

No. 13-1745

with Nos. 13-2393, 13-2757, and 14-0039 *Consolidated*

UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

NATURAL RESOURCES DEFENSE COUNCIL *et al.*, Petitioners,
v.
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Respondent,
LAKE CARRIERS' ASSOCIATION and CANADIAN SHIPOWNERS
ASSOCIATION, Intervenors

ON PETITION FOR REVIEW OF FINAL ACTION OF THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**PETITIONERS NATURAL RESOURCES DEFENSE COUNCIL,
NORTHWEST ENVIRONMENTAL ADVOCATES,
AND THE CENTER FOR BIOLOGICAL DIVERSITY
REPLY BRIEF IN PAGE PROOF FORM**

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INTRODUCTION

Aquatic invasive species pose dire problems for the country's environment and economy. They are unlike any other pollutant; they multiply, move upstream and down, and hitch rides on recreational boats. The passage of time is no antidote; to the contrary, time only allows invasives to become established and cause more harm. In short, invasive species spread and grow like wildfire.

Ballast water discharges are the primary source of aquatic invasive species, with as many as 4,000 species in a single ship's tank at any given time. *See* EPA-HQ-OW-2011-0141-0004 at 128. After 30 years of refusing to regulate those discharges, EPA now refuses to place any meaningful restrictions them. With this second Vessel General Permit ("VGP"), EPA is trying to fight the raging wildfire of invasive species with a garden hose, when far greater effort is required. The VGP simply does not comply with the Clean Water Act's ("CWA") technology-forcing or water quality protection mandates.

Because the devastating ecological, human health, and economic impacts from aquatic invasive species cannot be overstated, they bear further discussion. Unlike any other vector, "ballast water operates to simultaneously transfer entire ecological communities, including viruses, bacteria, phytoplankton, zooplankton, [and] fish." EPA-HQ-OW-2011-0141-0188 at 3. For example, the New York Department of Environmental Conservation reports that, "[t]o date, over 185

nonnative species have been documented in the waters of the Great Lakes [and] over 113 nonnative species in the Hudson River.” Response, EPA-HQ-OW-2011-0141-0926 at 355. Indeed, “half the biomass, by weight, in the Hudson River is comprised of [invasive] zebra mussels alone.” *Id.* Invasive species wreak economic havoc by “clogging water intakes and damaging native sport fisheries.” *Id.* And they have been linked with significant human health threats, including cholera. *Id.* (explaining that ballast discharges of bacteria in the same family as cholera “are the suspected source of a foodborne illness outbreak from shellfish harvested from Oyster Bay, New York”). The damage from aquatic invasive species is, in a word, staggering.

EPA does not deny the severity of the problem. EPA Br. 7–8. Rather, EPA uses the overwhelming magnitude of the problem as a crutch for issuing a permit that does little to address it. *See, e.g.*, EPA Br. 8–9. All told, EPA’s defenses amount to this: (1) the VGP will reduce invasive species discharges; (2) limitations in technology and science preclude any better approach; and (3) subsequent permits will make up for any deficiencies in this VGP. All three defenses fail.

First, the VGP, which adopts the International Maritime Organization (“IMO”) standards, will not significantly reduce invasive species in ballast water. EPA cites a 95 to 99.999% reduction, *see, e.g.*, EPA Br. 27, 35–36, but those figures misleadingly reflect reductions only of large organisms. The VGP will

have almost no effect whatsoever on reducing discharges of the smallest species, which are the most abundant. Indeed, the National Marine Fisheries Service (“NMFS”) calculates that new ballast-induced invasions will continue at an alarming rate under the VGP, and that more stringent limits are needed to truly prevent them. EPA-HQ-OW-2011-0141-1035 at 316–319. Thus, EPA’s rosy picture is misleading and unsupported by the record.

Second, EPA is wrong that existing technology and science can do no better. EPA skirted its obligation to set technology-based effluent limitations (“TBELs”) that meet the CWA’s best available technology (“BAT”) mandate. EPA failed to meaningfully evaluate onshore technology for treating ballast water, by both attempting to constrain its expert panel and failing to conduct its own independent evaluation. EPA ignored unequivocal data that existing shipboard technologies could meet more stringent limits. And EPA ignored the factors Congress set out in the CWA for determining BAT.

EPA did no better in setting the VGP’s water-quality based limitations (“WQBELs”). Finding that ballast water discharges would have reasonable potential to violate water quality standards even with the VGP’s TBELs, EPA was obligated to set WQBELs that would make sure those standards could be met. EPA did not do that. Instead, EPA adopted a “narrative WQBEL” that in practice requires nothing of anyone. EPA contends that it could not do anything more

meaningful because it is too difficult to predict invasions with absolute certainty. That contention misconstrues the record and is irrelevant; as the Supreme Court said when EPA made the same argument to avoid regulating greenhouse gases, “EPA [cannot] avoid its statutory obligation by noting the uncertainty surrounding various features of climate change and concluding that it would therefore be better not to regulate at this time.” *Massachusetts v. EPA*, 549 U.S. 497, 534 (2007). The VGP’s “narrative WQBEL” is akin to a decision not to regulate; it will not bring ballast water discharges into compliance with water quality standards. EPA can and must do better.

Finally, EPA argues that whatever the VGP does not do now can be done later. *See* EPA Br. 25, 38–39, 56. But the VGP will lock in inferior technology for years to come, when other technology that is available today can do a much better job. The CWA is technology-forcing—it requires EPA to set high standards for the future, not settle for a mediocre solution now. EPA has been dragged to this point kicking and screaming. After having been forced to remove its unlawful vessel discharge exemption in 2008, it has consistently brought up the rear in controlling ballast discharges of invasive species. The first VGP contained no numeric limits for ballast water despite the IMO standards’ having been established in 2004 and at least three systems having been approved as meeting them. EPA-HQ-OW-2011-0141-0264 at 6-207. Treatment system manufacturers

pleaded with EPA to adopt numeric standards. *Id.* at 6-225 (describing as a “vicious cycle” that “[w]hat has prevented them from commercial use” is lack of adoption of the standards). Now, though nothing has really changed, EPA hails IMO as the best available technology. Absent intervention by this Court, there is no reason to believe the next VGP will comply with the CWA to better control invasive species.

ARGUMENT

I. The VGPs’ TBELs Are Arbitrary and Capricious Because They Do Not Reflect Best Available Technology

The VGP sets numeric TBELs for treated ballast water discharges. EPA designed those TBELs to meet IMO standards for three classes of organisms: “large” (≥ 50 micrometers (μm)); “medium” (10-50 μm); and three types of pathogens and pathogen indicators. VGP § 2.2.3.5, EPA-HQ-OW-2011-0141-0880. The VGP’s TBELs do not set standards for other “small” organisms (< 10 μm), such as bacteria or viruses.

The VGP’s TBELs are arbitrary and capricious for at least four reasons. First, EPA failed to adequately consider onshore technology, which fits within the CWA’s BAT standard for ballast water treatment and justifies much more stringent standards. Second, onshore technology aside, EPA ignored that shipboard technology could exceed IMO standards. Third, the TBELs do not comply with the CWA’s technology-forcing mandate. Fourth, underlying these errors, EPA

established BAT without a thorough evaluation of required statutory factors.

Before we address these arguments in detail, we must address EPA's sweeping assertion that the VGP's IMO standards will reduce "the numbers of living organisms discharged in ballast water . . . by between 95 and 99.999%." EPA Br. 35–36; *see also id.* at 27 (citing SAB Report, EPA-HQ-OW-2011-0141-0229 at 36–38; Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 112–13). EPA's assertion simply is not true. The SAB concluded only that treatment to IMO would reduce the "*largest organism size class*" by 99.99 percent. SAB Report, EPA-HQ-OW-2011-0141-0229 at 37–38 (emphasis added). Similarly, EPA generated the 99.999 percent figure using studies that counted almost exclusively large organisms.¹

EPA ignores that small organisms like bacteria and viruses are eight orders of magnitude more abundant than larger organisms in ballast water. *See, e.g.*, EPA-HQ-OW-2011-0141-0315 at 27–28, 33.² Neither EPA nor the SAB analyzed how well shipboard technology kills those organisms; indeed, some treatment systems actually increase their concentrations. *See* EPA-HQ-OW-2011-0141-0487

¹ Five of the six studies counted only organisms larger than 50–100 micrometers while the sixth used 20 micrometers as the cutoff. *See* Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 112–13, 112–13 nn.22–26.

² Tables 8 and 13 show untreated ballast water contains at most 27,600 *large organisms* per cubic meter (Table 8, Test Run X, Reference C-T5) versus more than 2 *trillion bacteria* (Table 13, Test Run X, Reference C-T5 Total Bacteria; note the unit difference).

at 4; SAB Report, EPA-HQ-OW-2011-0141-0229 at 37. Despite the SAB's recommendation that EPA establish discharge standards for small organisms, *see* SAB Report, EPA-HQ-OW-2011-0141-0229 at 8, 65, 95–96, EPA did not. As a result, treating ballast water to VGP standards reduces average concentrations of *all* invasive species by only 0.04 percent.³ *See also* EPA-HQ-OW-2011-0141-0497 at 3 (New York Department of Environmental Conservation's observing the VGP will achieve only "marginal improvement[s]").

A. EPA Failed to Consider Onshore Treatment, Which Is Available, Economically Feasible, and Superior to Other Options

1. There Is No Evidence That EPA Independently Evaluated Onshore Treatment Technology

EPA claims that it "carefully" and "independently considered a full range of treatment technologies and specific systems," including the SAB Report, before concluding that onshore technologies "cannot be deemed 'available' at this juncture." EPA Br. 59, 61 (citing Response, EPA-HQ-OW-2011-0141-0926 at 899–901, (citing only SAB Report, EPA-HQ-OW-2011-0141-0229)). The record, however, shows the opposite. The SAB indicated onshore technology likely performs better than any shipboard technology and urged EPA to undertake further analysis. Nonetheless, EPA finalized the VGP without further evaluating onshore

³ One way to calculate the VGP's reduction of organisms is to back-calculate organism abundance using the logarithmic reductions listed in Table 6-6 of the SAB Report, EPA-HQ-OW-2011-0141-0229 at 82, and then apply the VGP standards.

technology.

Three key record facts cannot seriously be disputed. First, EPA's charge to the SAB excluded consideration of onshore technologies. Second, the SAB nevertheless conducted a preliminary assessment of onshore technology, concluded it was superior, urged its further evaluation, and recommended using onshore together with shipboard treatment. Third, EPA rejected onshore technology without further evaluation.

EPA concedes its charge constrained the SAB to considering shipboard systems. SAB Report, EPA-HQ-OW-2011-0141-0229 at 3–4, 30 (describing charges); *see also* EPA-HQ-OW-2011-0141-0487 at 5 (EPA “consistently opposed such [onshore technology] information in the report”). EPA claims the SAB's narrow charge was to “focus its limited time and resources on the status of shipboard treatment systems because such systems were either ‘in existence or in the development process.’” EPA Br. 57. Of course, onshore technology unquestionably “exists”—and has for decades—to treat drinking water and wastewater. In any event, the “limited time and resources” of volunteer scientists is not an appropriate statutory factor for setting BAT. 33 U.S.C. § 1314(b)(2)(B).

On its own initiative, the SAB identified onshore technology as a viable alternative:

Use of reception facilities for the treatment of ballast water appears to be technically feasible (given generations of successful water

treatment and sewage treatment technologies), and is likely to be more reliable and more readily adaptable than shipboard treatment.

Existing regional economic studies suggest that treating ballast water in reception facilities would be at least as economically feasible as shipboard treatment.

SAB Report, EPA-HQ-OW-2011-0141-0229 at 7. Concluding that onshore technology “may enable ballast water discharges to meet a stricter standard[,]” the panel concluded that “EPA should conduct a comprehensive analysis comparing biological effectiveness, cost, logistics, operations, and safety associated with both shipboard [treatment] and reception facilities.” *Id.* at 8. “If the analysis indicates that treatment at reception facilities is both economically and logistically feasible and is more effective than shipboard treatment systems,” the SAB explained, “it should be used as the basis for assessing the ability of available technologies to remove, kill, or inactivate living organisms to meet a given discharge standard.” *Id.*

EPA failed to undertake this comparative analysis before establishing the VGP’s BAT. Instead, it merely declared onshore technology “unavailable,” without independently analyzing its effectiveness, cost, logistics, operation, safety, or other factors, as urged by the SAB. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 91–93; Response, EPA-HQ-OW-2011-0141-0926 at 899–900. EPA did, however, recognize that (1) “use of onshore treatment systems, if available (e.g., compatible with the vessel), could be a valid and effective form of ballast water

treatment”; (2) onshore was better than shipboard technology because “fewer onshore facilities than shipboard systems would be needed; smaller total treatment capacity would be needed; and onshore facilities would be subject to fewer physical restrictions, and would therefore be able to use more effective treatment technologies”; and (3) “[s]ome studies conclude that onshore treatment facilities are a technically feasible option for either the industry as a whole or for some part of the industry.” Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 92. EPA identified three potential challenges to onshore technology: ensuring availability at ports-of-call, retrofitting piping to avoid delays, and some vessels’ needing to discharge ballast before reaching port. *Id.*; Response, EPA-HQ-OW-2011-0141-0926 at 900–01. Nothing in the record demonstrates EPA evaluated these concerns before concluding they outweighed the potentially significant benefits.

Shipboard technology faces its own array of challenges, many of which can be eliminated by use of onshore technology. Enumerating these constraints, the SAB concluded that “meeting significantly higher standards will likely require completely new treatment approaches” and maybe “a fundamental shift in how ballast water is managed.” SAB Report, EPA-HQ-OW-2011-0141-0229 at 5–6 (identifying “size, weight, and energy demands” of shipboard systems; “many existing vessels may be unable to overcome these barriers through retrofitting”; “important issues such as training, operation, maintenance, repair, and monitoring”

have received little attention; concerns about enforcement and lack of innovation incentives). The SAB explained how onshore might overcome obstacles to shipboard technology: “Challenging factors include vibration, small and busy crews, limited space and weight allowances, limited power, potentially increased corrosion rates and sometimes short voyages. Reception facilities, relieved of many or all of those constraints, show promise to achieve more stringent ballast water treatment standards than shipboard [systems].” *Id.* at 80. The SAB concluded that onshore treatment may be more effective, better operated and maintained by trained personnel, more easily retrofitted, more reliable and adaptable, and better monitored and regulated than shipboard technology, *id.* at 81–84, and that “combinations of practices and technologies [including onshore treatment] are potentially more effective and cost-efficient than sole reliance on shipboard [treatment].” *Id.* at 6–7.

Despite the SAB’s conclusions, EPA failed to analyze the relative merits of onshore versus shipboard technology or to consider using both in tandem, as the SAB recommended. *See id.* at 6. Rather, EPA concluded, by cherry-picking from the SAB Report and performing no independent evaluation, that shipboard technology somehow could overcome its many challenges while onshore technology somehow could not. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 92; Response, EPA-HQ-OW-2011-0141-0926 at 900–01. EPA’s conclusion is

particularly troubling because the SAB provided concrete suggestions for evaluating onshore technology's potential. SAB Report, EPA-HQ-OW-2011-0141-0229 at 85–87.

EPA justifies its failure to conduct this analysis by citing the SAB's inability “to reach ‘consensus’ . . . on some issues related to onshore treatment of ballast water.” EPA Br. 58–59. The SAB—scientists convened for their expertise in invasive species—reviewed but did not reach agreement on comparative costs and implementation timelines for shipboard versus onshore treatment. SAB Report, EPA-HQ-OW-2011-0141-0229 at 81, 86–87. But that does not give EPA license to punt on these core issues. The CWA makes EPA responsible for evaluating implementation, economic, and other factors relevant to BAT. *See* 33 U.S.C. § 1314(b)(2)(B). Its failure to do so was arbitrary and warrants remand.

2. EPA's Rejection of Onshore Technology Is Not Supported by the Record, the Law, or a Reasoned Analysis

EPA offers essentially two reasons for failing to seriously consider onshore technology, even though it might be much better at destroying invasive species in ballast water: (1) onshore is more costly than shipboard treatment, and (2) onshore treatment is not presently available. The law and the record support neither argument.

a. EPA Did Not Analyze Onshore Technology Costs

Even though EPA's Economic Analysis ignored onshore technology, EPA

argues that associated vessel retrofitting costs “would likely be significant,” implying that shipboard retrofits would be less costly. EPA Br. 64. The record does not support EPA’s post hoc litigation position.

EPA snubs onshore technology because discharging to onshore facilities may cause shipping delays and there are costs of retrofitting vessels with equipment to connect “to shore-based facilities all over the world.” EPA Br. 63–64 (citing Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 92 and Response, EPA-HQ-OW-2011-0141-0926 at 901). The record does not show, however, that delay-associated costs for discharging are higher for onshore treatment than shipboard. In fact, the SAB found that discharge rates and vessel modifications posed challenges for *both* options, SAB Report, EPA-HQ-OW-2011-0141-0229 at 39–40, 80, 86, and EPA conducted no analysis to show differential effects. EPA also cites the SAB’s lack of current data on costs. *Id.* at 87, EPA Brief 58–59. But for EPA to dismiss an existing technology on the basis of cost, EPA was obligated to undertake a cost analysis.

Even if the record demonstrated higher costs for onshore technology (it does not), EPA is precluded from relying on costs alone to determine BAT. *See* 33 U.S.C. § 1314(b)(2)(B); *Am. Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1051 (3d Cir. 1975) (“[T]he cost of compliance [is] not a factor to be given primary importance.”). The question is whether EPA’s consideration of costs was

reasonable. *See Reynolds Metal Co. v. EPA*, 760 F.2d 549, 565 (4th Cir. 1985). Here, it was patently unreasonable for EPA to dismiss an innovative and feasible alternative based on alleged costs without having actually assessed those costs. *Tanner's Council of Am., Inc. v. Train*, 540 F.2d 1188, 1191 (4th Cir. 1976) (explaining that an “agency must fully explicate its course of inquiry, its analysis, and its reasoning”). In asserting, but not assessing, the purported costs of onshore treatment, EPA ignored “hidden imbalances between cost and benefit.” *See Am. Iron* at 1076 n.19 (Adams, J., concurring).

b. EPA’s “Unavailability” Determination is Arbitrary

Despite its potential advantages, EPA rejected onshore technology as BAT because it was “unaware” of any facility treating ballast water. Response, EPA-HQ-OW-2011-0141-0926 at 899; EPA Br. 63. As we explained in our opening brief, vessels are not using onshore facilities because, for the last four decades, EPA unlawfully failed to regulate vessel discharges. NWEA Op. Br. 16, 35. Until discharge standards are mandated, there is no demand for treatment.

The SAB Report demonstrates that both onshore and shipboard technology *exist today*. In fact, the SAB cited the “long history of water treatment plants” to conceptualize future *shipboard* systems that might achieve 1000 times IMO, SAB Report, EPA-HQ-OW-2011-0141-0229 at 53, because shipboard treatment based on retrofitting is inherently limited, *id.* at 39–40, 49–50, 51–52, 56–57, 80, 82, 83,

84. The “availability” question, therefore, turns on the comparative timeline for the two approaches.

The SAB did not conclude, as EPA implies, that timelines were longer for onshore treatment. Quite the opposite:

Vessel modifications are needed for either shipboard or reception facility approaches *The critical path for both reception facility and shipboard treatment is the vessel modification work, where the governing factor is the frequency with which the vessel is taken out of service. This is the same for either approach.*

Id. at 86 (emphasis added). The SAB came to no agreement on timelines for onshore versus shipboard technology, *id.* at 87, but urged “[a] more comprehensive comparison,” *id.* at 86. Nonetheless, EPA made several unsupported assumptions concerning the availability of shipboard treatment and took no steps to evaluate implementation timelines for onshore technology.⁴

First, despite finding shipboard technology manufacturers “currently [have] a limited production capacity,” EPA concluded that they would produce sufficient systems to meet VGP’s deadlines. Draft Fact Sheet, EPA-HQ-OW-2011-0141-0003 at 106–07. Second, EPA assumed that shipboard technology will work despite concurrently finding that delayed implementation would give manufacturers “the opportunity to perfect and improve systems, such that any

⁴ Intervenors point out that EPA has “been forced to postpone” its first BAT deadline. Intervenors Br. 16, 21–22. Intervenors do not contend, nor could they, that implementation delays have anything to do with “availability” of treatment technology under the CWA’s BAT standard.

defects or shortcomings observed in the first systems produced and installed can be corrected.” *Id.* at 97. Finally, while raising concerns about onshore implementation timelines,⁵ EPA simply accommodated similar delay concerns for shipboard treatment with a lengthy implementation schedule. *Id.* at 98.

EPA could have, but did not, take the same approach to onshore treatment. It undertook no analysis of onshore implementation timelines, despite the SAB’s having estimated it would take roughly 30 months, SAB Report, EPA-HQ-OW-2011-0141-0229 at 86, compared to the VGP’s shipboard timeline of up to 72 months, *see* Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 97. EPA failed to explain why more protective onshore technology was not feasible given the timeline for shipboard technology. Indeed, EPA did not take the smallest of steps to gather information and assess available treatment potential at onshore facilities near U.S. ports. The record provides no support for EPA’s facile statement that onshore technology is “unavailable.”⁶

⁵ EPA cites concerns about lack of international standards for connections. EPA Br. 63–64. EPA ignores the IMO’s having adopted standards for “connections for ballast transfer on other ship types” because some ships may use onshore treatment. EPA-HQ-OW-2011-0141-0917 at 4 (§7.4). The VGP follows suit, requiring ship-to-shore connections for onshore treatment. VGP § 2.2.3.5.1.2, EPA-HQ-OW-2011-0141-0880.

⁶ EPA suggests onshore treatment is unavailable because land acquisition is “a difficult, costly, and time-consuming proposition[.]” EPA Br. 64 (citing SAB Report, EPA-HQ-OW-2011-0141-0229 at 87). The SAB merely noted EPA “would need to consider” such implications. SAB Report, EPA-HQ-OW-2011-0141-0229 at 87. EPA did not undertake this evaluation.

The CWA directs EPA to identify BAT as “the degree of effluent reduction attainable” by “including treatment techniques, process and procedure innovations, operating methods, and other alternatives.” 33 U.S.C. § 1314(b)(2)(A). An “innovation” is, by definition, “a new idea, method, or device.” Merriam-Webster Online Dictionary, Innovation, *available at* <http://www.merriam-webster.com/dictionary/innovation>. Congress thereby intended EPA’s BAT determination to “push the industry to achieve greater levels of effluent control, as Congress intended BAT standards to do.” *NRDC v. EPA*, 863 F.2d 1420, 1431 (9th Cir. 1988). Before dismissing well-established onshore technology as “unavailable,” EPA had a statutory obligation to meaningfully assess its efficacy, costs, and other statutory factors.

In the end, EPA relies on the potential for improvement in future permits, EPA Br. 25, while ignoring the SAB’s key concern about how today’s decisions affect technological innovations. Once shipboard systems meet IMO standards, the SAB explained, “further efforts by manufacturers to improve design and efficacy appear to decline” and “incentives for further innovations are dampened.” SAB Report, EPA-HQ-OW-2011-0141-0229 at 5–6. Similarly, EPA’s dismissal of onshore technology as BAT ensures the shipping industry will not develop onshore treatment. Thus, EPA’s failure to fully evaluate all innovations and alternatives for this VGP has long-lasting ramifications for future improvements in

treatment of ballast water.

B. EPA Ignored That Existing Shipboard Technology Can Perform Better Than IMO Standards

The VGP's TBELs are arbitrary and capricious for another reason: EPA ignored that existing shipboard technology can meet standards significantly more stringent than IMO.

In our opening brief, we explained that EPA ignored data showing some shipboard technology can achieve “up to 10 times the IMO standards.” NWEA Op. Br. 39; *see also id.* at 21–22, 40. EPA replies that the SAB determined that no system achieved 100 times or 1,000 times better than IMO and that it was impossible to determine that even 10 times IMO could be met. EPA Br. 30, 34, 37. EPA misconstrues our argument and the SAB's findings.

EPA asked the SAB to evaluate shipboard technologies' ability to meet certain specific sets of standards. The SAB examined 51 treatment systems and found that: (1) five technologies could meet IMO standards, SAB Report, EPA-HQ-OW-2011-0141-0229 at 4; (2) those technologies “may be able to reach 10x [IMO] for [two] size classes in the near future,” *id.* at 37; *see also id.* at 38; and (3) “none of the assessed [systems] can meet a standard that is 100 or 1000 times more stringent” than IMO standards, *id.* at CoverLetter-2.

EPA relied on these findings to assert that: (1) “[t]he numeric limitations in today's permit represent the most stringent standards that ballast water

management [treatment] systems currently safely, effectively, credibly, and reliably meet,” and (2) “no current ballast water treatment technologies were considered likely to meet standards more stringent than IMO.” Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 74–76; *see also* EPA Br. 18, 30, 36.

EPA’s assertions may appear to flow logically from the SAB’s findings, but they do not. Writing to EPA, eight members (one-third) of the SAB and five NAS scientists protested that EPA’s conclusions “misstate the SAB Panel’s findings,” including that the VGP’s standards “represent the best that can be achieved by available technology.” EPA-HQ-OW-2011-0141-0487 at 1. The scientists explained that EPA sought to limit the SAB’s examination to whether shipboard technology could achieve specific standards, namely (1) IMO for large and medium organisms, and (2) 10, 100, and 1,000 times those standards. *Id.* at 3. The SAB did not consider whether shipboard technologies could meet standards *more* stringent than IMO but *less* stringent than 10 times IMO. EPA suggests that IMO is good enough,⁷ but even a 2 times IMO standard cuts invasive species by *half* compared to the VGP. In arbitrarily limiting the SAB’s and its own evaluation, EPA relied on factors Congress did not contemplate and violated the CWA’s mandate to “identify . . . the degree of effluent reduction attainable.” 33 U.S.C. § 1314(b)(2)(A); *see also infra* note 14.

⁷ *See* EPA Br. 27, 35–36, 69; *see also supra* at 6–7 (explaining why the VGP will not achieve anywhere near the reductions EPA claims).

The record demonstrates existing shipboard technology *can* meet a standard between IMO and 10 times IMO. Every system the SAB reported as meeting IMO actually exceeded IMO for one or more organism sizes.⁸ Several met standards 2 or 5 times more stringent than IMO.⁹ In short, EPA’s pre-set standards were an artifice, hiding that existing shipboard technology can meet standards *up to* 10 times IMO.

EPA also ignored data that three shipboard technologies met 10 or 100 times IMO.¹⁰ The SAB found that reliable data¹¹ showed the Ecochlor system achieved a maximum of 0.3 large organisms per cubic meter, well below 10 times IMO.

⁸ In 13 trials of Hyde Marine Guardian, the highest concentration of large organisms was 7.3 per cubic meter of water, or 1.4 times better than IMO. EPA-HQ-OW-2011-0141-0316 at 28–29; EPA-HQ-OW-2011-0141-1022 at 15, 28, 43–44 (compare averages of untreated (“control”) concentrations to last three rows of “treated” concentrations); *see also infra* note 9.

⁹ In 12 trials of Optimarin, the highest concentration of large organisms was 1.3 per cubic meter of water, or 7.7 times IMO. EPA-HQ-OW-2011-0141-1168 at 32. In 17 trials of Alfa Laval/AlfaWall PureBallast, the highest concentration of large organisms was 2.2 per cubic meter, or 4.5 times IMO. The highest concentration of medium organisms was 2.7, or 3.7 times IMO. EPA-HQ-OW-2011-0141-1169 at 31–32; EPA-HQ-OW-2011-0141-1170 at 32–33. Three other systems (Ecochlor, BalPure, and PeraClean) met even higher standards, as discussed below.

¹⁰ These standards are as follows:

Organism class	IMO	10xIMO	100xIMO
>50µm (large)	10/m ³	1/m ³	0.1/m ³
10-50µm (medium)	10/mL	1/mL	0.1/mL

¹¹ *See* SAB Report, EPA-HQ-OW-2011-0141-0229 at 34–35 (Table 4-1 identifying Ecochlor, BalPure, and PeraClean treatment types as having “available” and “reliable” data); *id.* at 36 (“[J]ust nine [treatment systems]”—including PeraClean—“were considered to have reliable data for an assessment of performance.”).

EPA-HQ-OW-2011-0141-0315 at 28.¹² All valid trials also showed that Ecochlor reduced concentrations of medium organisms to less than 0.1 organisms per milliliter, 100 times IMO. EPA-HQ-OW-2011-0141-0315 at 29. Likewise, BalPure reduced medium organisms in 10 trials to less than 0.1 organisms per milliliter, and in another 5 trials to zero organisms per milliliter, thereby meeting 100 times IMO. EPA-HQ-OW-2011-0141-1167 at 30; EPA-HQ-OW-2011-0141-1166 at 6–15. PeraClean reduced medium organisms to less than 0.1 organisms per milliliter in 17 trials, meeting 100 times IMO. EPA-HQ-OW-2011-0141-0314 at 6–8, 27.

Nonetheless, EPA claims that insufficient data demonstrate that any shipboard technology meets more stringent standards. Specifically, EPA claims that Ecochlor sampling was limited and “larger volumes of water” were needed. EPA Br. 37; *see also* Response, EPA-HQ-OW-2011-0141-0926 at 574. EPA also cites the SAB’s statement on limitations of current testing methods. EPA Br. 30, 34, 37 (citing SAB Report, EPA-HQ-OW-2011-0141-0229 at 4, 32); *see also* Response, EPA-HQ-OW-2011-0141-0926 at 481.

These arguments are a distraction. Sampling was no more limited for the Ecochlor, BalPure, or PeraClean than other systems. Large water volumes are

¹² Ten valid Ecochlor trials (trials 7–16) resulted in 0.3 organisms per cubic meter in two trials and 0.0 organisms per cubic meter in eight. EPA-HQ-OW-2011-0141-0315 at 27–28.

necessary only for large organisms; smaller volumes work well for smaller organisms.¹³ And the SAB was making a general statement about whether *all* five technologies could meet IMO standards for *all* organism classes; the SAB did not address whether *some* specific technologies could achieve tougher standards for *some* organism classes. SAB Report, EPA-HQ-OW-2011-0141-0229 at 38.

Nothing the SAB said undermines the validity of the data we describe, which unequivocally demonstrate compliance with 10 times and/or 100 times IMO.¹⁴

In short, one type of shipboard technology exceeded 10 times IMO for large organisms, and three met 100 times IMO for medium organisms. At a minimum, several shipboard technologies reliably and significantly exceed the VGP's numeric TBELs, such as 2 or 5 times IMO. Accordingly, the record does not support EPA's assertion that, "no current ballast water treatment technologies were considered likely to meet standards more stringent than IMO D-2/Phase 1." Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 76.

¹³ For larger organisms, more water is needed because there are fewer of them per unit of sampled water. See EPA-HQ-OW-2011-0141-0231 at Tables 13–14; EPA-HQ-OW-2011-0141-0164 at 80; SAB Report, EPA-HQ-OW-2011-0141-0229 at 25, 27.

¹⁴ These systems met the 10 times and 100 times definitions on page 15 of the SAB Report. But using different definitions on page 31, the SAB could report that a system performed better than IMO only if, in all reported trials, it exceeded IMO for *both* large and medium organisms *and* decreased bacterial concentrations. See SAB Report, EPA-HQ-OW-2011-0141-0229 at 15, 31. Accordingly, EPA dismissed systems that met 10 or 100 times IMO for *some* organism classes because they did not exceed those standards for *all* organism classes. That is not BAT.

Additionally, the CWA requires EPA, in determining BAT, to take into account “the age of equipment and facilities involved[.]” 33 U.S.C. § 1314(b)(2)(B); 40 C.F.R. § 125.3(d)(3)(i). Ignoring this factor, EPA based the TBELs on shipboard technology despite the SAB’s concern that “the brief and limited experience with shipboard [systems] provides little basis for assessing whether they are likely to perform adequately over a 20-to-30-year vessel lifetime.” SAB Report, EPA-HQ-OW-2011-0141-0229 at 84; *see also id.* at 39–40, 49, 50. Likewise, EPA never evaluated whether to apply the same BAT determination to *new* ships, despite the SAB’s having found “it is technically feasible to integrate wholly new treatment systems into *new* vessel designs” that likely could meet 1,000 times IMO. *Id.* at 53. Instead, EPA simply dismissed the statutory factor of age. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 103.¹⁵

In sum, EPA misconstrued the SAB’s findings and ignored contrary data to justify adopting IMO standards in the VGP. Every technology the SAB *reported* met IMO standards actually exceeded IMO for at least some organism classes, and some did much better. By adopting less stringent standards in the VGP, EPA

¹⁵ Underlying these errors is EPA’s more fundamental failure to conduct the independent review required for reasoned decision-making. *See Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1301 (9th Cir. 2003); *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 378 (1989); *Avoyelles Sportsmen’s League, Inc. v. Marsh*, 715 F.2d 897, 906 n.17 (5th Cir. 1983) (an agency’s reliance on “outside reports” is permissible “[a]s long as the agency conducts its own independent and thorough review”).

violated its duty to establish BAT reflecting the best available technology.

C. EPA's Remaining BAT Arguments Lack Merit

EPA offers two final defenses for its TBELs, both meritless. First, EPA defends the TBELs on the grounds that it “tried to promote consistency” with Coast Guard’s standards, citing *Massachusetts v. EPA*. EPA Br. 24; *see also id.* at 17, 41, 51, 82–83. But the CWA does not list interagency consistency as a factor in setting BAT, certainly not one that overrides the statutory factors. And all that *Massachusetts v. EPA* says is: (1) EPA, not another agency, must satisfy EPA’s obligations, and (2) EPA can “avoid inconsistency” with other agencies. 549 U.S. at 532. That is not a command to ensure consistency at the expense of clear statutory obligations. *See Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (holding that an agency decision is “arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider”).¹⁶

Second, EPA repeatedly says the Court owes it deference, under the Administrative Procedure Act, to its decisions regarding “scientific matters,” and

¹⁶ EPA’s discussion of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, 16 U.S.C. § 4701 *et seq.*, is irrelevant. *See* EPA Br. 12–13. That law explicitly says it “shall . . . not affect or supersede any requirements or prohibitions” of the CWA. 16 U.S.C. § 4711(b)(2)(C); *see also Fednav, Ltd. v. Chester*, 505 F. Supp. 2d 381, 394 (E.D. Mich. 2007) (NISA contemplates disuniformity in ballast water regulation and indicates “tacit adoption of concurrent jurisdiction on clean water issues.”), *aff’d*, 547 F.3d 607 (6th Cir. 2008).

its interpretations of the CWA and regulations. *See* EPA Br. 20–22, 24, 39, 74, 81, 95. But the Court’s role is not so servile. Deference is appropriate only where an agency’s decision-making is *transparent from the record*. *See Islander E. Pipeline Co., LLC v. Conn. Dep’t of Env’tl. Prot.*, 482 F.3d 79, 94 (2d Cir. 2006) (quoting *Motor Vehicle Manufacturers Association of the United States, Inc.*, 463 U.S. at 42, and holding that an agency’s decision must “articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made”).

As we explain in our briefs, EPA has not supplied a reasoned basis for the VGP. No document contains EPA’s independent review of the scientific data upon which it purportedly based its decision. *See, e.g.*, Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 77 (referring to “EPA’s review” but citing nothing); *id.* at 103 (citing EPA’s “supplemental analysis” to exempt vessels under 1600 tons, not in the record). No document fleshes out EPA’s consideration of statutory BAT factors.¹⁷ *See* Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 77 (addressing other factors but not these). No document explains why EPA chose shipboard technology as BAT

¹⁷ The CWA requires EPA to consider “the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, [and] non-water quality environmental impact (including energy requirements).” 33 U.S.C. § 1314(b)(2)(B); 40 C.F.R. § 125.3(d)(3). EPA’s failure to consider even one of the required factors renders the VGP arbitrary and capricious. *See NRDC v. EPA*, 863 F.2d at 1426–27; *Am. Iron*, 526 F.2d at 1048.

for the roughly 50 percent of all ships with ballast water discharge that EPA and the Coast Guard found would *not* “use onboard treatment systems to comply with discharge requirements.” Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 73; EPA-HQ-OW-2011-0141-0004 at 11, 63. The SAB repeatedly cautioned that improvements to shipboard technology are severely limited by energy demands. SAB Report, EPA-HQ-OW-2011-0141-0229 at 5–6, 49 (meeting higher standards will be energy-intensive), 56. Yet no document explains how EPA “fully expects to make the BAT limit more stringent in the future,” given these energy limitations. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 74, 78–79 (single conclusory paragraph). No document responds to the engineering factor raised by the SAB that shipboard treatment technology can actually *increase* populations of bacteria. SAB Report, EPA-HQ-OW-2011-0141-0229 at 37; EPA-HQ-OW-2011-0141-0487 at 4.

We have also discussed how EPA relied on costs without analysis, ignored the age of certain equipment and facilities, and made up factors not in the CWA. Throughout, EPA simply repeatedly ignored data and failed to explain how it arrived at its conclusions. These omissions are especially troubling when one third of the SAB panel averred some of EPA’s central conclusions were wrong. *See* EPA-HQ-OW-2011-0141-0487.

The CWA’s “need for quick action and cross-industry application demands

that we exercise our review of [EPA's] regulations with considerable circumspection.” *Reynolds Metal*, 760 F.2d at 558. Such careful review here exposes a record that fails to connect the dots—to articulate a “rational connection between the facts found and the choice made.” *Islander E. Pipeline Co.*, 482 F.3d at 94. The Court should decline EPA's invitation to simply trust it.

D. EPA Failed to Properly Evaluate Available Technology for Lakers

As we explained in our opening brief, EPA failed to evaluate onshore treatment technology for Lakers and arbitrarily dismissed numeric standards as being impractical. NWEA Op. Br. 40–42. For the reasons set forth NWF's reply brief, EPA's response fails to justify either of these shortcomings. *See* EPA Br. 49–56; NWF Reply Br. 21–23.

II. The VGP's Narrative WQBEL Is Unlawful

The VGP does not ensure compliance with water quality standards. EPA's response fails to explain how it met its burden or addressed a record demonstrating it could do far better than a generally applicable, one-line directive to comply with state laws.

A. The VGP's Narrative WQBEL Does Not Ensure Compliance with Water Quality Standards

NPDES permit conditions “must assure that any discharge complies with the applicable requirements of numerous sections including the effluent limitations of

section 301(b).” *NRDC v. Train*, 510 F.2d 692, 696 (D.C. Cir. 1974). Further, “a mere possibility of compliance does not ‘ensure’ compliance.” *In re: City of Marlborough, Mass. Easterly Wastewater Treatment Facility*, 12 E.A.D. 235, 2005 WL 1993924, at *12 (EAB 2005).

Here, EPA determined that even after use of the VGP’s TBELs, a reasonable potential exists that ballast discharges will violate water quality standards. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 110. This “reasonable potential” determination required EPA to include conditions to assure discharges authorized by the permit will comply with the water quality standards of every state through use of WQBELs.¹⁸ 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.44(d).

Nowhere does EPA explain *how* it determined the VGP’s single-sentence narrative WQBEL sufficiently controls the “residual risk” of these water quality standard violations. *See* Response, EPA-HQ-OW-2011-0141-0926 at 1106, 1159. Rather, EPA merely asserts the WQBEL is “meant to address” this risk. *Id.* at 1159. But the CWA, EPA’s regulations, and case law are plain: EPA can only

¹⁸ Intervenor’s incorrectly claim that our WQBEL arguments are moot because states issued certifications under CWA section 401. Intervenor’s Br. 44–46. EPA has an independent obligation to show that a permit will ensure compliance with water quality standards. *NRDC v. EPA*, 279 F.3d 1180, 1188 (9th Cir. 2002); *see also Dubois v. U.S. Dep’t of Agric.*, 102 F.3d 1273, 1301 n.33 (1st Cir. 1996) (“[T]he CWA envisions that EPA make those assurances [water quality standards will be met] in the context of deciding whether to issue an NPDES permit.”). And EPA may impose stricter limits than those certified by states. *See NRDC v. EPA*, 279 F.3d at 1188.

issue a permit it can demonstrate ensures compliance with water quality standards. The record here shows EPA failed to do that and, indeed, supports the opposite conclusion.

1. The Narrative WQBEL Is Meaningless As a Practical Matter

The narrative WQBEL cannot be adequately implemented or enforced, rendering it meaningless. First, EPA cannot explain how vessel operators will implement the WQBEL. EPA accuses Petitioners of “overstat[ing] what is being asked of vessel operators.” EPA Br. 77. But Petitioners merely assert the obvious: for the WQBEL to prevent violations of water quality standards, vessel operators would need to know and be able to interpret the standards applicable to waters into which they were discharging. NWEA Op. Br. 45. They would need to know how to translate those standards into effluent limitations for their discharges. *Id.* The narrative WQBEL thus places an impossible burden on permittees, who have knowledge of neither the quality of their ballast water nor the quality of receiving waterbodies, the two facts crucial to assessing compliance with water quality standards. *Id.*

EPA first responds that vessel operators will not need to calculate effluent limitations on the fly because the WQBEL merely “requires vessels to take any steps that become necessary . . . to protect against site-specific threat of invasions.” EPA Br. 78. This is non-responsive. Whether couched as “effluent limitations” or

“steps,” EPA has not explained *how* vessel operators know *when* to take steps and *what* steps to take. NPDES permits have to inform permittees of the applicable limits and requirements in advance of discharge. Thus, despite what EPA protests, EPA Br. 77, it has indeed shifted its own burden to ensure its permit complies with the law to vessel operators. EPA’s remaining justifications, EPA Br. 78, also do not ensure that authorized discharges will not violate water quality standards *in the first place*. See *infra* Part II.A.2; Response, EPA-HQ-OW-2011-0141-0926 at 1159.

Second, EPA misconstrues our argument regarding enforceability of the WQBEL. NWEA Op. Br. 47. We do not argue narrative WQBELs are *per se* unenforceable. EPA Br. 77 n.32. To the contrary, we firmly believe such narrative NPDES conditions are enforceable as a matter of law, and courts have so held. See, e.g., *NWEA v. City of Portland*, 56 F.3d 979, 990 (9th Cir. 1995) (“[T]he statutory language, legislative history, and case law authorize citizens to enforce permit conditions stated in terms of water quality standards”). But legal enforceability and practical enforceability are not the same.

EPA acknowledges that numeric limits are easier to enforce but contends that there is “no reason to believe” the VGP’s narrative condition is unworkable. Response, EPA-HQ-OW-2011-0141-0926 at 1160; EPA Br. 78–79. This is wishful thinking. The VGP contains no monitoring requirements associated with

the WQBEL, meaning that neither EPA nor a citizen can enforce it.¹⁹ Because the VGP's narrative WQBEL is merely a directive to comply with state law, and is unenforceable *as a practical matter*, the VGP does not ensure its authorized discharges will comply with water quality standards.

Finally, EPA defends the narrative WQBEL by arguing similar provisions are “fairly standard” in NPDES permits. EPA Br. 20 n.14, 77 n.32. We agree. But EPA fails to provide a single instance where a narrative provision has *proactively* controlled discharges sufficient to meet water quality standards. EPA offers no evidence that EPA or a state has ever tried to enforce such a provision. While some citizen suits have successfully enforced narrative NPDES conditions, *see, e.g., NWEA*, 56 F.3d at 990, these were limited to circumstances of conclusive evidence of both water quality violations and the party or parties responsible. Here, given the VGP's lack of monitoring and reporting, such a citizen suit to

¹⁹ Our opening brief described the legal deficiencies in the VGP's monitoring requirements. *See* NWEA Br. 56–63. EPA responds by saying the VGP is a “placeholder” until “better monitoring approaches are developed.” EPA Br. 91, 98. But EPA cannot kick the can down the road. As the Ninth Circuit has held, 40 C.F.R. § 122.44(i)(2) “*requires* every NPDES permittee to monitor its discharges . . . in a manner sufficient to determine whether it is in compliance with the relevant NPDES permit [A]n NPDES permit is unlawful if a permittee is not required to effectively monitor its permit compliance.” *NRDC v. Cnty. of Los Angeles*, 725 F.3d 1194, 1207 (9th Cir. 2013), *cert. denied*, 134 S. Ct. 2135 (2014). Both the SAB and the NAS stressed how critical monitoring is to effective ballast water treatment. *See* SAB Report, EPA-HQ-OW-2011-0141-0229 at 2, 5, 6, 16, 20, 49, 79, 95; NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 2, 25, 37, 127; *see also* NWF Reply Br. 23–36. EPA's brief does not address these concerns.

enforce and give meaning to this provision is unimaginable. Most important, citizens enforce narrative conditions precisely *because* they do not provide proactive pollution controls to ensure compliance with water quality standards. The VGP's WQBEL is both unable to prevent water quality standards violations and lacks enforceability as a practical matter.

2. EPA's Justifications for the Narrative WQBEL Are Inappropriate in the Context of Invasive Species

EPA maintains the narrative WQBEL is "a useful one in individual circumstances." EPA Br. 78. EPA's sole example involves a situation in which there are *known* risks, such as a certain port's being a known source of an "unusually virulent pathogen," *prior to uptake or discharge* of ballast water. *Id.*

Unfortunately EPA misses the most basic fact about ballast water: of up to 4,000 individual species found in a typical ballast tank, EPA-HQ-OW-2011-0141-0004 at 128, most are *unknown*. NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 101, 124, 125, 133. The uptake and subsequent discharge of any particular species can result in a devastating invasion. *See, e.g., id.* at 130, 132. Because of the inherent delay in recognizing hazards of invasive species, *id.* at 25, 102, 123, EPA and ship operators are highly unlikely to "become[] aware of" imminent hazards prior to uptake or discharge, EPA Br. 78, in time to act before the damage will already have been unleashed in U.S. waters. In short, the WQBEL overlooks the unique qualities of invasive species and the fact that the harm they

cause is almost always irreversible. *See* NWEA Op. Br. 48; Response, EPA-HQ-OW-2011-0141-0926 at 402, 405–06, 409, 411, 419, 467.

EPA responds too that “a successful ballast water-caused invasion [is] at most an extremely rare event,” EPA Br. 74. This justification is perplexing since EPA also described “the successful introduction of any specific species [as] a ‘rare event,’ *even in the absence of controls[.]*” *Id.* (emphasis added). Yet, EPA agrees there have been a minimum 182 invasions in the Great Lakes, 100 in the Mississippi River system, 234 in San Francisco Bay, 81 in the Lower Columbia River, and 704 in the Gulf of Mexico. Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 18–19. These are hardly “rare.” And as explained above, the NMFS calculates the situation will only get worse, even under the VGP. NWEA Op. Br. 55 n.16. Thus, EPA’s characterization of the likelihood of future invasions as “rare” is both meaningless and misleading.

Finally, the post-discharge “corrective action” provisions of the WQBEL will not reduce or eliminate these risks. *See* EPA Br. 80; Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 146; Response, EPA-HQ-OW-2011-0141-0926 at 1095, 1100, 1148, 1159. The VGP provides no assurance it will preclude new colonizations by invasive species, any single one of which is likely a violation of

many states' water quality standards.²⁰ *See* NWEA Op. Br. 45 n.9; *see also* Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 111 (describing water quality standards that require control of invasive species). In sum, the VGP does not ensure compliance with water quality standards.

B. EPA Arbitrarily Determined That It Could Not Develop Numeric WQBELs or Any Other Limit More Stringent Than the VGP's Narrative Provision

EPA's continued reliance on the NAS Report does not justify its regulatory decision to choose a one-line narrative WQBEL over meaningful water quality-based controls.

1. EPA Mischaracterizes and Hides Behind the NAS Report

To support its determination that numeric WQBELs were infeasible, EPA relies almost exclusively on the NAS Report. *See, e.g.*, Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 115. EPA's reliance is misplaced because the NAS was not

²⁰ EPA argues Petitioners waived their arguments about VGP "corrective action" provisions by not including them in comments. EPA Br. 79. EPA is incorrect. CWA Section 509(b) expressly allows "any interested person" to seek review of an EPA permit, circumventing any administrative adjudicatory process. 33 U.S.C. § 1369(b)(1). Petitioners' only opportunity to raise objections was during public comment, which is not an adversarial proceeding. The Supreme Court has been clear that "[w]here [a] proceeding is not adversarial, the reasons for a court to require issue exhaustion are much weaker." *Sims v. Apfel*, 530 U.S. 103, 120 (2000). EPA's citation to *Ry. Labor Executives' Ass'n v. United States* is inapposite because it involved an adversarial dispute among specific parties. *See* EPA Br. 79–80, citing 791 F.2d 994, 998–1000 (2d Cir. 1986); *see also Am. Forest & Paper Ass'n v. EPA*, 137 F.3d 291, 295 (5th Cir. 1998).

asked to set, nor did it conclude that *EPA could not set*, numeric WQBELs.

Moreover, the ultimate goal of the NAS's report—to further science—is distantly removed from EPA's regulatory goals and obligations.

The NAS stated at the outset that it “was not asked to propose specific ballast water discharge limits, as that is a risk management decision.” NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 2. EPA agrees. Response, EPA-HQ-OW-2011-0141-0926 at 1122 (“NRC did not conclude that it is infeasible to calculate water quality-based effluent limits.”). EPA therefore misrepresents the NAS in stating that it “agrees with NAS that establishing a precise, quantified ballast water discharge standard more stringent than the numeric TBELs . . . is not possible with available data and information.” *Id.* at 1095. EPA's brief beats the same drum, relying on the NAS's conclusion that the “current state of science does not allow a quantitative evaluation of the relative merits of various discharge standards in terms of invasion probability.” EPA Br. 70–71 (quoting NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 5, 30). In so arguing, EPA takes a giant leap from the NAS conclusion that *precise* risks cannot be calculated to EPA's decision not to establish meaningful WQBELs in the VGP.

The record shows the fallacy of EPA's reasoning. The NAS essentially found that it was impossible to overcome data deficiencies that underlie the ability

to calculate *precise* risks, including problems identifying all invasive species in ballast water. NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 5, 63, 67, 95, 124, 127, 129. So the NAS did what scientists do: It called for nothing short of a massive and “highly directed and coordinated” data collection project that would take 10 years “under the best of circumstances.” *Id.* at 127–28, 131. This recommendation, while laudable, does not address present-day regulatory requirements. EPA’s decision to hide behind this need for perfect data (1) is specifically intended to allow sufficient time for new invasive species to colonize, *id.* at 128, itself a violation of water quality standards; (2) is disingenuous because, even three years after the NAS report, there is no such data collection underway; and (3) demonstrates how the VGP’s lack of monitoring requirements fails to ensure the collection of the very data the NAS and SAB considered essential. *See, e.g., id.* at 10, 127–128; SAB Report, EPA-HQ-OW-2011-0141-0229 at 95.

In addition, the NAS said the multitude of confounding factors involved in ballast water rendered “the prospect of developing a ballast water standard that can be applied to all ships and yield a desired result . . . daunting.” NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 5. By relying on the NAS’s insistence on “precise” invasion predictions, EPA has made “the perfect the enemy of the good” and circumvented its duty to make timely regulatory decisions based on the best science available. What is more, EPA hails the NAS’s observation that

use of IMO standards are a “logical first step.” EPA Br. 69 (quoting NAS at 130). EPA apparently sees no irony in this tepid endorsement of standards that are based on no risk assessment whatsoever, by a panel that has asserted that any higher level of protection must be based only on a perfect model using perfect data that can “identify *with confidence* the invasion probabilities.” NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 130 (emphasis added).²¹

In sum, EPA’s reliance on the NAS Report is arbitrary and capricious because (1) there will never be sufficient data to *precisely* predict the probability of invasive species colonizations associated with ballast water treatment levels, (2) the CWA does not require such precision, and (3) any “endorsement” by the NAS of IMO was not based on the very risk assessment perfection the NAS itself called for and EPA relied on.

²¹ In our opening brief, we cited the NMFS’s calculations of invasion probabilities associated with the IMO standards, demonstrating the VGP cannot meet water quality standards. NWEA Op. Br. 55 n.16. In response, EPA dismisses the NMFS and Coast Guard’s use of the Population Viability Analysis (PVA) model, on which those probabilities were based, citing the NAS’s conclusion that the PVA model (and all other models) suffers from data deficiencies. EPA Br. 82 n.34; NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 123–24, 130. Notwithstanding the NAS’s view, “[PVA’s] value as a tool for guiding conservation decision-making has been recognized by the National Research Council.” EPA-HQ-OW-2011-0141-0313 at A-23. The PVA is a practical tool, used by multiple federal agencies. In contrast, the NAS Report simply explains the sheer impossibility of making scientifically “precise” predictions.

2. EPA Fails to Explain Why It Could Not Adopt More Stringent WQBELs

EPA chastises Petitioners for failing to suggest “exactly what type of” WQBELs should be included in the VGP. EPA Br. 75. As an initial matter, it is EPA’s job, not ours, to develop permit limitations that ensure compliance with water quality standards, to develop a record to support those limitations, and to adequately explain how it satisfied its legal obligations. Yet, the obvious answers to EPA’s challenge are contained within the very expert reports commissioned by EPA. EPA simply did not consider them.

The NAS and SAB both emphasized the importance of using multiple approaches to limit ballast-driven invasions, such as “combinations of practices and technologies.” SAB Report, EPA-HQ-OW-2011-0141-0229 at 16. “[W]hen used in combination with shipboard treatment, [other practices and technologies] appear to be capable of achieving a greater level of risk reduction than shipboard treatment alone.” *Id.* at 88; *see also id.* at 2, 6, 21, 95 (recommending against a “one-size-fits-all approach”); NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 52, 63.

Both panels pointedly urged EPA to focus on “place-specific” and “voyage-based” invasion risks from the following: multiple discharges of ballast from the same source origin; source origins that are more likely to cause invasions because of species’ physiological tolerance, competitive ability, and life history; source

origins with the same environmental characteristics as the discharge environment; and voyage durations that increase live organisms. NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 4, 52, 58–59, 62; SAB Report, EPA-HQ-OW-2011-0141-0229 at 2, 6, 16–17, 56, 58, 85, 88–89, 91, 94–96. To address these higher risks, the SAB recommended combining (1) mid-ocean exchange, (2) onshore treatment facilities, and (3) management techniques for uptake and discharge of ballast water *along with* shipboard treatment. SAB Report, EPA-HQ-OW-2011-0141-0229 at 6–7, 16, 19, 58, 84–85, 88–89, 91, 94–96; NWEA Op. Br. 51 n.14. Of these, EPA only arguably required the latter. *See* VGP § 2.2.3.3 (practices to minimize, for example, uptake of sewage, sediment, and toxic algae).²²

EPA rejected, without explanation, onshore treatment, exchange, and managing the rate, pattern, and location of discharges, even where invasion risks are known to be higher, as an appropriate regulatory response to its finding that ballast discharges have “reasonable potential” to violate water quality standards—even though the experts called for these approaches. For example, while ships must “minimize” uptake of toxic algae and raw sewage, VGP § 2.2.3.3, they need not conduct ocean exchange to eliminate these known risks. Likewise, the VGP

²² Neither the record nor the permit is clear if section 2.2.3.3 applies to all living organisms. EPA does not appear to argue that this provision, asking vessels to minimize uptake in certain high-risk situations, amounts to a WQBEL of any kind.

does not require use of onshore treatment to address high-risk discharges, such as from similar environments or into locations where multiple discharges increase risks of colonization. *See, e.g.*, NAS Report, EPA-HQ-OW-2011-0141-0578 (Attachment 14) at 14, fig. 1-3 (volumes of ballast discharged in ports); *id.* at 16, fig. 1-5 (last port of call); EPA-HQ-OW-2011-0141-0004 at 9.

EPA's failure to use combinations of practices for ballast water discharges stands in stark contrast with the VGP's regulation of bilge-water and graywater. *See, e.g.*, Fact Sheet, EPA-HQ-OW-2011-0141-0950 at 64, 130 (provisions limit cumulative impact of numerous vessels discharging large volumes of bilge-water to ecologically-sensitive environments with limited circulation because "impact of discharges is likely to be higher, and in ecosystems that are already stressed[.]"); *id.* at 130 (same rationale for graywater). In contrast, EPA established no place-specific regulation of ballast discharges to address higher risks; nor does the record demonstrate it assessed cumulative impacts of multiple ballast discharges, despite the urging of its science advisors.

The agency also could have established a numeric WQBEL of zero. EPA rejected this approach out-of-hand because "there is likely a number greater than zero discharge of living organisms that is 'necessary' to meet water quality standards." Response, EPA-HQ-OW-2011-0141-0926 at 1105. "Therefore, EPA believes it would be unreasonable to conclude that zero discharge is 'necessary.'"

Id.; *see also id.* at 1104. But EPA's response misses the point. The agency must set an effluent limitation that *ensures* compliance with water quality standards. That a limitation less stringent than zero *may* suffice does not satisfy this responsibility. Further, EPA offers no support for the notion that "necessary" in CWA section 301(b)(1)(C) means "only the minimal restrictions necessary." That interpretation is particularly unpersuasive in light of EPA's crystal-clear regulations, interpreting these same statutory obligations as precluding the issuance of an NPDES permit where EPA cannot *ensure* compliance with water quality standards. *See, e.g.*, 40 C.F.R. § 122.4(d).

We acknowledge the measurement challenges associated with a zero-discharge limitation. *See* SAB Report, EPA-HQ-OW-2011-0141-0229 at 6; Response, EPA-HQ-OW-2011-0141-0926 at 1095. The inability to accurately quantify invasive species in ballast discharges does not, however, excuse EPA from mandating that level of pollution control based on water quality standards. EPA commonly sets WQBELs at levels below which pollutants can be detected or quantified. *See, e.g.*, EPA Region 10, Guidance on Water Quality Based Effluent Limits Set Below Analytical Detection/Quantitation Limits (Apr. 25, 2005) (setting WQBELs below quantitation limit), *available at* [http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Permits+Homepage/\\$FILE/ML-MDL-Policy-4-25-05.pdf](http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Permits+Homepage/$FILE/ML-MDL-Policy-4-25-05.pdf); *see also* EPA-HQ-OW-2011-0141-0450

(Attachment 3) at 2–3 (Michigan set numeric WQBELs for PCBs well below quantitation limit, with enforcement keyed to that limit). In fact, EPA’s guidance directs permits to “include . . . the appropriate permit limit . . . regardless of the proximity of the limit to the analytical detection level.” EPA-HQ-OW-2011-0141-0274 at 111. While the numeric limit may be zero for a particular pollutant, that limit is enforced only at the level the pollutant can be accurately detected. As technology for detecting ever-smaller amounts of a pollutant improves, the enforcement point in the permit moves closer to the WQBEL. This is a well-established approach to water quality-based permitting.

At bottom, “EPA is under a specific obligation to require that level of effluent control which is needed to implement existing water quality standards *without regard to the limits of practicability.*” *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1163 (9th Cir. 1999) (internal quotations omitted) (emphasis added). The record shows EPA had many choices besides the narrative WQBEL to ensure the water quality protection the CWA requires. EPA’s decision to adopt a one-line directive instead of meaningful limits on ballast discharges was arbitrary and capricious.

CONCLUSION

For the reasons stated above and in Petitioners’ opening brief, the VGP is arbitrary, capricious, an abuse of discretion, and not in accordance with the CWA.

Petitioners respectfully request that the Court set aside and remand the VGP for further proceedings consistent with the Court's opinion.

Dated this 1st day of August, 2014.

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitations of Fed. R. App. P. 32(a)(7)(B), as modified by the Court's Order dated July 2, 2014, because the brief contains 9,988 words, excluding the parts of the brief exempted by Fed. R. App. 32(a)(7)(B)(iii).

Dated this 1st day of August, 2014.

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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Second Circuit by using the appellate CM/ECF system on August 1, 2014.

I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

Dated this 1st day of August, 2014

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