



NATIONAL WILDLIFE FEDERATION®
Great Lakes Natural Resource Center®

July 30, 2008

VIA EMAIL

Ms. Mary Jean Fenske
Minnesota Pollution Control Agency
Industrial Division
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Re: Comments on Ballast Water Discharge General Permit, State Disposal System Permit MNG300000

Dear Ms. Fenske,

The National Wildlife Federation (“NWF”) is writing to comment on the June 30, 2008, draft of the Ballast Water Discharge General Permit (“draft permit”) proposed by the Minnesota Pollution Control Agency (“PCA”). NWF commends PCA for undertaking the development of such a permit.

Lake Superior and its tributaries are already impaired by invasive species, including the Eurasian water milfoil, spiny water flea, zebra mussel, round goby, and ruffe.¹ Regulating ballast water discharges is therefore necessary to protect Lake Superior and its tributaries from the further introduction of non-indigenous species carried in ballast water.

The draft permit contains many elements vital to controlling the introduction of non-indigenous species to Lake Superior and its tributaries. Nevertheless, the current draft is inadequate to ensure the health and vitality of the Lake Superior.

¹ See Minnesota Department of Natural Resources, *Designation of Infested Waters*, Order No. INF-07-001 (Apr. 21, 2008), available at <http://files.dnr.state.mn.us/eco/invasives/infestedwaters.pdf> (last visited July 30, 2008); Minnesota Department of Natural Resources, *Invasive Aquatic Animals*, available at <http://www.dnr.state.mn.us/invasives/aquaticanimals/index.html> (last visited July 30, 2008); U.S. Geological Survey Nonindigenous Aquatic Species Database, *Round Goby*, <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=713> (last visited July 30, 2008) (“*Round Goby Fact Sheet*”); U.S. Geological Survey Nonindigenous Aquatic Species Database, *Gymnocephalus cernuus*, <http://nas.er.usgs.gov/queries/factsheet.asp?SpeciesID=7> (last visited July 30, 2008).

1. The National Wildlife Federation's interest in the draft permit.

NWF is a non-profit corporation and the largest citizen-supported conservation advocacy and education organization in the United States, with affiliate organizations and members across the nation. NWF works actively on behalf of its approximately one million members, including tens of thousands of Minnesotans, to maintain and enhance the quality of the nation's waters, including the Great Lakes.

NWF's particular interest in the draft permit stems from the past, present, and future harm to the environment of the Lake Superior and its tributaries caused by aquatic invasive species. Many of NWF's members visit, use, and enjoy the areas affected by such species. Aquatic invasive species have harmed their health, recreational, and aesthetic interests. Accordingly, they seek to keep the waters of the Lake Superior basin free of invasive species and their deleterious effects.

2. Minnesota has the authority and responsibility to issue a National Pollutant Discharge Elimination System permit.

EPA has claimed that discharges incidental to the normal operation of a vessel are not subject to the Minnesota's authorized NPDES program.² EPA claims such discharges were excluded from the states' programs by the operation of 40 C.F.R. § 122.3(a), which exempted the discharges from the permitting requirement.

EPA is under a misapprehension. The regulation exempting discharges incidental to the normal operation of a vessel is no impediment to Minnesota's authority to regulate such discharges, and does not relieve the state of its responsibility to prohibit such discharges, unless permitted under the NDPEs program.

In 2005, the United States District Court for the Northern District of California held that the regulation exempting discharges "incidental to the normal operation of a vessel" was *ultra vires*, an invalid exercise "in excess of its [EPA's] statutory authority."³ The United States Court of Appeals for the Ninth Circuit has recently affirmed the district court.⁴ Courts have long and consistently held that regulations inconsistent with their underlying statute are void *ab initio*.⁵

² Letter from James A. Hanlon, Director, Office of Wastewater Management, U.S. Environmental Protection Agency, to Paul Eger, Assistant Commissioner, Water Policy, Minnesota Pollution Control Agency (Apr. 30, 2008).

³ *Nw. Env'tl. Advocates v. U.S. EPA*, No. C 03-05760 SI, 2005 WL 756614 at *13 (N.D. Cal. Mar. 30, 2005).

⁴ *Nw. Env'tl. Advocates v. U.S. EPA*, Nos. 03-74795, 06-17187, 06-17188, 2008 WL 2813103 at *19 (9th Cir. Jul. 23, 2008).

⁵ See *Dixon v. United States*, 381 U.S. 68, 74 (1965) (quoting *Manhattan Gen. Equip. Co. v. Comm'r of Internal Revenue*, 297 U.S. 129, 134 (1936)) (a regulation inconsistent with its underlying statute is a "mere nullity"); *United Nat. Bank v. U.S. Dept. of Interior*, 54 F. Supp. 2d 1309, 1311-12 (S.D. Fla. 1998) (citing *United States v. Larionoff*, 431 U.S. 864, 873 (1977)) ("It is well settled that a regulation that is not in harmony with the statute is void *ab initio* and cannot be relied upon by the agency."); *Legal Env'tl. Assistance Found. v. U.S. EPA*, 118 F.3d 1467, 1472 (11th Cir. 1997) ("[I]f the . . . regulations are inconsistent with the statute, . . . these regulations are void *ab initio* and cannot be relied upon by EPA . . .").

The exemption in 40 C.F.R. § 122.3(a), therefore, was a mere nullity, void at the moment of its promulgation, and never had any legal force or effect.

EPA's attempt to exempt discharges incidental to the normal operation of a vessel, including ballast water discharges, was thus an exercise in futility. The exemption was no exemption at all. As a rule inconsistent with the Act, it never had any power to exclude discharges incidental to the normal operation of a vessel from the discharges subject to the authorized state programs.

The authority and responsibility to regulate discharges incidental to the normal operation of a vessel therefore passed to Minnesota as part of EPA's delegation of the NPDES program. EPA did not merely delegate authority to administer a partial permit program, although it could have.⁶ Rather, it delegated the full NPDES permit program with respect to all discharges by non-federal entities.⁷ Under the Clean Water Act ("Act" or "CWA"), EPA loses its authority to issue NPDES permits upon delegation.⁸

Consequently, Minnesota must prohibit discharges incidental to the normal operation of a vessel, unless authorized by a state permit pursuant to the state NPDES program.⁹

3. The draft permit must impose effluent limitations sufficient to assure compliance with water quality standards.

NWF fully endorses the draft permit's requirement that ballast water discharges comply with water quality criteria, but criteria are only one component of water quality standards ("WQS"). "A water quality standard defines the water quality goals for a water body . . . by designating the use or uses to be made of the water, by setting criteria necessary to protect the uses, and by protecting water quality through antidegradation provisions."¹⁰

To meet a WQS, effluent limitations must be sufficient to protect all three components of the WQS: the designated uses, the water quality criteria (numeric or narrative), and the

⁶ See 33 U.S.C. § 1342(n).

⁷ See U.S. Environmental Protection Agency, *National Pollutant Discharge Elimination System (NPDES), State Program Status*, available at http://cfpub.epa.gov/npdes/statestats.cfm?program_id=45&view=general (last visited Jul. 29, 2008).

⁸ See 33 U.S.C. § 1342(c)(1).

⁹ 40 C.F.R. § 123.1(g)(1).

¹⁰ U.S. EPA, *Water Quality Standards Handbook* (1994), § 4.4.2, at 4-5 ("EPA WQS Handbook"); see also 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. § 131.3(e) ("Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses."); 40 C.F.R. § 131.6 (identifies the elements that states must include in water quality standards, including designated uses, water quality criteria, and an antidegradation policy).

antidegradation policy.¹¹ Thus, the draft permit must require compliance with the WQS as a whole, not just criteria.

To protect a designated use, effluent limitations must assure that the use will be maintained. This follows from the CWA's mandate that WQS "shall . . . serve the purposes of this Act,"¹² which are "to restore and *maintain* the chemical, physical, and biological integrity of the Nation's waters."¹³ An impairment of a designated use would run contrary to this mandate of maintaining the integrity of the water. Consequently, a violation of a WQS occurs where a designated use continues to a diminished extent. The purposes of the Act would not be served by deeming a designated use protected even as its usefulness degrades, by turning a blind eye to the degradation of a designated use until it is completely eliminated.

The requirement to fully maintain designated uses finds explicit expression in Minnesota's nondegradation policy. As the fact sheet for the draft permit acknowledges, "Existing beneficial uses and the water quality necessary to protect the existing uses must be maintained and protected from point and nonpoint sources of pollution."¹⁴ "No activity is allowable under the antidegradation policy which would partially or completely eliminate any existing use."¹⁵

4. Invasive species impair water quality standards.

At least 182 non-indigenous species have invaded the Great Lakes. The discussion that follows details the severe impairments to water quality standards caused by some of these species in Minnesota, all introduced by means of ballast water. These impairments foreshadow the adverse impacts that would be caused by additional invasions regulated only by BWE or SWF, or subject only to the performance standards in the draft permit.

"[S]cores of species have invaded—and continue to invade—European ports from which the Great Lakes receives the bulk of its transoceanic ship traffic, [making] the basin . . . vulnerable to further, potentially costly, invasions via [ballast water discharges] . . . in the absence of effective control."¹⁶ "It is currently impossible to identify an acceptable level of risk

¹¹ See *PUD No. 1 v. Washington Dept. of Ecology*, 511 U.S. 700, 715 (1994) (In the context of a certification pursuant to § 401 of the CWA, 33 U.S.C. § 1341, the Court held "a project that does not comply with a designated use of the water does not comply with the applicable water quality standards").

¹² 33 U.S.C. § 1313(c)(2)(A).

¹³ 33 U.S.C. § 1251(a) (emphasis added).

¹⁴ Minnesota Pollution Control Agency, *Fact Sheet for State Disposal System Permit MNG300000, Ballast Water Discharge Permit* at 13 (Jun. 30, 2008).

¹⁵ EPA WQS Handbook, § 4.4.2, at 4-5. Thus, a state must protect existing uses (including existing uses which are also designated uses) against degradation, not just elimination. See *PUD No. 1*, 511 U.S. at 718-19.

¹⁶ Anthony Ricciardi & Hugh J. MacIsaac, *Evaluating the Effectiveness of Ballast Water Exchange Policy in the Great Lakes*, 18 *Ecological Applications* 1321, 1321 (2008) ("Evaluating the Effectiveness of Ballast Water Exchange").

based on biological criteria, because the relationship between propagule pressure and invasion success has not been ascertained with respect to ballast water discharges.”¹⁷

a. Invasive species found in Minnesota impair the designated use component of the state’s water quality standards.

i. Public Water Supply

Minnesota recognizes public water supply as a designated use.¹⁸ This designated use is impaired by invasive species found in Minnesota, such as the zebra mussel.

The zebra mussel clogs water intake pipes and drinking water treatment centers.¹⁹ In addition, the zebra mussel has had “devastating economic impacts on municipal and residential drinking water delivery systems”²⁰ “They colonize pipes constricting flow, therefore reducing the intake in heat exchangers, condensers, fire fighting equipment, and air conditioning and cooling systems.”²¹

ii. Industrial Uses

Minnesota recognizes industrial uses as a designated use.²² This particular designated use is impaired by the invasive species that impair the public water supply use and in much the same manner. For instance, the zebra mussel has had “devastating economic impacts on . . . power plant intakes, and industrial facilities that use raw surface water.”²³

iii. Aquatic and Wildlife Uses

Minnesota recognizes aquatic and wildlife uses as a designated use.²⁴ These designated uses are impaired by a number of invasive species found in Minnesota.

“[A]fter habitat destruction, alien invasive species is the second leading cause of

¹⁷ *Id.*

¹⁸ Minn. Admin. R. § 7050.0140.

¹⁹ Indiana DNR, Zebra Mussel, <<http://www.in.gov/dnr/files/ZEBRA-MUSSEL.pdf>> (last visited July 29, 2008); U.S. Geological Survey Nonindigenous Aquatic Species Database, <<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=5>> (last visited July 28, 2008) (“*Zebra Mussel Fact Sheet*”).

²⁰ United States General Accounting Office, *Invasive Species: Clearer Focus and Greater Commitment Needed to Effectively Manage the Problem*, GAO-03-1, at 55 (October 2002) available at <<http://www.gao.gov/new.items/d031.pdf>> (“Clearer Focus Report”).

²¹ *Zebra Mussel Fact Sheet*.

²² Minn. Admin. R. § 7050.0140.

²³ *Clearer Focus Report* at 55.

²⁴ Minn. Admin. R. §7050.0140.

extinction of native aquatic species.”²⁵ For instance, the zebra mussel interferes with the growth, feeding, movement, respiration, and reproduction of native species, and it has been predicted that zebra mussels will cause the extinction of up to 140 native mussel species by 2012.²⁶ They have already extirpated native unionid clams completely from Lake St. Clair.²⁷

In addition, the effects of the zebra mussel’s massive consumption of phytoplankton may ripple through the food web to affect fish, potentially causing increased competition, decreased survival and decreased biomass of fish that eat plankton.²⁸ Zebra mussels may also cause biomagnification of toxins into both fish and birds.²⁹

The round goby has caused declines in the numbers of native fish species because of competition for food and habitat.³⁰ In Ohio, the round goby’s presence in Lake Erie led the state to shut down the smallmouth bass fishery to help prevent predation on smallmouth eggs.³¹

Similarly, the ruffe may have a detrimental effect on native yellow perch and walleye by feeding on their young or out-competing them for food.³² Yellow perch, emerald shiners, and trout-perch have all declined since the ruffe was introduced.³³

The spiny water flea competes with fish for zooplankton, and are therefore likely to adversely affect fish growth and survival.³⁴

iv. Recreational Uses

Minnesota recognizes recreational uses as a designated use.³⁵ Recreational use is impaired by invasive species found in Minnesota.

The zebra mussel affects recreational boating and fishing by attaching to exposed surfaces, increasing drag, overheating engines, sinking navigational buoys, and fouling fishing gear.³⁶ The spiny water flea fouls fishing gear and competes with larval fish for food.³⁷

²⁵ Great Lakes Water Quality Board, Report to the International Joint Commission, *Alien Invasive Species and Biological Pollution of the Great Lakes Ecosystem*, May 2001, at 3, <<http://www.ijc.org/rell/pdf/ais.pdf>> (last visited July 30, 2008).

²⁶ *Clearer Focus Report*, at 55.

²⁷ *Zebra Mussel Fact Sheet*.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Round Goby Fact Sheet*.

³¹ *Id.*

³² U.S. Geological Survey Nonindigenous Aquatic Species Database, *Gymnocephalus cernuus*, <<http://nas.er.usgs.gov/queries/factsheet.asp?SpeciesID=7>> (last visited July 28, 2008).

³³ *Id.*

³⁴ U.S. Geological Survey Nonindigenous Aquatic Species Database, <<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=162>> (last visited July 28, 2008) (“*Spiny Water Flea Fact Sheet*”); Indiana DNR, *Spiny and Fishhook Water Fleas*, http://www.in.gov/dnr/files/spiny_and_fishhook_water_flea.pdf (last visited Jul. 29, 2008).

³⁵ Minn. Admin. R. §7050.0140.

v. Aesthetic and Navigation Uses

Minnesota recognizes aesthetic use or navigation as designated uses.³⁸ These designated uses are impaired by invasive species found in Minnesota. For instance, zebra mussels cover beaches with sharp shells and give off a displeasing stench when they decay, which reduces recreation uses at beaches.³⁹

b. Invasive species found in Minnesota impair the water quality criteria component of the state's water quality standards.

Minnesota has established the following narrative criteria for Class 2 waters:

For all Class 2 waters, the aquatic habitat, which includes the waters of the state and stream bed, shall not be degraded in any material manner, there shall be no material increase in undesirable slime growths or aquatic plants, including algae, nor shall there be any significant increase in harmful pesticide or other residues in the waters, sediments, and aquatic flora and fauna; the normal fishery and lower aquatic biota upon which it is dependent and the use thereof shall not be seriously impaired or endangered, the species composition shall not be altered materially, and the propagation or migration of the fish and other biota normally present shall not be prevented or hindered by the discharge of any sewage, industrial waste, or other wastes to the waters.⁴⁰

These criteria are impaired in the manner described above in the section on the impairment of the aquatic and wildlife designated uses.

5. The draft permit does not impose effluent limitations sufficient to assure compliance with water quality standards.

Unfortunately, the draft permit will not assure compliance with the three components of WQS, either during the period given vessels to meet performance standards or afterwards.⁴¹ Current federal mandates require oceangoing vessels to conduct ballast water exchange ("BWE") or, if a vessel carries no ballast on board (a "NOBOB"), saltwater flushing ("SWF"). Neither of these management practices is completely effective in preventing the introduction of invasive species, and neither apply to vessels that stay within the Great Lakes. Although a less than complete solution might be acceptable for the prevention of some pollutants, it is unacceptable with respect to invasive species. Because only a small number of non-indigenous organisms

³⁶ *Zebra Mussel Fact Sheet*.

³⁷ *Spiny Water Flea Fact Sheet*.

³⁸ See Minn. Admin. R. §7050.0140.

³⁹ Indiana DNR, Zebra Mussel, <http://www.in.gov/dnr/files/ZEBRA-MUSSEL.pdf> (last visited July 30, 2008).

⁴⁰ Minn. R. § 7050.0150, Subp. 3.

⁴¹ Contrary to PCA's position, nondegradation applies to all vessels, regardless of when they came online, because future discharges of ballast water allowed under the draft permit are likely to contain new non-indigenous species.

could entrench themselves and spread through the waters, any solution must achieve complete prevention.⁴²

BWE is ineffective in eliminating organisms in ballast tanks.⁴³ “[L]ive freshwater-tolerant zooplankton and other organisms have been found in ships that reportedly exchanged ballast and these include species not previously reported from the Great Lakes.”⁴⁴

An EPA study of BWE found that “a 95 percent exchange of the original water resulted in flushing of only 25 to 90 percent of the organisms studied.”⁴⁵ This was due to the inability of BWE to remove water remaining in the crevices of the ballast tank, as well as sediment layers in the ballast tank, both of which contain organisms.⁴⁶ A number of studies have found that ships which exchanged ballast water in the ocean carried live organisms in their ballast tanks.⁴⁷

Another problem with BWE is that residual freshwater left in ballast tanks does not necessarily allow the ballast water to reach a high enough salinity to eliminate invasive species in the water. Species from low-salinity environments have exhibited a range of tolerance to high salinity exposure, making it difficult to generalize about their ability to survive the “salinity shock” which occurs during BWE.⁴⁸ Species with a broad salinity tolerance are most able to survive in a ballast tank following ballast water exchange; recently introduced species have such a broad tolerance.⁴⁹

BWE has not prevented the introduction of invasive species into the Great Lakes. Since BWE became mandatory, the mean rate of discovery of invasive species in the Great Lakes has not declined.⁵⁰ The fishhook water flea is one example of an invasive species that almost certainly invaded Lake Ontario well after implementation of mandated open-ocean exchange.⁵¹ The bloody-red mysid *Hemimysis anomala* is another.⁵² “Shipping remains the most plausible

⁴² See Ricciardi & MacIsaac, *Evaluating the Effectiveness of Ballast Water Exchange*, at 1322.

⁴³ Anthony Ricciardi, *Pattern of Invasion in the Laurentian Great Lakes in Relation to Changes in Vector Activity, Diversity and Distrib.* 425 (2006) (“Patterns of Invasion”).

⁴⁴ Ricciardi & MacIsaac, *Evaluating the Effectiveness of Ballast Water Exchange*, at 1321.

⁴⁵ EPA, *Aquatic Nuisance Species in Ballast Water Discharges: Issues and Options*, at 10 (2001).

⁴⁶ *Id.*

⁴⁷ *NOBOB Final Report*, at 6-9; Thomas Johengen et al., *Assessment of Transoceanic NOBOB Vessels and Low-Salinity Ballast Water as Vectors for Non-indigenous Species Introductions to the Great Lakes*, at 6-9 (last modified May 20, 2005), available at <<http://www.glerl.noaa.gov/res/projects/nobob/products/NOBOBFinalReport.pdf>> (“NOBOB Final Report”). Ricciardi & MacIsaac, *Evaluating the Effectiveness of Ballast Water Exchange*, at 1321.

⁴⁸ *Id.*, at 6-10.

⁴⁹ Ricciardi, *Patterns of Invasion*, at 425.

⁵⁰ *Id.*, at 428, 431.

⁵¹ Prince William Sound Regional Citizens Advisory Council, *Ballast Water Exchange; Sequential Method*, available at <<http://www.pwsrcc.org/docs/d001700.pdf>> (last visited July 29, 2008) (citing H.J. MacIsaac et al., *Invasion of Lake Ontario by the Ponto-Caspian predatory cladoceran Cercopagis pengoi*, 56 Can. J. Fish. Aquat. Sci. 1 (1999).

⁵² Ricciardi & MacIsaac, *Evaluating the Effectiveness of Ballast Water Exchange*, at 1321.

vector responsible for 62% of non-indigenous species (84% of free-living species) discovered after 1993.”⁵³

Ships entering the Great Lakes with fresh or low-salinity water residuals from their last overseas ballasting operation present the most serious threat of introducing non-indigenous species; nearly two-thirds of NOBOBs surveyed between December 2000 and December 2002 entered the Great Lakes in this condition.⁵⁴ “[D]uring the 2000 international shipping season it can be reasonably assumed that over 90% of the ocean ships entering the Great Lakes would have taken freshwater ballast into tanks which probably contained residuals from offshore, coastal or inland waters and the resulting mixture would ultimately have been discharged at one or more of the Great Lakes loading facilities.”⁵⁵

Thus, the residual water or sediment, or both, in NOBOB ballast tanks are a potential vector for the introduction of non-indigenous microorganisms, phytoplankton, and invertebrate species into the Great Lakes, especially algal and invertebrate species.⁵⁶ Experiments have shown that NOBOBs may spread nonindigenous zooplankton species to the upper Great Lakes from populations in the lower lakes.⁵⁷

Although SWF may be an improvement over no treatment at all, it is far from a panacea.

The use of high-salinity water to flush NOBOB ballast tanks should be considered a useful and beneficial management practice to reduce species transfers and invasion risks associated with NOBOB ships entering the Great Lakes. In the absence of proven alternatives, this practice provides *some* level of protection against some adult and larval life stages, *but probably not against resting eggs and spores of zooplankton and phytoplankton.*⁵⁸

The effectiveness of SWF varies with the organisms present in the ballast tank. SWF is more effective in eliminating organisms from environments similar to the Great Lakes, which have very low salinity. However, the mortality rate drops for those native to estuaries, where salt levels are higher.⁵⁹ The effectiveness of saltwater flushing also depends on the organism’s age; in the larval stage, a freshwater mussel would be vulnerable to saltwater, but an adult could retract into its shell and possibly survive until dumped into a Great Lakes harbor.⁶⁰

6. Requiring the submission of ballast water treatment plans in advance of the installation of treatment technology is appropriate.

⁵³ Ricciardi, *Patterns of Invasion*, at 428.

⁵⁴ *NOBOB Final Report*, at i, ii, 6-2, 6-8.

⁵⁵ *Id.* at 2-5.

⁵⁶ *Id.* at 3-27, 3-39, 3-53, 6-5-7, 6-10.

⁵⁷ *Id.* at 4-35, 6-7.

⁵⁸ Ruiz et al., *Current State of Understanding*, at 1321 (emphasis added).

⁵⁹ See John Flesher, *EPA Plan for Stopping Lake Invaders Debated*, Associated Press, July 11, 2008 *quoting* David Reid, National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory.

⁶⁰ *Id.*

Requiring a permittee to submit a ballast water treatment plan 180 days prior to the installation of treatment technology provides a necessary opportunity for review. This is a major improvement from the working draft's requirement that the treatment plan be submitted after installation; however, PCA should make explicit a requirement that issuance of a permit is contingent upon compliance with water quality standards.

7. Monthly Discharge Monitoring Reports (DMRs) should be required as a check on the adequacy and implementation of a vessel's ballast water treatment plan.

Part 4 of the draft permit regarding record-keeping and reporting requires the yearly submission of DMRs for the previous year. Since DMRs will play an important role in evaluating compliance with WQS, a monthly reporting requirement would better assure compliance and would also lead to more timely revisions of the plan, as necessary.

In addition, PCA should require monitoring of ballast water discharges for compliance with WQS. "Up-front" verification is desirable. However, it should not substitute for or preclude monitoring of actual performance, especially since results obtained in up-front verification are likely to be obtained in more controlled conditions.

8. PCA should require vessels to use environmentally sound treatment technology.

The permit should require vessels to use environmentally sound treatment technologies, and to demonstrate that their treatment technology will be environmentally sound. Treatment to prevent the introduction of non-indigenous species should not come at the expense of ecosystem integrity.

Congress defined "environmentally sound methods, efforts, actions or programs" in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 ("NANPCA"), as follows:

"[E]nvironmentally sound" methods, efforts, actions or programs means methods, efforts, actions or programs to prevent introductions or control infestations of aquatic nuisance species that minimize adverse impacts to the structure and function of an ecosystem and adverse effects on non-target organisms and ecosystems and emphasize integrated pest management techniques and nonchemical measures.⁶¹

PCA should draw on the guidance provided by this definition of "environmentally sound" in evaluating whether technology and methods for treating ballast water are acceptable. In particular, PCA should follow the precept that an environmentally sound method is one which, among other characteristics, emphasizes non-chemical measures.

⁶¹ 16 U.S.C. § 4702(6).

Accordingly, the draft permit should specify that deoxygenation and ultraviolet (“UV”) radiation are environmentally sound treatment technologies. This would be consistent with Michigan’s general permit for ballast water discharges.⁶² Consequently, it would provide consistency for vessels transiting the Great Lakes. In addition, it would enable PCA to work cooperatively with Michigan to ensure enforcement. PCA should also revise the permit to allow vessel operators to use treatment technologies other than deoxygenation and UV radiation, *provided* they demonstrate that such technologies are effective in achieving the applicable performance standards and are environmentally sound.

NWF does not support the use of chlorine dioxide or hypochlorite to treat ballast water, except perhaps in emergency situations, such as to stop the spread of infectious diseases. Sodium hypochlorite (more commonly referred to as “bleach” or “chlorine”) is a toxic chemical that creates toxic by-products, such as chloroform.⁶³ “[M]any of these chlorinated hydrocarbons have been shown to be toxic to various life forms.”⁶⁴ Moreover, once these toxic by-products are released, they can be “quite resistant to biodegradation.”⁶⁵

Hypochlorite may be used in wastewater treatment plants, but that does not mean it is safe to use for the treatment of ballast water. Were hypochlorite used without pre-filtration it would react with organic debris and sediment. That would cause a serious problem because studies have found that *toxic by-product “concentrations increased with increasing sediment concentrations, undoubtedly due to the increase in organic precursors in the added sediment.”*⁶⁶ Thus, even if hypochlorite were considered safe for use in wastewater treatment plants, which add the chemical to *pre-filtered* water, the use of hypochlorite to treat *unfiltered* ballast water will create toxic conditions.

Moreover, scientists may not have yet identified the most toxic effects of hypochlorite. “[A]lthough it is the chlorinated hydrocarbons that are under scrutiny, some reports indicate that the brominated hydrocarbons might be a *significantly* greater health threat.”⁶⁷ Also, some studies have found that although there was no general correlation, “in some effluents chlorination/dechlorination did *significantly increase the toxicity* of effluents.”⁶⁸ In other words,

⁶² See Michigan Department of Environmental Quality, Ballast Water Control General Permit, No. MIG140000 (Oct. 11, 2006), available at <http://www.deq.state.mi.us/documents/deq-water-npdes-generalpermit-MIG140000.pdf> (last visited Apr. 29, 2008).

⁶³ See, e.g., Rudolf Matousek et al., *Electrolytic Sodium Hypochlorite System for Treatment of Ballast Water* (2003), at 4 (noting that several of these toxic by-products “have been linked to cancer in laboratory animals”).

⁶⁴ Greg D. Simpson & Eric Phillips, *Environmental Impact of Chlorine Dioxide* (April 1998), at 1 (comparing the effects of chlorine dioxide to the more toxic effects of sodium hypochlorite) (on file).

⁶⁵ *Id.*

⁶⁶ BMT Fleet Technology et al., *Studies to Address the Issues Raised by the Michigan Environmental Science Board in a 2002 Report titled “Critical Review of a Ballast Water Biocide Treatment Demonstration Project using Sodium Hypochlorite”* (May 2004), at 3 (emphasis added).

⁶⁷ Simpson & Phillips, *Environmental Impact of Chlorine Dioxide* at 1 (emphasis added) (on file).

⁶⁸ BMT Fleet Technology et al., *Studies to Address the Issues Raised by the Michigan Environmental Science Board in a 2002 Report titled “Critical Review of a Ballast Water Biocide Treatment Demonstration Project using Sodium Hypochlorite”* at Appendix A-9 (emphasis added).

despite the widespread use of hypochlorite in other contexts, many of its long-term toxic effects—when it is used to treat unfiltered ballast water—are still unknown.

In fact, a Michigan Environmental Science Board (“MESB”) panel found in 2002 that it is too early to determine whether hypochlorite is an environmentally sound technology:

[T]he MESB Panel concludes that insufficient information (too few tests and lack of data as to what requirements would need to be met throughout the Great Lakes jurisdictions), was provided to definitively address the question regarding if such discharges could be safely and legally discharged into Great Lakes waters.⁶⁹

In addition, chlorine dioxide poses its own problems concerning potential residuals in treated water. For example, a recent study on drinking water found that while chlorine dioxide can reduce the production of trihalomethanes compared to chlorine, the mutagenicity (to hamster lung cells) of water treated with chlorine dioxide was reduced only slightly (20 to 30 percent) compared to chlorine-treated water.⁷⁰

9. PCA Should Provide For Public Participation In The Permitting Process.

PCA should provide public access to each vessel operator’s water and sediment management plans and treatment technology plans and an opportunity for public comment before issuing a notice of coverage. Without such access and opportunity, members of the public will be unable to participate in the development of a vessel operator’s treatment method. Public scrutiny and comment seems especially appropriate as PCA initiates a permitting program of surpassing importance to the Great Lakes’ indigenous species, ecosystem stability, water-dependent activities, and industries that have collectively lost billions of dollars as a result of invasive species.

While under the General Requirements section of the permit PCA specifies that all vessel discharge reports (not including confidential data) and effluent data will be available for public inspection, it is vital the public have the opportunity to comment and hold the shipping industry accountable for their discharge operations by requiring an opportunity for public comment prior to the implementation of management plans and technology under the permit

Conclusion.

NWF appreciates PCA’s initiative to control the introduction of exotic species to Minnesota’s waters, as well as its provision of this opportunity to participate in the development of the final permit prior to its publication. We would appreciate copies of any future drafts of the

⁶⁹ Michigan Environmental Science Board Ballast Water Biocides Investigation Panel, Critical Review of a Ballast Water Biocides Treatment Demonstration Project Using Copper and Sodium Hypochlorite (September 2002), at viii.

⁷⁰ Itoh S, Murakami H, Fukuhara M, Nakano A. 2007. Limitations of Chlorine Dioxide As An Alternative Disinfectant in Comparison with Chlorine from the Viewpoint of Mutagenicity. *Journal of Water Supply Research and Technology-Aqua* 56:95-104.

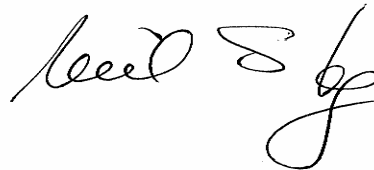
Ms. Mary Jean Fenske

July 30, 2008

Page 13

permit, and an opportunity to comment on them, too. Please include NWF in any mailing list you maintain regarding the draft or final permit.

Yours truly,

A handwritten signature in black ink, appearing to read "Neil S. Kagan". The signature is fluid and cursive, with the first name "Neil" being the most prominent part.

Neil S. Kagan
Senior Counsel

This brief was prepared with the assistance of Erica Armstrong (J.D. expected 2010, Michigan State University College of Law, Andrew Y. Chiang (J.D. expected 2009, University of Michigan Law School), and Joseph T. Neely (J.D. expected 2009, University of Michigan Law School).