



**NATIONAL WILDLIFE FEDERATION®**  
**Great Lakes Natural Resource Center®**

April 30, 2008

VIA EMAIL

Ms. Mary Jean Fenske  
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Industrial Division  
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Re: Comments on Ballast Water Discharge General Permit – Working Draft

Dear Ms. Fenske,

On behalf of the National Wildlife Federation (“NWF”), we are writing to comment on the April 10, 2008, working draft of the Ballast Water Discharge General Permit (“draft permit”) proposed by Minnesota Pollution Control Agency (“PCA”). NWF commends PCA for developing such a permit. One is certainly necessary to protect Lake Superior and its tributaries from the further introduction of exotic species carried in ballast water. The lake and its tributaries are already impaired by such species, including the Eurasian water milfoil, spiny water flea, zebra mussel, round goby, and ruffe. 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 Apr. 30, 2008); Minnesota Department of Natural Resources, *Invasive Aquatic Animals*, *available at* <http://www.dnr.state.mn.us/invasives/aquaticanimals/index.html> (last visited Mar. 25, 2008); U.S. Geological Survey Nonindigenous Aquatic Species Database, *Round Goby*, <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=713> (last visited Mar. 25, 2008); U.S. Geological Survey Nonindigenous Aquatic Species Database, *Gymnocephalus cernuus*, <http://nas.er.usgs.gov/queries/factsheet.asp?SpeciesID=7> (last visited Mar. 25, 2008).

The draft permit contains many elements vital to controlling the introduction of exotic species to Lake Superior and its tributaries. In many respects, however, the draft permit takes an approach too protracted or relaxed to effectively address the immediate and severe threats to the ecosystem and the economy caused by invasive species. For instance, giving vessels as many as five years to comply with the D-2 performance standards of the International Maritime Organization (“IMO”) is far too generous, especially since technology capable of meeting those standards is already available. Nor should vessels be exempted from compliance with performance standards depending on dry dock availability. Furthermore, the draft permit should

require compliance with performance standards equal to or more stringent than California's beginning in 2012. Only by setting a firm timetable will PCA drive the development of additional treatment technology necessary to protect Minnesota waters.

We will expand upon these and make other points in the comments which follow.

**1. PCA should expeditiously move toward a protective zero discharge performance standard.**

Exotic species do not generally dissipate over time once they become established in the ecosystem, and there is no reason to believe that Minnesota waters are capable of assimilating the introduction of more exotic species. These circumstances justify expeditious movement toward a zero discharge performance standard.

In the absence of treatment technology currently capable of meeting such a standard, the draft permit should be revised to require compliance with the IMO D-2 performance standards on a timetable shorter than five years. A shorter timetable is justified because technology capable of meeting those standards is already available.

For example, Alfa Laval's PureBallast ultraviolet/titanium system is now available for installation, and has been ordered by German vessel manager ER Schiffahrt for four new vessels to be delivered in 2009. See Brian Warshaw, *Companies Line Up for Ballast Water Approval Testing*, TANKER Operator at 32 (Nov./Dec. 2007), available at <http://www.optimarin.com/postmann/dbase/bilder/Pages%20from%20TOnovdec07lowres-2.pdf> (last visited Apr. 29, 2008). The PureBallast system received final approval from the IMO on July 13, 2007. IMO, *List of Ballast Water Management Systems That Make Use of Active Substances which Received Basic and Final Approval*, BW.M.2/Circ.11 (Oct. 3, 2007), available at [http://www.imo.org/includes/blastDataOnly.asp/data\\_id%3D20150/11.pdf](http://www.imo.org/includes/blastDataOnly.asp/data_id%3D20150/11.pdf) (last visited Apr. 30, 2008).

The OceanSaver® deoxygenation system should have completed its land-based testing and shipboard trials by this summer. See Brian Warshaw, *Companies Line Up for Ballast Water Approval Testing*, TANKER Operator at 32-33 (Nov./Dec. 2007), available at <http://www.optimarin.com/postmann/dbase/bilder/Pages%20from%20TOnovdec07lowres-2.pdf> (last visited Apr. 29, 2008). Indeed, OceanSaver AS was ready to offer firm quotations for deliveries from 2008 and onwards as early as August 2007, and has already contracted to make deliveries of the OceanSaver® system. OceanSaver AS, *Launch of the OceanSaver® Ballast Water Treatment System* (Aug. 2007), available at <http://www.oceansaver.eu/> (last visited Apr. 29, 2008); OceanSaver AS, *Leif Höegh Orders the OceanSaver® BWT System for 10 Ships* (Aug. 2007), available at <http://www.oceansaver.eu/> (last visited Apr. 29, 2008).

For these reasons, NWF recommends that PCA revise the draft permit to require compliance with the IMO D-2 performance standards no later than the beginning of the 2009 shipping season.

In addition, PCA should revise the draft permit to require compliance with more stringent performance standards no later than the beginning of the 2012 shipping season. Setting such a timetable would drive the development of treatment technologies, as well as the development of methodologies for evaluating their effectiveness.

To NWF's knowledge, California has adopted the most stringent set of performance standards in the United States to date. Cal. Code Regs. tit. 2, § 2291 *et seq.* (2008), available at [http://www.slc.ca.gov/Spec\\_Pub/MFD/Ballast\\_Water/Documents/PSREGFinal101707.pdf](http://www.slc.ca.gov/Spec_Pub/MFD/Ballast_Water/Documents/PSREGFinal101707.pdf) (last visited Apr. 29, 2008). These standards are set out in the following table:

Organism Size Class	Performance Standard
Organisms greater than 50 $\mu\text{m}$ in minimum dimension	No detectable living organisms
Organisms 10 – 50 $\mu\text{m}$ in minimum dimension	< 0.01 living organisms per ml
Organisms less than 10 $\mu\text{m}$ in minimum dimension	< $10^3$ bacteria/100 ml < $10^4$ viruses/100 ml
<i>Escherichia coli</i>	< 126 cfu/100 ml
Intestinal enterococci	< 33 cfu/100 ml
Toxicogenic <i>Vibrio cholerae</i> (01 & 0139)	< 1 cfu/100 ml or < 1 cfu/gram wet weight zoological samples

These performance standards significantly improve upon ballast water exchange, are consistent with the best professional judgment of scientific experts who participated in the IMO Convention, and approach a protective zero discharge standard. N. Dobroski, L. Takata, C. Scianni and M. Falkner, California State Lands Commission, Marine Facilities Division, *Assessment of the Efficacy, Availability and Environmental Impacts of Ballast Water Treatment Systems for Use in California Waters* (Dec. 2007), available at [http://www.slc.ca.gov/Spec\\_Pub/MFD/Ballast\\_Water/Documents/Final\\_TechReport\\_121307\\_2.pdf](http://www.slc.ca.gov/Spec_Pub/MFD/Ballast_Water/Documents/Final_TechReport_121307_2.pdf) (last visited Apr. 29, 2008).

PCA should also follow the lead of the U.S. House of Representatives, which has just passed a bill requiring zero discharge of any living organism by 2015. H.R. 2830, 110th Cong., 2d Sess. § 502, amending 16 U.S.C. § 4701 by inserting subsection (b)(1) (2008). Such a requirement, although perhaps aspirational, will force the development of the technology necessary to ensure the protection of Minnesota waters against invasive species.

**2. PCA should mandate submittals prior to issuing a notice of coverage, and monitoring of all discharges after issuing a notice of coverage.**

NWF recommends that PCA revise the draft permit to require the submission of water and sediment management plans and treatment technology plans prior to issuing the permit, rather than 180 days to one year after permit issuance. In addition, the permit should specify that PCA will issue a permit only upon a vessel operator's demonstration that the plans will be effective in achieving the applicable performance standards. Such a precautionary approach would screen out vessels which can not meet the performance standards.

The draft permit also requires the vessel to maintain a current copy of the plans on board and to make the plan available to PCA upon request. NWF commends PCA for including this provision because it creates a system of accountability for vessel operators and opportunities for oversight and review by PCA and citizens.

**3. PCA should require vessels to use environmentally sound treatment technology.**

PCA should revise the permit to specify that it will issue a permit only upon a vessel operator's demonstration that the treatment technology will be environmentally sound. Treatment to prevent the introduction of exotic 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.

16 U.S.C. § 4702(6).

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.

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. *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). 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. *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”). “[M]any of these chlorinated hydrocarbons have been shown to be toxic to various life forms.” 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). Moreover, once these toxic by-products are released, they can be “quite resistant to biodegradation.” *Id.*

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.”* 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). 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.” Greg D. Simpson & Eric Phillips, *Environmental Impact of Chlorine Dioxide* (April 1998), at 1 (emphasis added) (on file). Also, some studies have found that although there was no general correlation, “in some

effluents chlorination/dechlorination did *significantly increase the toxicity* of effluents.” 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 Appendix A-9 (emphasis added). In other words, 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.

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.

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. 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.

#### **4. 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.

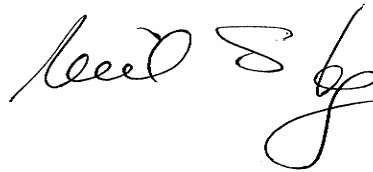
#### **Conclusion.**

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

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of the final permit prior to its publication. We would appreciate copies of any future drafts of the permit, and an opportunity to comment on them, too. Please include us 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 more prominent and the last name "Kagan" written in a more compact, stylized manner.

Neil S. Kagan  
Senior Counsel

s/

Michaela Tarr  
Legal Intern