operating in federally-protected waters are contained in § 139.40(g).

§ 139.20 Gas turbines.

(a) The requirements in paragraph (b) of this section apply to discharges from the washing of gas turbine components.

(b) The discharge of untreated gas turbine washwater is prohibited unless infeasible.

§ 139.21 Graywater systems.

(a) The requirements in paragraphs (b) through (h) of this section apply to discharges of graywater except for graywater from any commercial vessel on the Great Lakes that is subject to the requirements in 40 CFR part 140 and 33 CFR part 159.

(b) The introduction of kitchen waste, food, oils, and oily residues to the graywater system must be minimized.

(c) Any soaps, cleaners, and detergents discharged in graywater must be minimally-toxic, phosphate-free, and biodegradable.

(d) The discharge of graywater is prohibited from any vessel:

(1) Within 3 NM from shore that voyages at least 3 NM from shore and has remaining available graywater storage capacity, unless the discharge meets the standards in paragraph (f) of this section; and

(2) Within 1 NM from shore that voyages at least 1 NM from shore but not beyond 3 NM from shore and has remaining available graywater storage capacity, unless the discharge meets the standards in paragraph (f) of this section.

(e) The discharge of graywater from the following vessels must meet the numeric discharge standard established in paragraph (f) of this section:

(1) Any new vessel of 400 GT ITC (400 GRT if GT ITC is not assigned) and above;

(2) Any passenger vessel with overnight accommodations for 500 or more passengers;

(3) Any passenger vessel with overnight accommodations for 100–499 passengers unless the vessel was constructed before December 19, 2008, and does not voyage beyond 1 NM from shore; and

(4) Any new ferry authorized by the USCG to carry 250 or more people.

(f) A vessel identified in paragraph (e) of this section that is discharging graywater must meet the following numeric discharge standard:

(1) *Fecal coliform.*

(i) The 30-day geometric mean must not exceed 20 cfu/100 mL (colony forming units/milliliter).

(ii) Greater than 90% of samples must not exceed 40 cfu/100 mL.

(2) *BOD5.*

(i) The 30-day average must not exceed 30 mg/L.

(ii) The 7-day average must not exceed 45 mg/L.

(3) *Suspended solids.*

(i) The 30-day average must not exceed 30 mg/L.

(ii) The 7-day average must not exceed 45 mg/L.

(4) *pH.*

(i) Must be maintained between 6.0 and 9.0.

(ii) [Reserved]

(5) Total residual chlorine.

(i) Must not exceed 10.0 µg/L.

(ii) [Reserved]

(g) The discharge of graywater from any vessel operating on the Great Lakes that is not a commercial vessel must not exceed 200 fecal coliform forming units per 100 milliliters and contain no more than 150 milligrams per liter of suspended solids.

(h) Additional standards applicable to discharges from graywater systems when a vessel is operating in federally-protected waters are contained in § 139.40(h).

§ 139.22 Hulls and associated niche areas.

(a) *Applicability.* The requirements in paragraphs (b) and (c) of this section apply to the discharge of coatings, biofouling organisms, and other materials from vessel hull surfaces and niche areas.

(b) *Coatings.* (1) Coatings applied to the vessel must be specific to the operational profile of the vessel and the equipment to which it is applied, including, for biocidal coatings, having appropriate effective biocide release rates and components that are biodegradable once separated from the vessel surface.

(2) Coatings must be applied, maintained, and reapplied consistent with manufacturer specifications, including the thickness, the method of application, and the lifespan of the coating.

(3) Coatings on vessel hulls and niches must not contain tributyltin (TBT) or any other organotin compound used as a biocide.

(i) Any vessel hull previously covered with a coating containing TBT (whether or not used as a biocide) or any other organotin compound (if used as a biocide) must:

(A) Maintain an effective overcoat on the vessel hull so that no TBT or other organotin leaches from the vessel hull; or

(B) Remove any TBT or other organotin compound from the vessel hull.

(4) When an organotin compound other than TBT is used as a catalyst in the coating (*e.g.,* dibutyltin), the coating must:

(i) Contain less than 2,500 mg total tin per kilogram of dry paint; and

(ii) Not be designed to slough or otherwise peel from the vessel hull, noting that incidental amounts of coating discharged by abrasion during cleaning or after contact with other hard surfaces (*e.g.,* moorings) are acceptable.

(5) Coatings that contain cybutryne must not be applied on vessel hulls and niches.

(i) Any vessel that has previously applied a coating that contains cybutryne to the vessel hull must:

(A) Apply and maintain an effective overcoat of the vessel hull so that no cybutryne leaches from the vessel hull, noting that incidental amounts of coating discharged by abrasion during cleaning or after contact with other hard surfaces (*e.g.,* moorings) are acceptable; or

(B) Remove any cybutryne coating from the vessel hull.

(6) Alternatives to copper-based coatings must be considered for vessels spending 30 or more days per year in a copper-impaired waterbody or using these waters as their home port.

(c) *Cleaning.* (1) Hulls and niche areas must be cleaned regularly to minimize biofouling.

(2) Cleaning techniques must minimize damage to the coating.

(3) Cleaning must not result in a plume or cloud of paint.

(4) In-water cleaning of biofouling that exceeds a fouling rating of FR–20 is prohibited unless one or more of the following conditions are met:

(i) The biofouling is local in origin and cleaning does not result in a plume or cloud of paint; or

(ii) An in-water cleaning and capture (IWCC) system is designed and operated to:

(A) Capture coatings and biofouling organisms;

(B) Filter biofouling organisms from the effluent; and

(C) Minimize the release of biocides.

(5) The discharge of any wastes filtered or otherwise removed from any IWCC system is prohibited.

(6) In-water cleaning of any copper-based hull coatings is prohibited in a copper-impaired waterbody within the first 365 days after application, unless an IWCC system consistent with paragraph (c)(2)(ii) of this section is used.

(7) In-water cleaning must not be conducted on any section of a biocidal antifouling coating that shows excessive cleaning actions (*e.g.,* brush marks) or blistering due to the internal failure of the paint system.

(8) 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.

(9) 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).

§ 139.23 Inert gas systems.

(a) The requirements in paragraph (b) of this section apply to the discharge of washwater from an inert gas system and deck seal water when used as an integral part of that system.

(b) The discharge from inert gas systems must meet the general discharge requirements in subpart B of this part.

§ 139.24 Motor gasoline and compensating systems.

(a) The requirements in paragraphs (b) and (c) of this section apply to the discharge of motor gasoline and compensating ambient water added to keep gasoline tanks full to prevent potentially explosive gasoline vapors from forming.

(b) The discharge of motor gasoline and compensating discharges must meet all general discharge requirements in subpart B of this part.

(c) Additional standards applicable to discharges from motor gasoline and compensating systems when a vessel is operating in federally-protected waters are contained in § 139.40(j).

§ 139.25 Non-oily machinery.

(a) The requirements in paragraph (b) of this section apply to discharges from machinery that contains no oil, including discharges from the operation of desalination systems, water chillers, valve packings, water piping, low- and high-pressure air compressors, propulsion engine jacket coolers, fire pumps, and seawater and potable water pumps.

(b) The discharge of untreated non-oily machinery wastewater and packing gland or stuffing box effluent containing toxic or bioaccumulative additives or the discharge of oil in such quantities as may be harmful is prohibited.

§ 139.26 Pools and spas.

(a) The requirements in paragraphs (b) and (c) of this section apply to discharges from pools and spas.

(b) Except for unintentional or inadvertent releases from overflows across the decks and into overboard drains caused by, but not limited to, weather, vessel traffic, marine wildlife avoidance or navigational maneuvering, discharge of pool and spa water must:

(1) Occur only while the vessel is underway, unless determined to be infeasible, and;

(2) Meet the following numeric discharge standard:

(i) For chlorine disinfection: Total residual chlorine less than 100 µg/L; and

(ii) For bromine disinfection: Total residual oxidant less than 25 µg/L.

(c) Additional standards applicable to discharges from pools and spas when a vessel is operating in federally-protected waters are contained in § 139.40(k).

§ 139.27 Refrigeration and air conditioning.

(a) The requirements in paragraph (b) of this section apply to discharges of condensation from refrigeration, air conditioning, and similar chilling equipment.

(b) The direct overboard discharge of any condensate that contacts toxic or hazardous materials is prohibited.

§ 139.28 Seawater piping.

(a) The requirements in paragraphs (b) and (c) of this section apply to discharges from seawater piping systems that provide water for other vessel uses (*e.g.,* engines, hydraulic systems, and refrigeration), including while a vessel is in port or in layup.

(b) Seawater piping systems, including sea chests, grates, and similar appurtenances, that accumulate biofouling that exceeds a fouling rating of FR–20 must be fitted with a Marine Growth Prevention System (MGPS).

(1) An MGPS must be selected to address:

(i) The level, frequency, and type of biofouling; and

(ii) The design, location, and area in which the system will be used.

(2) An MGPS must include one, or some combination of the following:

(i) Chemical injection;

(ii) Electrolysis, ultrasound, ultraviolet radiation, or electrochlorination;

(iii) Application of an antifouling coating; or

(iv) Use of cupro-nickel piping.

(3) Upon identification of biofouling that exceeds a fouling rating of FR–20 in a seawater piping system, reactive measures to manage the macrofouling must be used. Discharges resulting from reactive measures to remove macrofouling are prohibited in port.

(c) Additional standards applicable to discharges from seawater piping when a vessel is operating in federally-protected waters are contained in § 139.40(l).

§ 139.29 Sonar domes.

(a) The requirements in paragraphs (b) and (c) of this section apply to discharges from sonar domes.

(b) The discharge of water during maintenance or repair from inside the sonar dome is prohibited.

(c) Use of bioaccumulative biocides on the exterior of any sonar dome is prohibited when non-bioaccumulative alternatives are available.

Subpart D—Special Area Requirements

§ 139.40 Federally-protected waters.

(a) *Applicability.* The requirements in paragraphs (b) through (l) of this section are in addition to applicable standards in subparts B and C of this part and apply when a vessel is operating in federally-protected waters.

(b) *Ballast tanks.* The discharge or uptake of ballast water in federally-protected waters must be avoided except for those vessels operating within the boundaries of any national marine sanctuary that preserves shipwrecks or maritime heritage in the Great Lakes, unless the designation documents for such sanctuary do not allow taking up or discharging ballast water in such sanctuary, pursuant to the Howard Coble Coast Guard and Maritime Transportation Act of 2014, as amended by the Coast Guard Reauthorization Act of 2015, Public Law 114–120, title VI, sec 602.

(c) *Bilges.* For any vessel of 400 GT ITC (400 GRT if GT ITC is not assigned) and above, the discharge of bilgewater into federally-protected waters is prohibited.

(d) *Boilers.* The discharge of boiler blowdown into federally-protected waters is prohibited.

(e) *Chain lockers.* The discharge of accumulated water and sediment from any chain locker into federally-protected waters is prohibited.

(f) *Decks.* The discharge of deck washdown into federally-protected waters is prohibited.

(g) *Fire protection equipment.* The discharge from fire protection equipment during testing, training, maintenance, inspection, or certification into federally-protected water is prohibited. The discharge of non-fluorinated firefighting foam into federally-protected waters is prohibited except by any vessel owned or under contract with the United States, state, or local government to do business exclusively in any federally-protected waters.

(h) *Graywater system.* The discharge of graywater into federally-protected waters from any vessel with remaining available graywater storage capacity is prohibited.

(i) *Hulls and associated niche areas.* The discharge from in-water cleaning of vessel hulls and niche areas into federally-protected waters is prohibited.

(j) *Motor gasoline and compensating systems.* The discharge of motor gasoline and compensating discharges into federally-protected waters is prohibited.

(k) *Pools and spas.* The discharge of pool or spa water into federally-protected waters is prohibited.

(l) *Seawater piping systems.* The discharge of chemical dosing, as described in § 139.28, into federally-protected waters is prohibited.

Subpart E—Procedures for States To Request Changes to Standards, Regulations, or Policy Promulgated by the Administrator

§ 139.50 Petition by a Governor for the Administrator to establish an emergency order or review a standard, regulation, or policy.

(a) The Governor of a State (or a designee) may submit a petition to the Administrator:

(1) To issue an emergency order under CWA section 312(p)(4)(e); or

(2) To review any standard of performance, regulation, or policy promulgated by the Administrator under CWA section 312(p)(4) or (6), if there exists new information that could reasonably result in a change to:

(i) The standard of performance, regulation, or policy; or

(ii) A determination on which the standard of performance, regulation, or policy was based.

(b) A petition under paragraph (a) of this section shall be signed by the Governor (or a designee) and must include:

(1) The purpose of the petition (request for emergency order or a review of a standard, regulation, or policy);

(2) Any applicable scientific or technical information that forms the basis of the petition; and

(3) The direct and indirect benefits if the requested petition were to be granted by the Administrator.

(c) The Administrator shall grant or deny:

(1) A petition under paragraph (a)(1) of this section by not later than the date that is 180 days after the date on which the petition is submitted; and

(2) A petition under paragraph (a)(2) of this section by not later than the date that is one year after the date on which the petition is submitted.

(d) If the Administrator determines to grant a petition:

(1) In the case of a petition under paragraph (a)(1) of this section, the Administrator shall immediately issue the relevant emergency order under CWA section 312(p)(4)(E); or

(2) In the case of a petition under paragraph (a)(2) of this section, the Administrator shall submit a Notice of Proposed Rulemaking to the **Federal Register** to revise the relevant standard, requirement, regulation, or policy under

CWA section 312(p)(4) or (6), as applicable.

(e) If the Administrator determines to deny a petition, the Administrator shall submit a notice to the **Federal Register**, that includes a detailed explanation of the scientific, technical, or operational factors that form the basis of the determination.

§ 139.51 Petition by a Governor for the Administrator to establish enhanced Great Lakes system requirements.

(a) The Governors endorsing a proposed standard or requirement under CWA section 312(p)(10)(ii)(III)(bb) may jointly submit to the Administrator for approval each proposed standard of performance or other requirement developed and endorsed pursuant to CWA section 312(p)(10)(ii) with respect to any discharge that is subject to regulation under this part and occurs within the Great Lakes System.

(b) A petition under paragraph (a) of this section must include:

(1) An explanation regarding why the applicable standard of performance or other requirement is at least as stringent as a comparable standard of performance or other requirement under this part;

(2) Information indicating that the standard of performance or other requirement is in accordance with maritime safety; and

(3) Information indicating that the standard of performance or other requirement is in accordance with applicable maritime and navigation laws and regulations.

(c) On receipt of a proposed standard of performance or other requirement under paragraph (b) of this section, the Administrator shall submit, after consultation with USCG, a document to the **Federal Register** that, at minimum:

(1) States that the proposed standard or requirement is publicly available; and

(2) Provides an opportunity for public comment regarding the proposed standard or requirement.

(d) The Administrator shall commence a review of each proposed standard of performance or other requirement covered by the notice to determine whether that standard or requirement is at least as stringent as comparable standards and requirements under this part.

(e) In carrying out paragraph (d) of this section, the Administrator:

(1) Shall consult with the Secretary,

(2) Shall consult with the Governor of each Great Lakes State and representatives from the Federal and provincial governments of Canada;

(3) Shall take into consideration any relevant data or public comments received under paragraph (c)(2) of this section; and

(4) Shall not take into consideration any preliminary assessment by the Great Lakes Commission or any dissenting opinion by a Governor of a Great Lakes State, except to the extent that such an assessment or opinion is relevant to the criteria for the applicable determination under paragraph (d) of this section.

(f) Upon review and determination, the Administrator, in concurrence with the Secretary, shall approve each proposed standard or other requirement, unless the Administrator determines that the proposed standard or other requirement is not at least as stringent as comparable standards and requirements under this part.

(g) If the Administrator approves a proposed standard or other requirement, the Administrator shall submit notification of the determination to the Governor of each Great Lakes State and to the **Federal Register**.

(h) If the Administrator disapproves a proposed standard of performance or other requirement, the Administrator shall submit a notice that must include:

(1) A description of the reasons why the standard or requirement is, as applicable, less stringent than a comparable standard or requirement under this part, and

(2) Any recommendations regarding changes the Governors of the Great Lakes States could make to conform the disapproved portion of the standard or requirement to the requirements of paragraph (b) of this section.

(i) Disapproval of a proposed standard or requirement by the Administrator under paragraph (h) of this section shall be considered to be a final agency action subject to judicial review under section 509.

(j) On approval by the Administrator of a proposed standard of performance or other requirement, the Administrator shall establish, by regulation, the proposed standard or requirement within the Great Lakes System in lieu of any comparable standard or other requirement promulgated under CWA section 312(p)(4).

§ 139.52 Application by a State for the Administrator to establish a State No-Discharge Zone.

(a) If any state determines that the protection and enhancement of the quality of some or all of the waters within the state require greater environmental protection, the Governor of a State (or a designee) may submit a petition to the Administrator to establish a regulation prohibiting one or more discharges, whether treated or not treated, into such waters subject to the application.

(b) A prohibition by the Administrator under paragraph (a) of this section shall not apply until the Administrator, in concurrence with the Secretary, reviews the state application and makes the applicable determinations described in paragraph (d) of this section and publishes a regulation establishing the prohibition.

(c) An application submitted by the state under paragraph (a) of this section shall be signed by the Governor (or a designee) and must include:

(1) A certification that a prohibition of the discharge(s) would protect and enhance the quality of the specific waters within the state to a greater extent than the applicable Federal standard provides;

(2) A detailed analysis of the direct and indirect benefits of the requested prohibition for each individual discharge for which the state is seeking a prohibition;

(3) A table identifying the types and number of vessels operating in the waterbody and a table identifying the types and number of vessels that would be subject to the prohibition;

(4) A table identifying the location, operating schedule, draught requirements, pumpout capacity, pumpout flow rate, and fee structure of each facility capable of servicing the vessels that would be subject to the prohibition and available to receive the prohibited discharge;

(5) A map indicating the location of each facility identified in paragraph (5) within the proposed waters;

(6) A table identifying the location and geographic area of each proposed no-discharge zone; and

(7) A detailed analysis of the impacts to vessels subject to the prohibition, including a discussion of how these vessels may feasibly collect and store the discharge, the extent to which retrofitting may be required, costs that are incurred as a result of the discharge prohibition, and any safety implications.

(d) On application of a State, the Administrator, in concurrence with the Secretary, shall, by regulation, prohibit the discharge from a vessel of one or more discharges subject to regulation under this part, whether treated or not treated, into the waters covered by the application if the Administrator determines that—

(1) The prohibition of the discharge would protect and enhance the quality of the specified waters within the state;

(2) Adequate facilities for the safe and sanitary removal and treatment of the prohibited discharge are reasonably

available, taking costs into consideration, for the water and all vessels to which the prohibition would apply. A determination of adequacy shall consider, at a minimum, water depth, dock size, pumpout facility capacity and flow rate, availability of year-round operations, proximity to navigation routes, and the ratio of pumpout facilities to the population and discharge capacity of vessels operating in those waters;

(3) The discharge can be safely collected and stored until a vessel reaches an appropriate facility or location for discharge;

(4) In the case of an application for the prohibition of the discharge of ballast water in port (or in any other location where cargo, passengers, or fuel are loaded and unloaded):

(i) The considerations for adequate facilities described in paragraph (d)(2) of this section apply; and

(ii) The prohibition will not unreasonably interfere with the safe loading and unloading of cargo, passengers, or fuel.

(e) The Administrator shall submit to the Secretary a request for written concurrence on a determination made to establish a prohibition.

(1) A failure by the Secretary to concur with the Administrator 60 days after the date on which the Administrator submits a request for concurrence shall not prevent the Administrator from prohibiting the discharge or discharges, subject to the condition that the Administrator shall include in the administrative record of the promulgation:

(i) Documentation of the request for concurrence; and

(ii) The response of the Administrator to any written objections received from the Secretary relating to the prohibition during the 60-day period beginning on the date of the request for concurrence.

(f) Upon a determination by the Administrator that an application meets the criteria in paragraph (c) of this section, the Administrator shall approve or disapprove an application submitted by a state.

(g) If the Administrator approves the application, the Administrator shall submit a notice of proposed rulemaking to the **Federal Register**.

(h) A prohibition by the Administrator under paragraph (a) of this section shall not apply until the Administrator publishes a final rule establishing the prohibition.

Appendix A to Part 139—Federally-Protected Waters [1]

A.1 National Marine Sanctuaries

American Samoa National Marine Sanctuary
Channel Islands National Marine Sanctuary
Cordell Bank National Marine Sanctuary
Florida Keys National Marine Sanctuary
Flower Garden Banks National Marine Sanctuary
Gray's Reef National Marine Sanctuary
Greater Farallones National Marine Sanctuary
Hawaii Humpback Whale National Marine Sanctuary
Mallows Bay-Potomac River National Marine Sanctuary
Monitor National Marine Sanctuary
Monterey Bay National Marine Sanctuary
Olympic Coast National Marine Sanctuary
Stellwagen Bank National Marine Sanctuary
Thunder Bay National Marine Sanctuary

A.2 Marine National Monuments

Mariana Trench Marine National Monument
Northeast Canyons and Seamounts Marine National Monument
Pacific Remote Islands Marine National Monument
Papahānaumokuākea Marine National Monument
Rose Atoll Marine National Monument

A.3 National Parks (National Reserves and Monuments)

Alabama

Birmingham Civil Rights National Monument
Horseshoe Bend National Military Park
Freedom Riders National Monument
Little River Canyon National Preserve
Muscle Shoals National Heritage Area
Russell Cave National Monument
Trail of Tears National Historic Trail
Tuskegee Airmen National Historic Site

Alaska

Aleutian World War II National Historic Area
Aniakchak National Monument & Preserve
Bering Land Bridge National Preserve
Cape Krusenstern National Monument
Denali National Park & Preserve
Gates of the Artic National Park & Preserve
Glacier Bay National Park & Preserve
Katmai National Park & Preserve
Kenai Fjords National Park
Klondike Gold Rush National Historical Park
Kobuk Valley National Park
Lake Clark National Park & Preserve
Noatak National Preserve
Sitka National Historical Park
Wrangell—St Elias National Park & Preserve
Yukon—Charley Rivers National Preserve

American Samoa

National Park of America Samoa

Arizona

Canyon de Chelly National Monument
Casa Grande Ruins National Monument
Chiricahua National Monument
Glen Canyon National Recreation Area
Grand Canyon National Park
Hohokam Pima National Monument
Lake Mead National Recreation Area
Montezuma Castle National Monument
Navajo National Monument
Organ Pipe Cactus National Monument
Parashant National Monument
Petrified Forest National Park
Pipe Spring National Monument
Saguaro National Park
Sunset Crater Volcano National Monument
Tonto National Monument
Tumacacori National Historical Park
Tuzigoot National Monument
Walnut Canyon National Monument
Wupatki National Monument
Yuma Crossing National Heritage Area

Arkansas

Hot Springs National Park
Pea Ridge National Military Park
Trail of Tears National Historic Trail

California

Alcatraz Island
Cabrillo National Monument
Castle Mountains National Monument
Cesar E. Chavez National Monument
Channel Islands National Park
Death Valley National Park
Devils Postpile National Monument
Fort Point National Historic Site
Golden Gate National Recreation Area
John Muir National Historic Site
Joshua Tree National Park
Lassen Volcanic National Park
Lava Beds National Monument
Mojave National Preserve
Muir Woods National Monument
Pinnacles National Park
Point Reyes National Seashore
Redwood National Park
Rosie the Riveter WWII Home Front National Historical Park
San Francisco Maritime National Historical Park
Santa Monica Mountains National Recreation Area
Sequoia & Kings Canyon National Parks
Tule Lake National Monument
Whiskeytown National Recreation Area
Yosemite National Park

Colorado

Bent's Old Fort National Historical Site
Black Canyon of The Gunnison National Park
Colorado National Monument
Curecanti National Recreation Area
Dinosaur National Monument
Florissant Fossil Beds National Monument
Great Sand Dunes National Park & Preserve
Hovenweep National Monument
Mesa Verde National Park
Rocky Mountain National Park
Santa Fe National Historic Trail
Yucca House National Monument

Connecticut

Quinebaug & Shetucket Rivers Valley National Heritage Corridor

Delaware

Captain John Smith Chesapeake National Historic Trail
First State National Historical Park

District of Columbia

Anacostia Park
Capitol Hill Parks
Captain John Smith Chesapeake National Historic Trail
Chesapeake & Ohio Canal National Historical Park
Chesapeake Bay Gateways Network
Kenilworth Park & Aquatic Gardens
Meridian Hill Park
National Capital Parks-East

National Mall & Memorial Parks
Potomac Heritage National Scenic Trail

Florida

Big Cypress National Preserve
Biscayne National Park
Canaveral National Seashore
Castillo De San Marcos National Monument
De Soto National Memorial
Dry Tortugas National Park
Everglades National Park
Fort Caroline National Memorial
Fort Matanzas National Monument
Gulf Islands National Seashore
Timucuan Ecological and Historical Preserve

Georgia

Augusta Canal National Heritage Area
Chattahoochee River National Recreation Area
Chickamauga & Chattanooga National Military Park
Cumberland Island National Seashore
Fort Frederica National Monument
Fort Pulaski National Monument
Jimmy Carter National Historic Site
Martin Luther King, Jr. National Historical Park
Ocmulgee National Historical Park

Guam

War in The Pacific National Historical Park

Hawaii

Haleakala National Park
Hawai'i Volcanoes National Park
Kalaupapa National Historical Park
Kaloko-Honokohau National Historical Park
Pu'uhonua O Honaunau National Historical Park
Puukohola Heiau National Historical Site

Idaho

City of Rocks National Reserve
Craters Of The Moon National Monument and Preserve
Hagerman Fossil Beds National Monument
Lewis & Clark National Historic Trail
Minidoka Internment National Monument
Nez Perce National Historical Park
Yellowstone National Park

Illinois

Lewis & Clark National Historic Trail
Pullman National Monument
Trail Of Tears National Historic Trail

Indiana

George Rogers Clark National Historical Park
Indiana Dunes National Park
Lincoln Boyhood National Memorial

Iowa

Effigy Mounds National Monument
Lewis & Clark National Historic Trail

Kansas

Lewis & Clark National Historic Trail
Tallgrass Prairie National Preserve

Kentucky

Abraham Lincoln Birthplace National Historical Park
Big South Fork National River and Recreation Area
Camp Nelson National Monument
Cumberland Gap National Historical Park
Mammoth Cave National Park
Trail Of Tears National Historic Trail

Louisiana

Cane River National Heritage Area
Cane River Creole National Historical Park
Jean Lafitte National Historical Park and Preserve
New Orleans Jazz National Historical Park
Poverty Point National Monument

Maine

Acadia National Park
Katahdin Woods and Waters National Monument
Roosevelt Campobello International Park
Saint Croix Island International Historic Site

Maryland

Antietam National Battlefield
Assateague Island National Seashore
Captain John Smith Chesapeake National Historic Trail
Catoctin Mountain Park
Chesapeake & Ohio Canal National Historical Park
Chesapeake Bay Gateways Network
Clara Barton National Historic Site
Fort Foote Park
Fort McHenry National Monument and Historic Shrine
Fort Washington Park
Glen Echo Park
Greenbelt Park
Harmony Hall
Harpers Ferry National Historical Park
Harriet Tubman Underground Railroad National Historical Park
Monocacy National Battlefield
Oxon Cove Park & Oxon Hill Farm
Piscataway Park
Potomac Heritage National Scenic Trail
Thomas Stone National Historic Site

Massachusetts

Adams National Historical Park
Blackstone River Valley National Heritage Corridor
Boston National Historical Park
Boston African American National Historic Site
Boston Harbor Islands National Recreation Area
Cape Cod National Seashore
Essex National Heritage Area
Lowell National Historical Park
Minute Man National Historic Site
New Bedford Whaling National Historical Park
Salem Maritime National Historic Site
Saugus Iron Works National Historic Site
Springfield Armory National Historic Site

Michigan

Isle Royale National Park
Keweenaw National Historical Park
Pictured Rocks National Lakeshore
Sleeping Bear Dunes National Lakeshore

Minnesota

Grand Portage National Monument
Mississippi National River and Recreation Area
Pipestone National Monument
Saint Croix National Scenic Riverway
Voyageurs National Park

Mississippi

Gulf Islands National Seashore
Natchez National Historical Park
Natchez Trace National Scenic Trail

Missouri

Gateway Arch National Park
George Washington Carver National Monument
Jefferson National Expansion Memorial
Lewis & Clark National Historic Trail
Ozark National Scenic Riverways
Sainte Genevieve National Historical Park
Trail Of Tears National Historic Trail
Wilson's Creek National Battlefield

Montana

Bighorn Canyon National Recreation Area
Glacier National Park
Lewis & Clark National Historic Trail
Little Bighorn Battlefield National Monument
Nez Perce National Historical Park
Yellowstone National Park

Nebraska

Agate Fossil Beds National Monument
Homestead National Monument of America
Lewis & Clark National Historic Trail
Niobrara National Scenic River
Scotts Bluff National Monument

Nevada

Death Valley National Park
Great Basin National Park
Lake Mead National Recreation Area
Tule Springs Fossil Beds

New Hampshire

Saint-Gaudens National Historical Park

New Jersey

Appalachian National Scenic Trail
Delaware National Scenic River
Delaware Water Gap National Recreation Area
Ellis Island National Monument
Gateway National Recreation Area
Great Egg Harbor River
Lower Delaware National Wild and Scenic River
Morristown National Historical Park
New Jersey Pinelands National Reserve
Paterson Great Falls National Historical Park
Thomas Edison National Historical Park

New Mexico

Aztec Ruins National Monument
Bandelier National Monument
Capulin Volcano National Monument
Carlsbad Caverns National Park
Chaco Culture National Historical Park
El Malpais National Monument
El Morro National Monument
Fort Union National Monument
Gila Cliff Dwellings National Monument
Manhattan Project National Historical Park
Pecos National Historical Park
Petroglyph National Monument
Salinas Pueblo Missions National Monument
Valles Caldera National Preserve
White Sands National Park

New York

African Burial Ground National Monument
Castle Clinton National Monument
Chesapeake Bay Gateways Network
Ellis Island National Monument

Erie Canalway National Heritage Corridor
Fire Island National Seashore
Fort Stanwix National Monument
Gateway National Recreation Area
Governors Island National Monument
Harriet Tubman National Historical Park
Hudson River Valley National Heritage Area
National Parks of New York Harbor
Saratoga National Historical Park
Statue Of Liberty National Monument
Stonewall National Monument
Upper Delaware Scenic and Recreational River
Women's Rights National Historical Park

North Carolina

Blue Ridge National Heritage Area
Cape Hatteras National Seashore
Cape Lookout National Seashore
Great Smoky Mountains National Park
Wright Brothers National Monument

North Dakota

Fort Union Trading Post National Historic Site
Lewis & Clark National Historic Trail
Theodore Roosevelt National Park

Northern Mariana Islands

American Memorial Park

Ohio

Charles Young Buffalo Soldiers National Monument
Cuyahoga Valley National Park
Dayton Aviation Heritage National Historical Park
Hopewell Culture National Historical Park
Perry's Victory & International Peace Memorial

Oklahoma

Chickasaw National Recreation Area
Trail Of Tears National Historic Trail

Oregon

Crater Lake National Park
Fort Vancouver National Historic Site
John Day Fossil Beds National Monument
Lewis & Clark National Historic Trail
Lewis and Clark National Historical Park
Nez Perce National Historical Park
Oregon Caves National Monument

Pennsylvania

Chesapeake Bay Gateways Network
Delaware National Scenic River
Delaware & Lehigh National Heritage Corridor
Delaware Water Gap National Recreation Area
First State National Historical Park
Independence National Historical Park
Johnstown Flood National Memorial
Lackawanna Heritage Valley
Lower Delaware National Wild and Scenic River
Potomac Heritage National Scenic Trail
Rivers Of Steel National Heritage Area
Schuylkill River Valley National Heritage Area
Upper Delaware Scenic and Recreational River
Valley Forge National Historical Park

Rhode Island

Blackstone River Valley National Historical Park

South Carolina

Congaree National Park
Fort Moultrie National Monument
Fort Sumter National Historical Park

South Dakota

Badlands National Park
Jewel Cave National Monument
Lewis & Clark National Historic Trail
Missouri Recreational River
Wind Cave National Park

Tennessee

Big South Fork National River and Recreation Area
Cumberland Gap National Historical Park
Great Smoky Mountains National Park
Manhattan Project National Historical Park
Obed Wild and Scenic River

Texas

Alibates Flint Quarries National Monument
Amistad National Recreation Area
Big Bend National Park
Big Thicket National Preserve
Chamizal National Memorial
Guadalupe Mountains National Park
Lake Meredith National Recreation Area
Lyndon B Johnson National Historical Park
Padre Island National Seashore
Rio Grande Wild and Scenic River
San Antonio Missions National Historical Park
Waco Mammoth National Monument

Utah

Arches National Park
Bryce Canyon National Park
Canyonlands National Park
Capitol Reef National Park
Cedar Breaks National Monument
Dinosaur National Monument
Glen Canyon National Recreation Area
Golden Spike National Historical Park
Hovenweep National Monument
Natural Bridges National Monument
Rainbow Bridge National Monument
Timpanogos Cave National Monument
Zion National Park

Vermont

Marsh-Billings-Rockefeller National Historical Park

Virgin Islands

Buck Island Reef National Monument
Salt River Bay National Historical Park and Ecological Reserve
Virgin Islands National Park
Virgin Islands Coral Reef National Monument

Virginia

Appomattox Court House National Historical Park
Assateague Island National Seashore
Booker T Washington National Monument
Cape Henry Memorial
Captain John Smith Chesapeake National Historic Trail
Cedar Creek & Belle Grove National Historical Park
Chesapeake Bay Gateways Network
Colonial National Historical Park
Cumberland Gap National Historical Park
Fort Monroe National Monument
Fredericksburg & Spotsylvania National Military Park
George Washington Birthplace National Monument
Great Falls Park
Harpers Ferry National Historical Park
Historic Jamestowne
Lyndon Baines Johnson Memorial Grove on the Potomac
Potomac Heritage National Scenic Trail
Prince William Forest Park
Shenandoah National Park
Theodore Roosevelt Island Park
Yorktown Battlefield

Washington

Ebey's Landing National Historical Reserve
Fort Vancouver National Historic Site
Lake Chelan National Recreation Area
Lake Roosevelt National Recreation Area
Lewis & Clark National Historic Park
Manhattan Project National Historical Park
Mount Rainier National Park
Nez Perce National Historical Park
North Cascades National Park
Olympic National Park
Ross Lake National Recreation Area
San Juan Island National Historical Park

West Virginia

Bluestone National Scenic River
Chesapeake Bay Gateways Network
Gauley River National Recreation Area
Harpers Ferry National Historical Park
New River Gorge National River

Wisconsin

Apostle Islands National Lakeshore
Saint Croix National Scenic Riverway

Wyoming

Bighorn Canyon National Recreation Area
Devils Tower National Monument
Fossil Butte National Monument
Grand Teton National Park
Yellowstone National Park

A.4 National Wildlife Refuges

Refuges that have boundaries in multiple states are listed only in the state where the main visitor entrance is located. Maps of each national wildlife refuge are available at *https://www.fws.gov/refuges.*

Alabama

Bon Secour National Wildlife Refuge
Cahaba River National Wildlife Refuge
Choctaw National Wildlife Refuge
Eufaula National Wildlife Refuge
Fern Cave National Wildlife Refuge
Key Cave National Wildlife Refuge
Mountain Longleaf National Wildlife Refuge
Sauta Cave National Wildlife Refuge
Watercress Darter National Wildlife Refuge
Wheeler National Wildlife Refuge

Alaska

Alaska Maritime National Wildlife Refuge
Alaska Peninsula National Wildlife Refuge
Arctic National Wildlife Refuge
Becharof National Wildlife Refuge
Innoko National Wildlife Refuge
Izembek National Wildlife Refuge
Kanuti National Wildlife Refuge
Kenai National Wildlife Refuge
Kodiak National Wildlife Refuge
Koyukuk National Wildlife Refuge
Nowitna National Wildlife Refuge
Selawik National Wildlife Refuge

Tetlin National Wildlife Refuge
Togiak National Wildlife Refuge
Yukon Delta Flats National Wildlife Refuge
Yukon Delta National Wildlife Refuge

Arizona

Bill Williams River National Wildlife Refuge
Buenos Aires National Wildlife Refuge
Cabeza Prieta National Wildlife Refuge
Cibola National Wildlife Refuge
Havasu National Wildlife Refuge
Imperial National Wildlife Refuge
Kofa National Wildlife Refuge
Leslie Canyon National Wildlife Refuge
San Bernardino National Wildlife Refuge

Arkansas

Bald Knob National Wildlife Refuge
Big Lake National Wildlife Refuge
Cache River National Wildlife Refuge
Felsenthal National Wildlife Refuge
Holla Bend National Wildlife Refuge
Logan Cave National Wildlife Refuge
Overflow National Wildlife Refuge
Pond Creek National Wildlife Refuge
Wapanocca National Wildlife Refuge
White River National Wildlife Refuge

California

Antioch Dunes National Wildlife Refuge
Bitter Creek National Wildlife Refuge
Blue Ridge National Wildlife Refuge
Butte Sink Wildlife Management Area
Castle Rock National Wildlife Refuge
Clear Lake National Wildlife Refuge
Coachella Valley National Wildlife Refuge
Colusa National Wildlife Refuge
Delevan National Wildlife Refuge
Don Edwards San Francisco Bay National Wildlife Refuge
Ellicott Slough National Wildlife Refuge
Farallon Islands National Wildlife Refuge
Grasslands Wildlife Management Area
Grulla National Wildlife Refuge
Hopper Mountain National Wildlife Refuge
Humboldt Bay National Wildlife Refuge
Kern National Wildlife Refuge
Kesterton National Wildlife Refuge
Lower Klamath National Wildlife Refuge
Marin Islands National Wildlife Refuge
Merced National Wildlife Refuge
Modoc National Wildlife Refuge
North Central Valley Wildlife Management Area
Pixley National Wildlife Refuge
Sacramento National Wildlife Refuge
Sacramento River National Wildlife Refuge
Salinas River National Wildlife Refuge
San Diego Bay National Wildlife Refuge
San Diego National Wildlife Refuge
San Joaquin River National Wildlife Refuge
San Luis National Wildlife Refuge
San Pablo Bay National Wildlife Refuge
Seal Beach National Wildlife Refuge
Sonny Bono Salton Sea National Wildlife Refuge
Stone Lakes National Wildlife Refuge
Sutter National Wildlife Refuge
Tijuana Slough National Wildlife Refuge
Tule Lake National Wildlife Refuge
Willow Creek-Lurline Wildlife Management Area
Windom Wetland Management District

Colorado

Alamosa National Wildlife Refuge
Arapaho National Wildlife Refuge
Baca National Wildlife Refuge
Browns Park National Wildlife Refuge
Monte Vista National Wildlife Refuge
Rocky Flats National Wildlife Refuge
Rocky Mountain Arsenal National Wildlife Refuge
Two Ponds National Wildlife Refuge

Connecticut

Stewart B. McKinney National Wildlife Refuge

Delaware

Bombay Hook National Wildlife Refuge
Prime Hook National Wildlife Refuge

Florida

Archie Carr National Wildlife Refuge
Arthur R. Marshall Loxahatchee National Wildlife Refuge
Caloosahatchee National Wildlife Refuge
Cedar Keys National Wildlife Refuge
Chassahowitzka National Wildlife Refuge
Crocodile Lake National Wildlife Refuge
Crystal River National Wildlife Refuge
Egmont Key National Wildlife Refuge
Everglades Headwaters NWR and Conservation Area
Florida Panther National Wildlife Refuge
Great White Heron National Wildlife Refuge
Hobe Sound National Wildlife Refuge
Island Bay National Wildlife Refuge
J.N. ''Ding'' Darling National Wildlife Refuge
Key West National Wildlife Refuge
Lake Wales Ridge National Wildlife Refuge
Lake Woodruff National Wildlife Refuge
Lower Suwannee National Wildlife Refuge
Matlacha Pass National Wildlife Refuge
Merritt Island National Wildlife Refuge
National Key Deer Refuge
Passage Key National Wildlife Refuge
Pelican Island National Wildlife Refuge
Pine Island National Wildlife Refuge
Pinellas National Wildlife Refuge
St. Johns National Wildlife Refuge
St. Marks National Wildlife Refuge
St. Vincent National Wildlife Refuge
Ten Thousand Islands National Wildlife Refuge

Georgia

Banks Lake National Wildlife Refuge
Blackbeard Island National Wildlife Refuge
Bond Swamp National Wildlife Refuge
Harris Neck National Wildlife Refuge
Okefenokee National Wildlife Refuge
Piedmont National Wildlife Refuge
Wassaw National Wildlife Refuge
Wolf Island National Wildlife Refuge

Guam

Guadalupe-Nipomo Dunes National Wildlife Refuge

Hawaii

Hailstone National Wildlife Refuge
Hakalau Forest National Wildlife Refuge
Hanalei National Wildlife Refuge
Hawaiian Islands National Wildlife Refuge
Hule'ia National Wildlife Refuge
James Campbell National Wildlife Refuge
Kakahaia National Wildlife Refuge
Kealia Pond National Wildlife Refuge
Kilauea Point National Wildlife Refuge
Oahu Forest National Wildlife Refuge
Pearl Harbor National Wildlife Refuge
Rose Atoll National Wildlife Refuge

Idaho

Bear Lake National Wildlife Refuge
Camas National Wildlife Refuge
Deer Flat National Wildlife Refuge
Grays Lake National Wildlife Refuge
Kootenai National Wildlife Refuge
Minidoka National Wildlife Refuge
Oxford Slough Waterfowl Production Area

Illinois

Chautauqua National Wildlife Refuge
Crab Orchard National Wildlife Refuge
Cypress Creek National Wildlife Refuge
Emiquon National Wildlife Refuge
Hagerman National Wildlife Refuge
Kankakee NWR and Conservation Area
Meredosia National Wildlife Refuge
Middle Mississippi River National Wildlife Refuge
Two Rivers National Wildlife Refuge

Indiana

Big Oaks National Wildlife Refuge
Muscatatuck National Wildlife Refuge
Patoka River National Wildlife Refuge and Wildlife Management Area

Iowa

DeSoto National Wildlife Refuge
Driftless Area National Wildlife Refuge
Iowa Wetland Management District
Neal Smith National Wildlife Refuge
Port Louisa National Wildlife Refuge
Union Slough National Wildlife Refuge

Kansas

Flint Hills National Wildlife Refuge
Kirwin National Wildlife Refuge
Marais des Cygnes National Wildlife Refuge
Quivira National Wildlife Refuge

Kentucky

Clarks River National Wildlife Refuge
Green River National Wildlife Refuge

Louisiana

Atchafalaya National Wildlife Refuge
Bayou Cocodrie National Wildlife Refuge
Bayou Sauvage National Wildlife Refuge
Bayou Teche National Wildlife Refuge
Big Branch Marsh National Wildlife Refuge
Black Bayou Lake National Wildlife Refuge
Bogue Chitto National Wildlife Refuge
Breton National Wildlife Refuge
Cameron Prairie National Wildlife Refuge
Cat Island National Wildlife Refuge
Catahoula National Wildlife Refuge
D'Arbonne National Wildlife Refuge
Delta National Wildlife Refuge
Grand Cote National Wildlife Refuge
Handy Brake National Wildlife Refuge
Lacassine National Wildlife Refuge
Lake Ophelia National Wildlife Refuge
Louisiana Wetland Management District
Mandalay National Wildlife Refuge
Red River National Wildlife Refuge
Sabine National Wildlife Refuge
Shell Keys National Wildlife Refuge
Tensas River National Wildlife Refuge
Upper Ouachita National Wildlife Refuge

Maine

Aroostook National Wildlife Refuge
Carlton Pond Waterfowl Production Area
Cross Island National Wildlife Refuge
Franklin Island National Wildlife Refuge

Maine Coastal Islands National Wildlife Refuge
Moosehorn National Wildlife Refuge
Petit Manan National Wildlife Refuge
Pond Island National Wildlife Refuge
Rachel Carson National Wildlife Refuge
Seal Island National Wildlife Refuge
Sunkhaze Meadows National Wildlife Refuge

Maryland

Blackwater National Wildlife Refuge
Eastern Neck National Wildlife Refuge
Glenn Martin National Wildlife Refuge
Patuxent Research Refuge
Susquehanna River National Wildlife Refuge

Massachusetts

Assabet River National Wildlife Refuge
Great Meadows National Wildlife Refuge
Mashpee National Wildlife Refuge
Massasoit National Wildlife Refuge
Monomoy National Wildlife Refuge
Nantucket National Wildlife Refuge
Nomans Land Island National Wildlife Refuge
Oxbow National Wildlife Refuge
Parker River National Wildlife Refuge
Silvio O. Conte National Fish & Wildlife Refuge
Thacher Island National Wildlife Refuge

Michigan

Detroit River International Wildlife Refuge
Harbor Island National Wildlife Refuge
Huron National Wildlife Refuge
Kirtlands Warbler Wildlife Management Area
Michigan Islands National Wildlife Refuge
Michigan Wetland Management District
Seney National Wildlife Refuge
Shiawassee National Wildlife Refuge

Minnesota

Agassiz National Wildlife Refuge
Big Stone National Wildlife Refuge
Big Stone Wetland Management District
Crane Meadows National Wildlife Refuge
Detroit Lakes Wetland Management District
Fergus Falls Wetland Management District
Glacial Ridge National Wildlife Refuge
Hamden Slough National Wildlife Refuge
Litchfield Wetland Management District
Mille Lacs National Wildlife Refuge
Minnesota Valley National Wildlife Refuge
Minnesota Valley Wetland Management District
Morris Wetland Management District
Northern Tallgrass Prairie National Wildlife Refuge
Rice Lake National Wildlife Refuge
Rydell National Wildlife Refuge
Sherburne National Wildlife Refuge
Tamarac National Wildlife Refuge
Tamarac Wetland Management District
Upper Mississippi River National Wildlife & Fish Refuge

Mississippi

Coldwater River National Wildlife Refuge
Dahomey National Wildlife Refuge
Grand Bay National Wildlife Refuge
Hillside National Wildlife Refuge
Holt Collier National Wildlife Refuge
Mathews Brake National Wildlife Refuge
Mississippi Sandhill Crane National Wildlife Refuge
Morgan Brake National Wildlife Refuge
Panther Swamp National Wildlife Refuge
Sam D. Hamilton Noxubee National Wildlife Refuge
St. Catherine Creek National Wildlife Refuge
Tallahatchie National Wildlife Refuge
Theodore Roosevelt National Wildlife Refuge
Yazoo National Wildlife Refuge

Missouri

Big Muddy National Fish & Wildlife Refuge
Clarence Cannon National Wildlife Refuge
Great River National Wildlife Refuge
Loess Bluffs National Wildlife Refuge
Mingo National Wildlife Refuge
Ozark Cavefish National Wildlife Refuge
Pilot Knob National Wildlife Refuge
Swan Lake National Wildlife Refuge

Montana

Benton Lake National Wildlife Refuge
Benton Lake Wetland Management District
Black Coulee National Wildlife Refuge
Bowdoin National Wildlife Refuge
Bowdoin Wetland Management District
Charles M. Russell National Wildlife Refuge
Creedman Coulee National Wildlife Refuge
Grass Lake NWR
Hackmatack National Wildlife Refuge
Hewitt Lake National Wildlife Refuge
Lake Mason National Wildlife Refuge
Lake Thibadeau National Wildlife Refuge
Lee Metcalf National Wildlife Refuge
Lost Trail National Wildlife Refuge
Medicine Lake National Wildlife Refuge
National Bison Range
Nine-pipe National Wildlife Refuge
Northeast Montana Wetland Management District
Northwest Montana Wetland Management District
Red Rock Lakes National Wildlife Refuge
Swan River National Wildlife Refuge
UL Bend National Wildlife Refuge
War Horse National Wildlife Refuge

Nebraska

Boyer Chute National Wildlife Refuge
Crescent Lake National Wildlife Refuge
Fort Niobrara National Wildlife Refuge
John W. and Louise Seier National Wildlife Refuge
North Platte National Wildlife Refuge
Rainwater Basin Wetland Management District
Valentine National Wildlife Refuge

Nevada

Anaho Island National Wildlife Refuge
Ash Meadows National Wildlife Refuge
Desert National Wildlife Range
Fallon National Wildlife Refuge
Moapa Valley National Wildlife Refuge
Pahranagat National Wildlife Refuge
Ruby Lake National Wildlife Refuge
Sheldon National Wildlife Refuge
Stillwater National Wildlife Refuge

New Hampshire

Great Bay National Wildlife Refuge
John Hay National Wildlife Refuge
Umbagog National Wildlife Refuge
Wapack National Wildlife Refuge

New Jersey

Cape May National Wildlife Refuge
Edwin B. Forsythe National Wildlife Refuge
Great Swamp National Wildlife Refuge
Supawna Meadows National Wildlife Refuge
Wallkill River National Wildlife Refuge

New Mexico

Bitter Lake National Wildlife Refuge
Bosque del Apache National Wildlife Refuge
Las Vegas National Wildlife Refuge
Maxwell National Wildlife Refuge
Rio Mora National Wildlife Refuge and Conservation Area
San Andres National Wildlife Refuge
Sevilleta National Wildlife Refuge
Valle De Oro National Wildlife Refuge

New York

Amagansett National Wildlife Refuge
Conscience Point National Wildlife Refuge
Elizabeth A. Morton National Wildlife Refuge
Great Thicket National Wildlife Refuge
Iroquois National Wildlife Refuge
Montezuma National Wildlife Refuge
Oyster Bay National Wildlife Refuge
Seatuck National Wildlife Refuge
Shawangunk Grasslands National Wildlife Refuge
Target Rock National Wildlife Refuge
Wallkill River National Wildlife Refuge
Wertheim National Wildlife Refuge

North Carolina

Alligator River National Wildlife Refuge
Cedar Island National Wildlife Refuge
Currituck National Wildlife Refuge
Mackay Island National Wildlife Refuge
Mattamuskeet National Wildlife Refuge
Mountain Bogs National Wildlife Refuge
Pea Island National Wildlife Refuge
Pee Dee National Wildlife Refuge
Pocosin Lakes National Wildlife Refuge
Roanoke River National Wildlife Refuge
Swanquarter National Wildlife Refuge

North Dakota

Arrowwood National Wildlife Refuge
Arrowwood Wetland Management District
Audubon National Wildlife Refuge
Audubon Wetland Management District
Chase Lake National Wildlife Refuge
Chase Lake Wetland Management District
Crosby Wetland Management District
Dakota Tallgrass Prairie Wildlife Management Area
Des Lacs National Wildlife Refuge
Devils Lake Wetland Management District
Florence Lake National Wildlife Refuge
J. Clark Salyer National Wildlife Refuge
J. Clark Salyer Wetland Management District
Kellys Slough National Wildlife Refuge
Kulm Wetland Management District
Lake Alice National Wildlife Refuge
Lake Ilo National Wildlife Refuge
Lake Nettie National Wildlife Refuge
Lake Zahl National Wildlife Refuge
Long Lake National Wildlife Refuge
Long Lake Wetland Management District
Lostwood National Wildlife Refuge
Lostwood Wetland Management District
McLean National Wildlife Refuge
Shell Lake National Wildlife Refuge
Slade National Wildlife Refuge
Stewart Lake National Wildlife Refuge
Sullys Hill National Game Preserve
Tewaukon National Wildlife Refuge
Tewaukon Wetland Management District
Upper Souris National Wildlife Refuge
Valley City Wetland Management District
White Horse Hill
White Lake National Wildlife Refuge

Northern Mariana Islands

Mariana Arc of Fire National Wildlife Refuge
Mariana Trench Marine National Monument
Palmyra Atoll National Wildlife Refuge
Wake Atoll National Wildlife Refuge

Ohio

Cedar Point National Wildlife Refuge
Ottawa National Wildlife Refuge
West Sister Island National Wildlife Refuge

Oklahoma

Deep Fork National Wildlife Refuge
Little River National Wildlife Refuge
Optima National Wildlife Refuge
Ozark Plateau National Wildlife Refuge
Salt Plains National Wildlife Refuge
Sequoyah National Wildlife Refuge
Tishomingo National Wildlife Refuge
Washita National Wildlife Refuge
Wichita Mountains Wildlife Refuge

Oregon

Ankeny National Wildlife Refuge
Bandon Marsh National Wildlife Refuge
Baskett Slough National Wildlife Refuge
Bear Valley National Wildlife Refuge
Cape Meares National Wildlife Refuge
Cold Springs National Wildlife Refuge
Hart Mountain National Antelope Refuge
Klamath Marsh National Wildlife Refuge
Malheur National Wildlife Refuge
McKay Creek National Wildlife Refuge
Nestucca Bay National Wildlife Refuge
Oregon Islands National Wildlife Refuge
Siletz Bay National Wildlife Refuge
Three Arch Rocks National Wildlife Refuge
Tualatin River National Wildlife Refuge
Upper Klamath National Wildlife Refuge
Wapato Lake National Wildlife Refuge
William L. Finley National Wildlife Refuge

Pennsylvania

Cherry Valley National Wildlife Range
Erie National Wildlife Refuge
John Heinz National Wildlife Refuge at Tinicum

Puerto Rico

Cabo Rojo National Wildlife Refuge
Culebra National Wildlife Refuge
Desecheo National Wildlife Refuge
Laguna Cartagena National Wildlife Refuge
Navassa Island National Wildlife Refuge
Vieques National Wildlife Refuge

Rhode Island

Block Island National Wildlife Refuge
John H. Chafee National Wildlife Refuge
Ninigret National Wildlife Refuge
Sachuest Point National Wildlife Refuge
Trustom Pond National Wildlife Refuge

South Carolina

Cape Romain National Wildlife Refuge
Carolina Sandhills National Wildlife Refuge
Ernest F. Hollings ACE Basin National Wildlife Refuge
Pinckney Island National Wildlife Refuge
Santee National Wildlife Refuge
Savannah National Wildlife Refuge
Tybee National Wildlife Refuge
Waccamaw National Wildlife Refuge

South Dakota

Huron Wetland Management District
Karl E. Mundt National Wildlife Refuge
Lacreek National Wildlife Refuge
Lake Andes National Wildlife Refuge
Madison Wetland Management District
Sand Lake National Wildlife Refuge
Sand Lake Wetland Management District
Waubay National Wildlife Refuge

Tennessee

Chickasaw National Wildlife Refuge
Cross Creeks National Wildlife Refuge
Hatchie National Wildlife Refuge
Lake Isom National Wildlife Refuge
Lower Hatchie National Wildlife Refuge
Reelfoot National Wildlife Refuge
Tennessee National Wildlife Refuge

Texas

Anahuac National Wildlife Refuge
Aransas National Wildlife Refuge
Attwater Prairie Chicken National Wildlife Refuge
Balcones Canyonlands National Wildlife Refuge
Big Boggy National Wildlife Refuge
Brazoria National Wildlife Refuge
Buffalo Lake National Wildlife Refuge
Caddo Lake National Wildlife Refuge
Guam National Wildlife Refuge
Laguna Atascosa National Wildlife Refuge
Lower Rio Grande Valley National Wildlife Refuge
McFaddin National Wildlife Refuge
Muleshoe National Wildlife Refuge
Neches River National Wildlife Refuge
San Bernard National Wildlife Refuge
Santa Ana National Wildlife Refuge
Texas Point National Wildlife Refuge
Trinity River National Wildlife Refuge

United States Minor Outlying Islands

Baker Island National Wildlife Refuge
Howland Island National Wildlife Refuge
Jarvis Island National Wildlife Refuge
Johnston Atoll National Wildlife Refuge
Kingman Reef National Wildlife Refuge
Midway Atoll National Wildlife Refuge

Utah

Bear River Migratory Bird Refuge
Fish Springs National Wildlife Refuge
Ouray National Wildlife Refuge

Vermont

Missisquoi National Wildlife Refuge

Virgin Islands

Buck Island National Wildlife Refuge
Green Cay National Wildlife Refuge
Sandy Point National Wildlife Refuge

Virginia

Back Bay National Wildlife Refuge
Chincoteague National Wildlife Refuge
Eastern Shore of Virginia National Wildlife Refuge
Elizabeth Hartwell Mason Neck National Wildlife Refuge
Featherstone National Wildlife Refuge
Fisherman Island National Wildlife Refuge
Great Dismal Swamp National Wildlife Refuge
James River National Wildlife Refuge
Nansemond National Wildlife Refuge
Occoquan Bay National Wildlife Refuge
Plum Tree Island National Wildlife Refuge
Presquile National Wildlife Refuge
Rappahannock River Valley National Wildlife Refuge
Wallops Island National Wildlife Refuge

Washington

Billy Frank Jr. Nisqually National Wildlife Refuge
Columbia National Wildlife Refuge
Conboy Lake National Wildlife Refuge
Copalis National Wildlife Refuge
Dungeness National Wildlife Refuge
Flattery Rocks National Wildlife Refuge
Franz Lake National Wildlife Refuge
Grays Harbor National Wildlife Refuge
Hanford Reach National Monument
Julia Butler Hansen Refuge for the Columbian White-Tailed Deer
Lewis and Clark National Wildlife Refuge
Little Pend Oreille National Wildlife Refuge
McNary National Wildlife Refuge
Pierce National Wildlife Refuge
Protection Island National Wildlife Refuge
Quillayute Needles National Wildlife Refuge
Ridgefield National Wildlife Refuge
Saddle Mountain National Wildlife Refuge
San Juan Islands National Wildlife Refuge
Steigerwald Lake National Wildlife Refuge
Toppenish National Wildlife Refuge
Turnbull National Wildlife Refuge
Umatilla National Wildlife Refuge
Willapa National Wildlife Refuge

West Virginia

Canaan Valley National Wildlife Refuge
Ohio River Islands National Wildlife Refuge

Wisconsin

Fox River National Wildlife Refuge
Gravel Island National Wildlife Refuge
Green Bay National Wildlife Refuge
Hagerman National Wildlife Refuge
Horicon National Wildlife Refuge
Leopold Wetland Management District
Necedah National Wildlife Refuge
St. Croix Wetland Management District
St. Croix Wetland Management District
Trempealeau National Wildlife Refuge
Whittlesey Creek National Wildlife Refuge

Wyoming

Bamforth National Wildlife Refuge
Cokeville Meadows National Wildlife Refuge
Hutton Lake National Wildlife Refuge
Mortenson Lake National Wildlife Refuge
National Elk Refuge National Wildlife Refuge
Pathfinder National Wildlife Refuge
Seedskadee National Wildlife Refuge

A.5 National Wilderness Areas

Alabama

Cheaha Wilderness
Dugger Mountain Wilderness
Sipsey Wilderness

Alaska

Aleutian Islands Wilderness
Andreafsky Wilderness
Becharof Wilderness
Bering Sea Wilderness
Bogoslof Wilderness
Chamisso Wilderness
Chuck River Wilderness
Coronation Island Wilderness
Denali Wilderness
Endicott River Wilderness
Forrester Island Wilderness
Gates of the Arctic Wilderness
Glacier Bay Wilderness

Hazy Islands Wilderness
Innoko Wilderness
Izembek Wilderness
Jay S. Hammond Wilderness
Karta River Wilderness
Katmai Wilderness
Kenai Wilderness
Kobuk Valley Wilderness
Kootznoowoo Wilderness
Koyukuk Wilderness
Kuiu Wilderness
Maurille Islands Wilderness
Misty Fjords National Monument Wilderness
Mollie Beattie Wilderness
Noatak Wilderness
Nunivak Wilderness
Petersburg Creek-Duncan Salt Chuck Wilderness
Pleasant/Lemusurier/Inian Islands Wilderness
Russell Fjord Wilderness
Saint Lazaria Wilderness
Selawik Wilderness
Semidi Wilderness
Simeonof Wilderness
South Baranof Wilderness
South Etolin Wilderness
South Prince of Wales Wilderness
Stikine-LeConte Wilderness
Tebenkof Bay Wilderness
Togiak Wilderness
Tracy Arm-Fords Terror Wilderness
Tuxedni Wilderness
Unimak Wilderness
Warren Island Wilderness
West Chichagof-Yakobi Wilderness
Wrangell-Saint Elias Wilderness

Arizona

Apache Creek Wilderness
Aravaipa Canyon Wilderness
Arrastra Mountain Wilderness
Aubrey Peak Wilderness
Baboquivari Peak Wilderness
Bear Wallow Wilderness
Beaver Dam Mountains Wilderness
Big Horn Mountains Wilderness
Cabeza Prieta Wilderness
Castle Creek Wilderness
Cedar Bench Wilderness
Chiricahua National Monument Wilderness
Chiricahua Wilderness
Cottonwood Point Wilderness
Coyote Mountains Wilderness
Dos Cabezas Mountains Wilderness
Eagletail Mountains Wilderness
East Cactus Plain Wilderness
Escudilla Wilderness
Fishhooks Wilderness
Fossil Springs Wilderness
Four Peaks Wilderness
Galiuro Wilderness
Gibraltar Mountain Wilderness
Grand Wash Cliffs Wilderness
Granite Mountain Wilderness
Harcuvar Mountains Wilderness
Harquahala Mountains Wilderness
Hassayampa River Canyon Wilderness
Havasu Wilderness
Hells Canyon Wilderness
Hellsgate Wilderness
Hummingbird Springs Wilderness
Imperial Refuge Wilderness
Juniper Mesa Wilderness
Kachina Peaks Wilderness
Kanab Creek Wilderness
Kendrick Mountain Wilderness
Kofa Wilderness
Mazatzal Wilderness
Miller Peak Wilderness
Mount Baldy Wilderness
Mount Logan Wilderness
Mount Nutt Wilderness
Mount Tipton Wilderness
Mount Trumbull Wilderness
Mount Wilson Wilderness
Mt. Wrightson Wilderness
Muggins Mountain Wilderness
Munds Mountain Wilderness
Needle's Eye Wilderness
New Water Mountains Wilderness
North Maricopa Mountains Wilderness
North Santa Teresa Wilderness
Organ Pipe Cactus Wilderness
Paiute Wilderness
Pajarita Wilderness
Paria Canyon-Vermilion Cliffs Wilderness
Peloncillo Mountains Wilderness
Petrified Forest National Wilderness Area
Pine Mountain Wilderness
Pusch Ridge Wilderness
Rawhide Mountains Wilderness
Red Rock-Secret Mountain Wilderness
Redfield Canyon Wilderness
Rincon Mountain Wilderness
Saddle Mountain Wilderness
Saguaro Wilderness
Salome Wilderness
Salt River Canyon Wilderness
Santa Teresa Wilderness
Sierra Ancha Wilderness
Sierra Estrella Wilderness
Signal Mountain Wilderness
South Maricopa Mountains Wilderness
Strawberry Crater Wilderness
Superstition Wilderness
Swansea Wilderness
Sycamore Canyon Wilderness
Table Top Wilderness
Tres Alamos Wilderness
Trigo Mountain Wilderness
Upper Burro Creek Wilderness
Wabayuma Peak Wilderness
Warm Springs Wilderness
West Clear Creek Wilderness
Wet Beaver Wilderness
White Canyon Wilderness
Woodchute Wilderness
Woolsey Peak Wilderness

Arkansas

Big Lake Wilderness
Black Fork Mountain Wilderness
Buffalo National River Wilderness
Caney Creek Wilderness
Dry Creek Wilderness
East Fork Wilderness
Flatside Wilderness
Hurricane Creek Wilderness
Leatherwood Wilderness
Poteau Mountain Wilderness
Richland Creek Wilderness
Upper Buffalo Wilderness

California

Agua Tibia Wilderness
Ansel Adams Wilderness
Argus Range Wilderness
Avawatz Mountains Wilderness
Beauty Mountain Wilderness
Big Maria Mountains Wilderness
Bigelow Cholla Garden Wilderness
Bighorn Mountain Wilderness
Black Mountain Wilderness
Bright Star Wilderness
Bristol Mountains Wilderness
Bucks Lake Wilderness
Buzzards Peak Wilderness
Cache Creek Wilderness
Cadiz Dunes Wilderness
Cahuilla Mountain Wilderness
Caribou Wilderness
Carrizo Gorge Wilderness
Carson-Iceberg Wilderness
Castle Crags Wilderness
Cedar Roughs Wilderness
Chanchelulla Wilderness
Chemehuevi Mountains Wilderness
Chimney Peak Wilderness
Chuckwalla Mountains Wilderness
Chumash Wilderness
Cleghorn Lakes Wilderness
Clipper Mountain Wilderness
Coso Range Wilderness
Coyote Mountains Wilderness
Cucamonga Wilderness
Darwin Falls Wilderness
Dead Mountains Wilderness
Death Valley Wilderness
Desolation Wilderness
Dick Smith Wilderness
Dinkey Lakes Wilderness
Domeland Wilderness
El Paso Mountains Wilderness
Elkhorn Ridge Wilderness
Emigrant Wilderness
Farallon Wilderness
Fish Creek Mountains Wilderness
Funeral Mountains Wilderness
Garcia Wilderness
Golden Trout Wilderness
Golden Valley Wilderness
Granite Chief Wilderness
Granite Mountain Wilderness
Grass Valley Wilderness
Great Falls Basin Wilderness
Hain Wilderness
Hauser Wilderness
Havasu Wilderness
Hollow Hills Wilderness
Hoover Wilderness
Ibex Wilderness
Imperial Refuge Wilderness
Indian Pass Wilderness
Inyo Mountains Wilderness
Ishi Wilderness
Jacumba Wilderness
Jennie Lakes Wilderness
John Krebs Wilderness
John Muir Wilderness
Joshua Tree Wilderness
Kaiser Wilderness
Kelso Dunes Wilderness
Kiavah Wilderness
King Range Wilderness
Kingston Range Wilderness
Lassen Volcanic Wilderness
Lava Beds Wilderness
Little Chuckwalla Mountains Wilderness
Little Picacho Wilderness
Machesna Mountain Wilderness
Magic Mountain Wilderness
Malpais Mesa Wilderness
Manly Peak Wilderness
Marble Mountain Wilderness
Matilija Wilderness
Mecca Hills Wilderness
Mesquite Wilderness

Milpitas Wash Wilderness
Mojave Wilderness
Mokelumne Wilderness
Monarch Wilderness
Mount Lassic Wilderness
Mt. Shasta Wilderness
Newberry Mountains Wilderness
Nopah Range Wilderness
North Algodones Dunes Wilderness
North Fork Wilderness
North Mesquite Mountains Wilderness
Old Woman Mountains Wilderness
Orocopia Mountains Wilderness
Otay Mountain Wilderness
Owens Peak Wilderness
Owens River Headwaters
Wilderness Pahrump Valley Wilderness
Palen/McCoy Wilderness
Palo Verde Mountains Wilderness
Phillip Burton Wilderness
Picacho Peak Wilderness
Pine Creek Wilderness
Pinto Mountains Wilderness
Piper Mountain Wilderness
Piute Mountains Wilderness
Pleasant View Ridge Wilderness
Red Buttes Wilderness
Resting Spring Range Wilderness
Rice Valley Wilderness
Riverside Mountains Wilderness
Rocks and Islands Wilderness
Rodman Mountains Wilderness
Russian Wilderness
Sacatar Trail Wilderness
Saddle Peak Hills Wilderness
San Gabriel Wilderness
San Gorgonio Wilderness
San Jacinto Wilderness
San Mateo Canyon Wilderness
San Rafael Wilderness
Sanhedrin Wilderness
Santa Lucia Wilderness
Santa Rosa Wilderness
Sawtooth Mountains Wilderness
Sequoia-Kings Canyon Wilderness
Sespe Wilderness
Sheep Mountain Wilderness
Sheephole Valley Wilderness
Silver Peak Wilderness
Siskiyou Wilderness
Snow Mountain Wilderness
Soda Mountains Wilderness
South Fork Eel River Wilderness
South Fork San Jacinto Wilderness
South Nopah Range Wilderness
South Sierra Wilderness
South Warner Wilderness
Stateline Wilderness
Stepladder Mountains Wilderness
Surprise Canyon Wilderness
Sylvania Mountains Wilderness
Thousand Lakes Wilderness
Trilobite Wilderness
Trinity Alps Wilderness
Turtle Mountains Wilderness
Ventana Wilderness
Whipple Mountains Wilderness
White Mountains Wilderness
Yolla Bolly-Middle Eel Wilderness
Yosemite Wilderness
Yuki Wilderness

Colorado

Black Canyon of the Gunnison Wilderness
Black Ridge Canyons Wilderness
Buffalo Peaks Wilderness
Byers Peak Wilderness
Cache La Poudre Wilderness
Collegiate Peaks Wilderness
Comanche Peak Wilderness
Dominguez Canyon Wilderness
Eagles Nest Wilderness
Flat Tops Wilderness
Fossil Ridge Wilderness
Great Sand Dunes Wilderness
Greenhorn Mountain Wilderness
Gunnison Gorge Wilderness
Hermosa Creek Wilderness
Holy Cross Wilderness
Hunter-Fryingpan Wilderness
Indian Peaks Wilderness
James Peak Wilderness
La Garita Wilderness
Lizard Head Wilderness
Lost Creek Wilderness
Maroon Bells-Snowmass Wilderness
Mesa Verde Wilderness
Mount Evans Wilderness
Mount Massive Wilderness
Mount Sneffels Wilderness
Mount Zirkel Wilderness
Neota Wilderness
Never Summer Wilderness
Platte River Wilderness
Powderhorn Wilderness
Ptarmigan Peak Wilderness
Raggeds Wilderness
Rawah Wilderness
Rocky Mountain National Park Wilderness
Sangre de Cristo Wilderness
Sarvis Creek Wilderness
South San Juan Wilderness
Spanish Peaks Wilderness
Uncompahgre Wilderness
Vasquez Peak Wilderness
Weminuche Wilderness
West Elk Wilderness

Florida

Alexander Springs Wilderness
Big Gum Swamp Wilderness
Billies Bay Wilderness
Bradwell Bay Wilderness
Cedar Keys Wilderness
Chassahowitzka Wilderness
Florida Keys Wilderness
Island Bay Wilderness
J.N. ''Ding'' Darling Wilderness
Juniper Prairie Wilderness
Lake Woodruff Wilderness
Little Lake George Wilderness
Marjory Stoneman Douglas Wilderness
Mud Swamp/New River Wilderness
Passage Key Wilderness
Pelican Island Wilderness
St. Marks Wilderness

Georgia

Big Frog Wilderness
Blackbeard Island Wilderness
Blood Mountain Wilderness
Brasstown Wilderness
Cohutta Wilderness
Cumberland Island Wilderness
Ellicott Rock Wilderness
Mark Trail Wilderness
Okefenokee Wilderness
Raven Cliffs Wilderness
Rich Mountain Wilderness
Southern Nantahala Wilderness
Tray Mountain Wilderness
Wolf Island Wilderness

Hawaii

Hawaii Haleakala Wilderness
Hawaii Volcanoes Wilderness

Idaho

Big Jacks Creek Wilderness
Bruneau-Jarbidge Rivers Wilderness
Cecil D. Andrus-White Clouds Wilderness
Craters of the Moon National Wilderness Area
Frank Church-River of No Return Wilderness
Gospel-Hump Wilderness
Hells Canyon Wilderness
Hemingway-Boulders Wilderness
Jim McClure-Jerry Peak Wilderness
Little Jacks Creek Wilderness
North Fork Owyhee Wilderness
Owyhee River Wilderness
Pole Creek Wilderness
Sawtooth Wilderness
Selway-Bitterroot Wilderness

Illinois

Bald Knob Wilderness
Bay Creek Wilderness
Burden Falls Wilderness
Clear Springs Wilderness
Crab Orchard Wilderness
Garden of the Gods Wilderness
Lusk Creek Wilderness
Panther Den Wilderness

Indiana

Charles C. Deam Wilderness

Kentucky

Beaver Creek Wilderness
Clifty Wilderness

Louisiana

Breton Wilderness
Kisatchie Hills Wilderness
Lacassine Wilderness

Maine

Caribou-Speckled Mountain Wilderness
Moosehorn (Baring Unit) Wilderness
Moosehorn Wilderness

Massachusetts

Monomoy Wilderness

Michigan

Beaver Basin Wilderness
Big Island Lake Wilderness
Delirium Wilderness
Horseshoe Bay Wilderness
Huron Islands Wilderness
Isle Royale Wilderness
Mackinac Wilderness
McCormick Wilderness
Michigan Islands Wilderness
Nordhouse Dunes Wilderness
Rock River Canyon Wilderness
Round Island Wilderness
Seney Wilderness
Sleeping Bear Dunes Wilderness
Sturgeon River Gorge Wilderness
Sylvania Wilderness

Minnesota

Agassiz Wilderness
Boundary Waters Canoe Area Wilderness
Tamarac Wilderness

Mississippi

Black Creek Wilderness

Gulf Islands Wilderness
Leaf Wilderness

Missouri

Bell Mountain Wilderness
Devils Backbone Wilderness
Hercules-Glades Wilderness
Irish Wilderness
Mingo Wilderness
Paddy Creek Wilderness
Piney Creek Wilderness
Rockpile Mountain Wilderness

Montana

Absaroka-Beartooth Wilderness
Anaconda Pintler Wilderness
Bob Marshall Wilderness
Cabinet Mountains Wilderness
Gates of the Mountains Wilderness
Great Bear Wilderness
Lee Metcalf Wilderness
Medicine Lake Wilderness
Mission Mountains Wilderness
Rattlesnake Wilderness
Red Rock Lakes Wilderness
Scapegoat Wilderness
Selway-Bitterroot Wilderness
UL Bend Wilderness

Nebraska

Fort Niobrara Wilderness
Soldier Creek Wilderness

Nevada

Alta Toquima Wilderness
Arc Dome Wilderness
Arrow Canyon Wilderness
Bald Mountain Wilderness
Becky Peak Wilderness
Big Rocks Wilderness
Black Canyon Wilderness
Black Rock Desert Wilderness
Boundary Peak Wilderness
Bridge Canyon Wilderness
Bristlecone Wilderness
Calico Mountains Wilderness
Clover Mountains Wilderness
Currant Mountain Wilderness
Death Valley Wilderness
Delamar Mountains Wilderness
East Fork High Rock Canyon Wilderness
East Humboldts Wilderness
Eldorado Wilderness
Far South Egans Wilderness
Fortification Range Wilderness
Goshute Canyon Wilderness
Government Peak Wilderness
Grant Range Wilderness
High Rock Canyon Wilderness
High Rock Lake Wilderness
High Schells Wilderness
Highland Ridge Wilderness
Ireteba Peaks Wilderness
Jarbidge Wilderness
Jimbilnan Wilderness
Jumbo Springs Wilderness
La Madre Mountain Wilderness
Lime Canyon Wilderness
Little High Rock Canyon Wilderness
Meadow Valley Range Wilderness
Mormon Mountains Wilderness
Mount Grafton Wilderness
Mt. Charleston Wilderness
Mt. Irish Wilderness
Mt. Moriah Wilderness
Mt. Rose Wilderness
Muddy Mountains Wilderness
Nellis Wash Wilderness
North Black Rock Range Wilderness
North Jackson Mountains Wilderness
North McCullough Wilderness
Pahute Peak Wilderness
Parsnip Peak Wilderness
Pine Forest Range Wilderness
Pinto Valley Wilderness
Quinn Canyon Wilderness
Rainbow Mountain Wilderness
Red Mountain Wilderness
Ruby Mountains Wilderness
Santa Rosa-Paradise Peak Wilderness
Shellback Wilderness
South Egan Range Wilderness
South Jackson Mountains Wilderness
South McCullough Wilderness
South Pahroc Range Wilderness
Spirit Mountain Wilderness
Table Mountain Wilderness
Tunnel Spring Wilderness
Wee Thump Joshua Tree Wilderness
Weepah Spring Wilderness
White Pine Range Wilderness
White Rock Range Wilderness
Worthington Mountains Wilderness
Wovoka Wilderness

New Hampshire

Great Gulf Wilderness
Pemigewasset Wilderness
Presidential Range-Dry River Wilderness
Sandwich Range Wilderness
Wild River Wilderness

New Jersey

Brigantine Wilderness
Great Swamp National Wildlife Refuge Wilderness

New Mexico

Aden Lava Flow Wilderness
Ah-shi-sle-pah Wilderness
Aldo Leopold Wilderness
Apache Kid Wilderness
Bandelier Wilderness
Bisti/De-Na-Zin Wilderness
Blue Range Wilderness
Bosque del Apache Wilderness
Broad Canyon Wilderness
Capitan Mountains Wilderness
Carlsbad Caverns Wilderness
Cebolla Wilderness
Cerro del Yuta Wilderness
Chama River Canyon Wilderness
Cinder Cone Wilderness
Columbine-Hondo Wilderness
Cruces Basin Wilderness
Dome Wilderness
East Potrillo Mountains
Gila Wilderness
Latir Peak Wilderness
Manzano Mountain Wilderness
Mount Riley Wilderness
Ojito Wilderness
Organ Mountains Wilderness
Pecos Wilderness
Potrillo Mountains Wilderness
Rio San Antonio Wilderness
Robledo Mountains Wilderness
Sabinoso Wilderness
Salt Creek Wilderness
San Pedro Parks Wilderness
Sandia Mountain Wilderness
Sierra de las Uvas Wilderness
West Malpais Wilderness
Wheeler Peak Wilderness
White Mountain Wilderness
Whitethorn Wilderness
Withington Wilderness

New York

Otis Pike Fire Island High Dune Wilderness

North Carolina

Birkhead Mountains Wilderness
Catfish Lake South Wilderness
Ellicott Rock Wilderness
Joyce Kilmer-Slickrock Wilderness
Linville Gorge Wilderness
Middle Prong Wilderness
Pocosin Wilderness
Pond Pine Wilderness
Sheep Ridge Wilderness
Shining Rock Wilderness
Southern Nantahala Wilderness
Swanquarter Wilderness

North Dakota

Chase Lake Wilderness
Lostwood Wilderness
Theodore Roosevelt Wilderness

Ohio

West Sister Island Wilderness

Oklahoma

Black Fork Mountain Wilderness
Upper Kiamichi River Wilderness
Wichita Mountains Wilderness

Oregon

Badger Creek Wilderness
Black Canyon Wilderness
Boulder Creek Wilderness
Bridge Creek Wilderness
Bull of the Woods Wilderness
Clackamas Wilderness
Copper Salmon Wilderness
Cummins Creek Wilderness
Diamond Peak Wilderness
Devils Staircase Wilderness
Drift Creek Wilderness
Eagle Cap Wilderness
Gearhart Mountain Wilderness
Grassy Knob Wilderness
Hells Canyon Wilderness
Kalmiopsis Wilderness
Lower White River Wilderness
Mark O. Hatfield Wilderness
Menagerie Wilderness
Middle Santiam Wilderness
Mill Creek Wilderness
Monument Rock Wilderness
Mount Hood Wilderness
Mount Jefferson Wilderness
Mount Thielsen Wilderness
Mount Washington Wilderness
Mountain Lakes Wilderness
North Fork John Day Wilderness
North Fork Umatilla Wilderness
Opal Creek Wilderness
Oregon Badlands Wilderness
Oregon Islands Wilderness
Red Buttes Wilderness
Roaring River Wilderness
Rock Creek Wilderness
Rogue-Umpqua Divide Wilderness
Salmon-Huckleberry Wilderness
Sky Lakes Wilderness
Soda Mountain Wilderness
Spring Basin Wilderness
Steens Mountain Wilderness
Strawberry Mountain Wilderness

Table Rock Wilderness
Three Arch Rocks Wilderness
Three Sisters Wilderness
Waldo Lake Wilderness
Wenaha-Tucannon Wilderness
Wild Rogue Wilderness

Pennsylvania

Allegheny Islands Wilderness
Hickory Creek Wilderness

Puerto Rico

El Toro Wilderness

South Carolina

Cape Romain Wilderness
Congaree National Park Wilderness
Ellicott Rock Wilderness
Hell Hole Bay Wilderness
Little Wambaw Swamp Wilderness
Wambaw Creek Wilderness
Wambaw Swamp Wilderness

South Dakota

Badlands Wilderness
Black Elk Wilderness

Tennessee

Bald River Gorge Wilderness
Big Frog Wilderness
Big Laurel Branch Wilderness
Citico Creek Wilderness
Cohutta Wilderness
Gee Creek Wilderness
Joyce Kilmer-Slickrock Wilderness
Little Frog Mountain Wilderness
Pond Mountain Wilderness
Sampson Mountain Wilderness
Unaka Mountain Wilderness
Upper Bald River Wilderness

Texas

Big Slough Wilderness
Guadalupe Mountains Wilderness
Indian Mounds Wilderness
Little Lake Creek Wilderness
Turkey Hill Wilderness
Upland Island Wilderness

Utah

Ashdown Gorge Wilderness
Beartrap Canyon Wilderness
Beaver Dam Mountains Wilderness
Big Wild Horse Mesa Wilderness
Blackridge Wilderness
Black Ridge Canyons Wilderness
Box-Death Hollow Wilderness
Canaan Mountain Wilderness
Cedar Mountain Wilderness Area
Cold Wash Wilderness
Cottonwood Canyon Wilderness
Cottonwood Forest Wilderness
Cougar Canyon Wilderness
Dark Canyon Wilderness
Deep Creek North Wilderness
Deep Creek Wilderness
Deseret Peak Wilderness
Desolation Canyon Wilderness
Devil's Canyon Wilderness
Doc's Pass Wilderness
Eagle Canyon Wilderness
Goose Creek Wilderness
High Uintas Wilderness
Horse Valley Wilderness
Labyrinth Canyon Wilderness
LaVerkin Creek Wilderness
Little Ocean Draw Wilderness
Little Wild Horse Canyon Wilderness
Lone Peak Wilderness
Lower Last Chance Wilderness
Mexican Mountain Wilderness
Middle Wild Horse Mesa Wilderness
Mount Naomi Wilderness
Mount Nebo Wilderness
Mount Olympus Wilderness
Mount Timpanogos Wilderness
Muddy Creek Wilderness
Nelson Mountain Wilderness
Paria Canyon-Vermilion Cliffs Wilderness
Pine Valley Mountain Wilderness
Red Butte Wilderness
Red's Canyon Wilderness
Red Mountain Wilderness
San Rafael Reef Wilderness
Sid's Mountain Wilderness
Slaughter Creek Wilderness
Taylor Creek Wilderness
Turtle Canyon Wilderness
Twin Peaks Wilderness
Wellsville Mountain Wilderness
Zion Wilderness

Vermont

Big Branch Wilderness
Breadloaf Wilderness
Bristol Cliffs Wilderness
George D. Aiken Wilderness
Glastenbury Wilderness
Joseph Battell Wilderness
Lye Brook Wilderness
Peru Peak Wilderness

Virginia

Barbours Creek Wilderness
Beartown Wilderness
Brush Mountain East Wilderness
Brush Mountain Wilderness
Garden Mountain Wilderness
Hunting Camp Creek Wilderness
James River Face Wilderness
Kimberling Creek Wilderness
Lewis Fork Wilderness
Little Dry Run Wilderness
Little Wilson Creek Wilderness
Mountain Lake Wilderness
Peters Mountain Wilderness
Priest Wilderness
Raccoon Branch Wilderness
Ramseys Draft Wilderness
Rich Hole Wilderness
Rough Mountain Wilderness
Saint Mary's Wilderness
Shawvers Run Wilderness
Shenandoah Wilderness
Stone Mountain Wilderness
Three Ridges Wilderness
Thunder Ridge Wilderness

Washington

Alpine Lakes Wilderness
Boulder River Wilderness
Buckhorn Wilderness
Clearwater Wilderness
Colonel Bob Wilderness
Daniel J. Evans Wilderness
Glacier Peak Wilderness
Glacier View Wilderness
Goat Rocks Wilderness
Henry M. Jackson Wilderness
Indian Heaven Wilderness
Juniper Dunes Wilderness
Lake Chelan-Sawtooth Wilderness
Mount Adams Wilderness
Mount Baker Wilderness
Mount Rainier Wilderness
Mount Skokomish Wilderness
Noisy-Diobsud Wilderness
Norse Peak Wilderness
Pasayten Wilderness
Salmo-Priest Wilderness
San Juan Wilderness
Stephen Mather Wilderness
Tatoosh Wilderness
The Brothers Wilderness
Trapper Creek Wilderness
Washington Islands Wilderness
Wenaha-Tucannon Wilderness
Wild Sky Wilderness
William O. Douglas Wilderness
Wonder Mountain Wilderness

West Virginia

Big Draft Wilderness
Cranberry Wilderness
Dolly Sods Wilderness
Laurel Fork North Wilderness
Laurel Fork South Wilderness
Mountain Lake Wilderness
Roaring Plains West Wilderness
Otter Creek Wilderness
Spice Run Wilderness

Wisconsin

Blackjack Springs Wilderness
Gaylord A. Nelson Wilderness
Headwaters Wilderness
Porcupine Lake Wilderness
Rainbow Lake Wilderness
Whisker Lake Wilderness
Wisconsin Islands Wilderness

Wyoming

Absaroka-Beartooth Wilderness
Bridger Wilderness
Cloud Peak Wilderness
Encampment River Wilderness
Fitzpatrick Wilderness
Gros Ventre Wilderness
Huston Park Wilderness
Jedediah Smith Wilderness
North Absaroka Wilderness
Platte River Wilderness
Popo Agie Wilderness
Savage Run Wilderness
Teton Wilderness
Washakie Wilderness
Winegar Hole Wilderness

A.6 National Wild and Scenic Rivers

Alabama

Sipsey Fork of the West Fork River

Alaska

Alagnak River
Alatna River
Andreafsky River
Aniakchak River
Beaver Creek
Birch Creek
Charley River
Chilikadrotna River
Delta River
Fortymile River
Gulkana River
Ivishak River
John River
Kobuk River
Koyukuk River (North Fork)
Mulchatna River
Noatak River

Nowitna River
Salmon River
Selawik River
Sheenjek River
Tinayguk River
Tlikakila River
Unalakleet River
Wind River

Arizona

Fossil Creek
Verde River

Arkansas

Big Piney Creek
Buffalo River
Cossatot River
Hurricane Creek
Little Missouri River
Mulberry River
North Sylamore Creek
Richland Creek

California

Amargosa River
American River (Lower)
American River (North Fork)
Bautista Creek
Big Sur River
Black Butte River
Cottonwood Creek
Deep Creek
Eel River
Feather River
Fuller Mill Creek
Kern River
Kings River
Klamath River
Merced River
Owens River Headwaters
Palm Canyon Creek
Piru Creek
San Jacinto River (North Fork)
Sespe Creek
Sisquoc River
Surprise Canyon Creek
Smith River
Trinity River
Tuolumne River
Whitewater River

Colorado

Cache la Poudre River

Connecticut

Eightmile River
Farmington (Lower) River & Salmon Brook
Farmington (West Branch) River
Wood & Pawcatuck Rivers

Delaware

White Clay Creek

Florida

Loxahatchee River
Wekiva River

Georgia

Chattooga River

Idaho

Battle Creek
Big Jacks Creek
Bruneau River
Bruneau River (West Fork)
Clearwater River (Middle Fork)
Cottonwood Creek
Deep Creek
Dickshooter Creek
Duncan Creek
Jarbidge River
Little Jacks Creek
Owyhee River
Owyhee River (North Fork)
Owyhee River (South Fork)
Rapid River
Red Canyon
St. Joe River
Salmon River
Salmon River (Middle Fork)
Sheep Creek
Snake River
Wickahoney Creek

Illinois

Vermilion River

Kentucky

Red River

Louisiana

Saline Bayou

Maine

Allagash Wilderness Waterway

Massachusetts

Nashua, Squannacook, Nissitissit Rivers
Sudbury, Assabet, Concord Rivers
Taunton River
Westfield River

Michigan

AuSable River
Bear Creek
Black River
Carp River
Indian River
Manistee River
Ontonagon River
Paint River
Pere Marquette River
Pine River
Presque Isle River
Sturgeon River (Hiawatha National Forest)
Sturgeon River (Ottawa National Forest)
Tahquamenon River (East Branch)
Whitefish River
Yellow Dog River

Minnesota

St. Croix River

Mississippi

Black Creek

Missouri

Eleven Point River

Montana

East Rosebud Creek
Flathead River
Missouri River

Nebraska

Missouri River
Niobrara River

New Hampshire

Lamprey River
Nashua, Squannacook, Nissitissit Rivers
Wildcat River

New Jersey

Delaware River (Lower)
Delaware River (Middle)
Great Egg Harbor River
Maurice River
Musconetcong River

New Mexico

Jemez River (East Fork)
Pecos River
Rio Chama
Rio Grande

New York

Delaware River (Upper)

North Carolina

Chattooga River
Horsepasture River
Lumber River
New River
Wilson Creek

Ohio

Big & Little Darby Creeks
Little Beaver Creek
Little Miami River

Oregon

Big Marsh Creek
Chetco River
Clackamas River
Clackamas River (South Fork)
Collawash River
Crescent Creek
Crooked River
Crooked River (North Fork)
Deschutes River
Donner und Blitzen River
Eagle Creek (Mt. Hood National Forest)
Eagle Creek (Wallowa-Whitman National Forest)
Elk Creek
Elk River
Elkhorn Creek
Fifteenmile Creek
Fish Creek
Franklin Creek
Grande Ronde River
Hood River (East Fork)
Hood River (Middle Fork)
Illinois River
Imnaha River
Jenny Creek
John Day River
John Day River (North Fork)
John Day River (South Fork)
Joseph Creek
Klamath River
Little Deschutes River
Lobster Creek
Lostine River
Malheur River
Malheur River (North Fork)
McKenzie River
Metolius River
Minam River
Molalla River
Nestucca River
North Powder River
North Umpqua River
Owyhee River
Owyhee River (North Fork)
Powder River
Quartzville Creek
River Styx
Roaring River
Roaring River (South Fork)
Rogue River

Rogue River (Upper)
Salmon River
Sandy River
Silver Creek (North Fork)
Smith River (North Fork)
Snake River
Sprague River
Spring Creek
Sycan River
Walker Creek
Wallowa River
Wasson Creek
Wenaha River
West Little Owyhee River
Whychus Creek
White River
Wildhorse & Kiger Creeks
Willamette River (North Fork Middle Fork)
Zigzag River

Pennsylvania

Allegheny River
Clarion River
Delaware River (Lower)
Delaware River (Middle)
Delaware River (Upper)
White Clay Creek

Puerto Rico

Rio de la Mina
Rio Icacos
Rio Mameyes

Rhode Island

Wood & Pawcatuck Rivers

South Carolina

Chattooga River

South Dakota

Missouri

Tennessee

Obed River

Texas

Rio Grande

Utah

Green River
Virgin River

Vermont

Missisquoi & Trout Rivers

Washington

Illabot Creek
Klickitat River
Pratt River
Skagit River
Snoqualmie (Middle Fork) River
White Salmon River

West Virginia

Bluestone River

Wisconsin

St. Croix River
Wolf River

Wyoming

Snake River Headwaters
Yellowstone River (Clark's Fork)

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