Comments of the
World Shipping Council

Submitted to the
New York State
Department of Environmental Conservation

In the matter of
Draft Clean Water Act Section 401 Certification for 2013
Commercial and Large Recreational Vessel General Permit

June 6, 2012
The World Shipping Council (the “Council” or “WSC”) respectfully files these comments in response to the New York State Department of Environmental Conservation’s (NYSDEC) draft Clean Water Act Section 401 Certification for the 2013 Commercial and Large Recreational Vessel General Permit (VGP), which was posted on the NYSDEC website on May 16, 2012. The NYSDEC set a submission deadline of June 6 for comments on the agency’s potential action on the U.S. Environmental Protection Agency’s request for a section 401 water quality certification for EPA’s draft VGP, which is scheduled to become effective on December 19, 2013.

The Council is a non-profit trade association whose goal is to provide a coordinated voice for the liner shipping industry in its work with policymakers and other industry groups with an interest in international transportation. Liner shipping is the sector of the maritime shipping industry that offers regular service based on fixed schedules and itineraries. WSC members carry over 90% of the United States’ containerized ocean commerce, and include the full spectrum of carriers from large global lines to niche carriers, offering container, roll-on/roll-off, and car carrier service as well as a broad array of logistics services.1

1. **Support for New York’s Adoption of Federal Numeric Ballast Water Treatment Standard.**

The Council commends New York State for supporting the establishment of a nationwide ballast water discharge standard that provides the best available level of environmental protection and recognizes that the vessels that carry America’s export and import commerce call at multiple ports in the United States and around the world and cannot be subject to different treatment standards in the various jurisdictions they call. Having states support a nationwide, protective ballast water treatment standard reduces the uncertainty regarding what standard will be applied and will facilitate the type approval of protective treatment technologies for use on vessels calling in U.S. ports.

2. **Ballast Water Exchange Plus Treatment Should Not Be Expanded Beyond the Great Lakes Without Further Study.**

NYSDEC’s Condition 2 would require all vessels calling New York, including those equipped with ballast water treatment systems pursuant to the VGP and U.S. Coast Guard Final Rule, to continue to conduct ballast water exchange or flushing beyond the exclusive economic zone. Although some studies have been cited to support the idea that “exchange plus treatment” may have benefits for ballast water discharges into the fresh waters of the Great Lakes, no studies have been conducted that support the application of exchange plus treatment for discharges into saltwater ecosystems. NYSDEC’s draft condition 2, however, would require

---

1 A list of the Council’s member companies and additional information about the liner industry and the Council may be found at: [www.worldshipping.org](http://www.worldshipping.org).
“exchange plus treatment” for all receiving waters, including New York harbor, which is a saltwater ecosystem.

The fact sheet accompanying NYSDEC’s draft section 401 certification cites Canada’s BLG 15/5/7 paper to the International Maritime Organization (IMO) as justification for requiring “exchange plus treatment” for vessels discharging into any New York waters. The Canadian BLG paper, however, only recommends employment of exchange plus treatment for fresh or brackish receiving waters, which would not be applicable to New York harbor:

“Ballast water exchange is particularly effective for reducing invasion risk for fresh or brackish water recipient habitats through the introduction of an environmental salinity barrier.”

We note that the recommendation in Canada’s BLG paper – to consider application of exchange plus treatment for fresh or brackish receiving waters – is a theory that is not based on a direct study of the efficacy of exchange plus treatment (which has not been studied directly), but on a scientific study that found only that exchange alone may sometimes be as effective as treatment for ballast water discharges into the freshwater Great Lakes. The BLG paper extrapolates from that study that exchange plus treatment could reduce biological invasion risk for discharges into fresh and brackish recipient waters: “In theory, this proposed combination approach for ballast water management should result in reduced invasion risk by lowering propagule pressure and introducing an environmental barrier.” New York’s Condition 2 would extrapolate even further – and well beyond what the science today supports.

The EPA draft of the next VGP contains a proposal in Section 2.2.3.5.1.1 that would require exchange plus treatment, but this requirement would only apply to vessels entering the Great Lakes “if the vessel has taken on ballast water from a freshwater or brackish water port (salinity <18 ppt) within the previous month”. EPA’s rationale for this requirement does not, however, apply to waters outside the Great Lakes, including New York Harbor. EPA’s rationale is that an environmental mismatch occurs when freshwater species that are taken up in the ship’s ballast tanks are shocked by saline water during ballast water exchange before being discharged into the freshwater ecosystem of the Great Lakes, where the freshwater species could otherwise survive. Unlike ballast water exchange into freshwater ecosystems, the “shock effect” does not occur for ballast water taken up and discharged in salt water. Consequently, the effectiveness of ballast water exchange in saline uptake and discharge waters is highly variable in terms of total viable organisms discharged. This is the principal reason why so much effort has gone into establishing a uniform numeric ballast water discharge standard to replace ballast water exchange.

Exchange Plus Treatment Should Be Studied for Effectiveness and Unintended Consequences Before It Is Applied Outside the Great Lakes. As noted above, no studies have been completed – with respect to either freshwater or saltwater receiving waters – to evaluate whether ballast water exchange coupled with treatment provides better results than treatment alone. The application of exchange plus treatment for vessels discharging into freshwater is based on the
theory that exchange plus treatment would have benefits beyond treatment alone since studies have demonstrated that exchange alone can be exceedingly effective for ballast water that is taken up and discharged in freshwater. Whatever the strength of the theory with respect to freshwater receiving waters, that theory by its own terms does not translate to saline receiving waters, and the exchange plus treatment approach should not be extended to saline receiving waters until its potential positive and negative consequences are better understood.

If there were no possible negative consequences from requiring exchange plus treatment to all waters, then the potential benefits might outweigh the safety concerns and additional air emissions associated with the additional ballast water pumping cycle that would be required. The fact is, however, that there are other possible negative results that should be understood before the practice is expanded beyond freshwater receiving waters. Ballast water treatment systems have been designed to meet the numeric discharge standard by treating un-exchanged ballast water that is brought on board the ship in a variety of geographic locations and retained for the full voyage. Requiring exchange plus treatment changes the operational premises upon which ballast water treatment systems have been designed for more than ten years and may affect how they perform. Those potential effects should be scientifically evaluated, not merely assumed.

As an example of how exchange plus treatment may make results worse rather than better, for many systems the dwell time of the water in the ballast tanks is an important aspect of treatment. Dwell time allows the active substances or other treatment techniques adequate time to distribute through the water and kill the organisms present in the tanks. In fact, the passage of time even without treatment has been shown to reduce the number of viable organisms in ballast water tanks. Because conducting exchange in tandem with treatment would reduce the dwell time, it is also possible that it could reduce, not improve, the efficacy of the treatment system.

A related issue is the fact the U.S. Coast Guard, in consultation with EPA, has developed a treatment technology type approval certification program, based on land-based and shipboard testing, which does not include evaluation of performance using exchange plus treatment. For New York to impose an operational requirement that is at odds with the fundamental assumptions underlying the type approval testing protocols introduces a new variable that could undermine confidence in the results of Coast Guard type approvals.

Of equal concern, New York would in effect be requiring every state that is called by a vessel that also calls New York on a particular voyage to accept the risks associated with New York’s untested, purely theoretical expansion of the exchange plus treatment concept beyond its already narrow scientific base. The Great Lakes states, in consultation with the EPA, have generally accepted the exchange plus treatment approach for their freshwater resources. We are not aware of any such analysis or consultation between New York and other states on the U.S. East Coast that have ports likely to be called by vessels also calling New York. New York’s actions have effects outside of its state waters, and at the very least other affected states should be consulted before this approach is adopted.
There is a possibility that ballast water exchange plus treatment may turn out to be a useful tool for saline uptake and saline receiving waters. There is also a possibility that adopting that approach for saline receiving waters will reduce the effectiveness of the ballast water treatment systems that are at the core of the shared national goal of minimizing ballast water mediated invasive species introductions. The point is that nobody today understands or has quantified either the positive or the negative implications of using this approach in saltwater. Those implications should be studied, not assumed, before New York effectively imposes such a requirement on a substantial portion of the U.S. East Coast.

3. The Proposed Condition 5 Live Organism Monitoring Conditions Are Not Practicable

Draft certification condition 5 – “Live organism monitoring” – is not practicable as drafted. There are two primary problems. The first is that the condition itself does not specify which organism classes are to be targeted in the sample analysis. The second problem is that the specified sampling protocols either do not exist (in the case of the California protocols) or are unsuitable (ETV and G8/G9 protocols). More fundamentally, as the Coast Guard has repeatedly made clear, there are as yet no protocols that are appropriate for compliance monitoring (as distinguished from type approval validation).

a. Need for Clarification of Organisms to be Analyzed

With respect to the question of what organism classes are to be sampled, the issue is simply one of clarification. Condition 5 does not itself state which organism classes are subject to compliance monitoring. The NYSDEC’s Fact Sheet makes reference to the greater than 50 micron and 10-50 micron class sizes. Given that the VGP at section 2.2.3.5.1.1.4 already requires monitoring for indicator bacteria (falling into the less than 10 micron class), it would appear that the Fact Sheet limitation to organisms larger than 10 microns is what is intended. If that is correct, and if New York still chooses to adopt draft Condition 5 after consideration of the comments below, the Council requests that those size classes be identified in the Condition 5 language as well as in the Fact Sheet.

b. The Proposed Testing Protocols are Unsuitable for Compliance Testing

The second problem with Condition 5 is more substantive. Condition 5 states that monitoring be conducted “using the shipboard Environmental Technology Verification (ETV) sampling protocol, or the California shipboard sampling protocol, or a protocol consistent with the International Maritime Organization IMO G8/G9 protocols, whichever is most advanced and available.” Each of the referenced protocols is inappropriate for the intended purpose of compliance testing.

The EPA’s ETV protocol and the IMO G8/G9 protocol were designed for, and are scaled for, treatment system type approval testing. More specifically, the ETV protocols were designed for
land-based testing. For example, the introduction to the ETV protocol states that “this protocol addresses the use of a land-based testing facility (TF) rather than shipboard testing . . . .” In part because they are designed as type approval mechanisms, these protocols require, especially for the greater than 50 micron size class, very large volumes of sample water. The ETV protocol, for example, requires between 12 and 60 cubic meters of water to be collected and analyzed in order to test a system for compliance with the greater than 50 micron size class. See ETV Version 5.1, Table 13. The G8/G9 protocols also require large sample volumes for that size class. It is simply unrealistic to expect such sample sizes to be collected from vessels in normal operation and transported to suitable laboratories for testing within the narrow time windows allowed by the protocols. Indeed, the very act of transporting that much water from a ship to a laboratory would introduce enough contamination and induce enough organism die-off to render any results meaningless.

The practical problems with the proposed Condition 5 are not limited to the largest organism size class. The 10-50 micron size class presents difficulties associated with distinguishing live organisms from dead organisms. The ETV Protocol Version 5.1, at page 46, describes part of the problem this way with respect to the 10-50 micron size class:

“Within this size class fall dormant cells or resting stages exhibited across a broad phylogenetic range of microalgae, heterotrophic protists, and metazoans (e.g., Marret and Zonneveld, 2003; Matsuoka and Fukuyo, 2000). To encompass this group, the term ‘cysts’ is used. . . . But because of their low metabolic state and relative impermeability to stains, it may be difficult to assess the viability of cysts on an individual basis without painstaking, cultural analyses, which, if possible at all, may require weeks or months to complete.”

The Coast Guard, in its Ballast Water Final Rule, 77 Fed. Reg. 17254, 17276 (March 23, 2012), also made reference to the difficulties associated with counting viable organisms of this size class, noting the multi-stage tests resorted to by the ETV protocol:

“Three commenters discussed the difficulties of making determinations of live/dead status of organisms as part of approval testing, particularly for organisms in the 10-50 micrometers size range. The Coast Guard acknowledges the identified difficulties. The Coast Guard points out that the ETV protocol, incorporated by reference in this final rule, on which the approval testing requirements are based, includes a multi-stain process because of these difficulties.”

Although it may be possible to mitigate the detection problems inherent in assessing viable organisms in the 10-50 micron class size under controlled, land-based type approval conditions, there is currently no accepted protocol for doing so under the compliance monitoring conditions that Condition 5 addresses.

With respect to the California compliance protocol, no such protocol yet exists. The California State Lands Commission (CSLC) on February 24, 2012, proposed a compliance testing protocol, but that rulemaking has not been completed. At the CSLC public meeting on May 24, 2012, CSLC staff was directed to revise the proposed rule after completion of a scientific peer
review of the proposed methodologies. (A video recording of that meeting is available on the CSLC’s website.) Thus, although there may be a California testing protocol in the future, the contents of such a protocol have not yet been established, and it is both scientifically and legally inappropriate to adopt a condition based on a set of requirements that have not yet been defined. In addition, the California protocol as originally proposed provides virtually no analytical guidance, and, for the greater than 50 micron size class, is not designed to assess compliance with a volume-based numeric standard.

The reality at this point in time is that no practical compliance testing protocol (as distinguished from the verification protocols such as the ETV and G8/G9 protocols discussed above) has been developed by any entity or government agency. That said, the Coast Guard is actively working to develop just such a compliance testing protocol. In its March 23, 2012 Final Rule (77 Fed. Reg. at 17268), the Coast Guard stated that: “We acknowledge that compliance exam procedures for BWMS will be an important component of enforcement, and such procedures are under development.” Even before the issuance of its final rule, the Coast Guard had convened a “Ballast Water Discharge Standards Compliance Subject Matter Expert Workshop” on June 28-30, 2011, in New London, Connecticut. In the report for the workshop, the Coast Guard stated the compliance monitoring problem this way:

“Due to a lack of a compliance monitoring framework and verification tools and methods, the USGC is unable to quickly and reliably determine vessel compliance with the Phase One or the proposed Phase Two BWDS. Additionally, there is little information on available technologies or the capabilities (testing limitations) of those technologies to verify the performance of ballast water treatment systems. With the multiple variables for BWTS and the vessels on which they will be installed, it is essential to understand and assess the costs, risks, and engineering and market constraints to develop feasible treatment verification tools and methods for Phase One and Phase Two ballast water discharge standards.”

On May 17, 2012, the Coast Guard issued a “Request for Information” seeking public input on available technologies, methodologies, processes, etc. that could be employed in creating a realistic compliance testing program for ballast water treatment technologies. We understand that after that RFI closes this month, the Coast Guard will continue its work to create a compliance monitoring program. Presumably that program will be finalized by the time that significant numbers of treatment systems are installed in vessels under the federal (EPA and Coast Guard) requirements.

---


3 Available at: https://www.fbo.gov/index?s=opportunity&mode=form&id=f43268a212644fe0c71a0fed1a4f&tab=core&cvew=0
In summary, Condition 5, as currently drafted, could not be implemented by vessel operators today. The ETV and G8/G9 type approval protocols have not been modified or scaled for use in compliance testing. If those protocols were applied unmodified to compliance testing, they could not be used because of the sample volumes required and the impracticability of implementing the rigorous analytical and sample handling requirements of those protocols in a compliance testing setting. The California protocols referenced in Condition 5 have not been adopted, may be substantially modified before they are adopted, and, in their draft form, provide no useful guidance to vessel operators or potential compliance monitoring contractors.

The most promising avenue for the creation of a workable compliance monitoring protocol is through the process that the Coast Guard has begun and is committed to completing. Given that the Coast Guard has not completed that work, however, it would be inappropriate to adopt a protocol that does not yet exist as part of the New York section 401 certification. If, despite that fact, New York does retain a compliance monitoring requirement, incorporation of the Coast Guard compliance protocols (to be effective as a condition once they are finalized) would be the least objectionable way forward. Any other approach would create a situation in which vessel operators could not comply and in which neither New York nor EPA would obtain any useful information regarding ballast water treatment technology performance beyond what will already be provided by the monitoring requirements of the VGP.

4. Conclusion.

The World Shipping Council commends New York’s support for a uniform national ballast water treatment standard. The Council urges New York to extend its support for that standard by waiting until there is a scientific basis to evaluate the implications of the exchange plus treatment approach before deciding whether to extend that practice to saline receiving waters. Especially because New York’s actions in this area will affect ballast water discharged in other states, it is important that there be a firm scientific basis before any such program is implemented. Finally, The Council encourages New York to defer imposing additional ballast water treatment system monitoring requirements, at least until the Coast Guard has completed its promulgation of a compliance monitoring protocol.

# # #