



September 25, 2023

Secretary Julie Moore
Vermont Agency of Natural Resources
1 National Life Drive; Davis Building 2
Montpelier, Vt 05620-3901

Re: Public Use of Waters Rules Petition

Dear Secretary Moore:

We write regarding our group's petition submitted in March 2022 requesting a rule to manage the operation of wake boats and the generation of enhanced wakes for surfing and other wake sports on Vermont's inland lakes. We filed our petition after 12 months of research, study, and internal debate. Since the filing, we have unearthed additional scientific research; the public has expressed broad and strong support for our rule; we have come to understand more completely the impact of wake boats on traditional lake users; and we have mobilized considerable expertise to quantify the impact on Vermont's recreational economy.

The rule proposed in our petition rests on a solid foundation of scientific research. Academic studies have found significant impacts on lake beds and phosphorus loading resulting from the powerful impact of enhanced wakes on lake shorelines. Unlike ski boats, designed to travel along a flat plane with motors on the order of 150-200 horsepower, wake boats create ocean-like waves by plowing through the water in a bow-up/stern-down orientation, with motors in the 400-650 horsepower range. The resulting propeller wash, angled downward, scours the lake bottom, releasing legacy phosphorus from up to 30 feet deep. Science makes clear that these enhanced waves and propeller wash are damaging lake ecosystems and degrading water quality.

In our 94-page petition, we reference six scientific studies, including one funded by the water sports industry. The DEC chose to rely most heavily on one of these: the University of Minnesota's peer-reviewed [St. Anthony Falls Laboratory \(SAFL\) Study](#). In doing so, DEC needs to recognize the shortcomings of the study when used as the basis for its proposed rule. First, the study evaluates wakes from wake boats built in 2019. Four years later, the newer models are already far bigger and more powerful (the boating industry widely boasts of "monster waves" generated by these newer boats). Second, the SAFL Study evaluates waves generated from a single wake boat operating alone and does not consider the additive impact of multiple wake boats operating in close proximity. These two shortcomings taken together produce a kind of "best case" scenario rather than one that reflects what actually occurs on lakes. Finally, the study narrowly focuses on a comparison between wake boat waves and ski boat waves and does not evaluate the impact of waves on shoreline erosion or bottom scouring. More recent studies indicate a need for greater distances from shore and also focus on other environmental impacts resulting from enhanced wakes on small bodies of water. Despite its serious shortcomings, this is the study the DEC is looking to for scientific guidance, and yet, in proposing a draft rule with only a 500-foot shoreline buffer, the DEC ignores the fact that the

SAFL Study specifically indicates that a distance over 600 feet is necessary to attenuate wake surfing waves to comparable water-skiing waves at 200 feet.

Wake boats, developed in the late 1990s, are a recent addition to Vermont lakes, and their impacts on Vermont's lakes are not completely understood. When the overall impact of an activity is not fully known, management decisions should be made conservatively to allow an adequate margin of error for future discoveries. This is known as the "precautionary principle." It applies to the scientific study of newly developing technologies and should be scrupulously applied to environmental regulation. Scientific research involving wake boats is in its early stages; more studies are on the way, in response to the nationwide concern over the problems caused by wake boats and their enhanced wakes. Any wake boat management rule must take the precautionary principle into account, recognizing the need to err on the side of caution until more information is available. Any distance from shore less than 1,000 feet fails to acknowledge this reality and fails to provide the necessary protection.

At the DEC's August Public Hearing, Kim Mackey offered a unique perspective in support of the 1,000-foot rule. Kim is a physician based in Madison, Wisconsin, and a longstanding summer resident at Great Averill Pond in the NEK. He owns and operates a wake boat on an 8,000-acre lake in Wisconsin, and Kim and his family also enjoy quiet paddling and other traditional activities. In his comment, Kim emphasized that the combination of horsepower, ballast, and prop angle sets wake boats apart from all other watercraft, generating waves with uniquely destructive characteristics. Kim described paddling with his children on their Wisconsin lake and finding themselves challenged more by huge waves produced by wake boats over a half mile away than by ski boats operating at a distance of only 100 feet. Kim offered his perspective as a wake boat owner that wake boats operating on Great Averill, approximately 800 acres and only three-quarters of a mile wide, would be disastrous. He is convinced that a 1,000-foot buffer is critical to protect shorelines and the safety of other users on Vermont's smaller lakes and ponds.

Another issue raised at the August Public Hearing, one which was not taken into consideration when DEC developed its proposed rule, is the issue of flooding, i.e., how it impacts shoreline erosion and how wake boat activity exacerbates the problem (See the oral comment made by Sarah Harrington during the August 2023 Public Hearing.) As Vermont witnessed this past summer, climate change has magnified water quality issues throughout the state. The seriousness of this issue was detailed in a statement issued by the [Lake Champlain Sea Grant Institute](#): "According to the [National Climate Assessment](#), very heavy precipitation events have increased by more than 70% in the Lake Champlain basin since the late 1950s. Annual total precipitation has increased consistently over the past century in the basin. As a result of these trends and increasing population, more homes, businesses, and communities have been impacted by shoreline flooding and inundation in recent years. Shoreline erosion also threatens to reduce fish spawning areas which could impact the health of the lake's fisheries. It can also increase the risk of encroachment by invasive plant species along shorelines." Boats operating within a specified distance from shore during flooding impact shorelines that, at lower water levels, are unaffected by the action of waves. This means that boats operating when water levels are unusually high damage shallow areas -- the littoral zone -- and erode shoreline soil not previously washed away during "normal" times. An effective wake sport management rule must leave room for variability in water levels, especially now that climate change has led to more frequent and severe flooding events. ANR must design a rule with enough flexibility to accommodate changing water levels. The proposed 500-foot rule leaves no margin for error. ANR should mandate 1,000 feet from shore, a distance that provides the space needed under variable water level conditions.

Our group takes issue with DEC's interpretation of the requirement, as specified in the Use of Public Waters rules, that any new rule must find the "least restrictive" solution to use conflicts. The question is, which group of lake users should be "least restricted?" We believe DEC's proposed 500-foot rule looks at this from the wrong point of view and ends up prioritizing wake sports over all other uses. In fact, the Use of Public Waters rules require attention to the enjoyment of our public waters by all users, both current and in the future. Allowing wake boats to create dangerous waves only 500 feet from shore (and only 200 feet from other users) effectively allows wake boats to dominate our lakes by inhibiting other users intimidated by giant swells. This situation greatly restricts, and even excludes, the vast majority of normal users from Vermont's lakes and ponds. Water skiers, paddlers, kayakers, canoers, anglers, swimmers, and sailors cannot enjoy the lake when wake boats are out on the water.

This effort to correctly interpret the term "least restrictive" not only impacts the balance of public uses and safety but also impacts the State's economy. The DEC's own economic impact analysis concludes that the economic impact of wake sport regulation outweighs the costs by 10 to 1. The benefits are estimated at \$93 million annually. Allowing wake sports to dominate by operating close to shore and by monopolizing the centers of small lakes discourages thousands of swimmers, paddlers, sailors, anglers, conventional boat users, and others who form the overwhelming majority of Vermont's lake-based recreational tourist activity. To be "least restrictive" on Vermont's recreational and tourism economies, an effective wake boat rule must limit enhanced wakes to 1,000 feet from shore. Even a few individuals operating with enhanced wakes close to shore can cause costly, possibly irreparable, environmental and water quality damage while contributing little to the state's economy.

In terms of the opposition to our petition, there are several points to be made. First, one of the studies referenced in our petition was an industry-sponsored study published by Goudy and Girod in 2015. In this study, researchers used a representative 2013 wake boat model that, in wake boat mode, generated an enhanced wake of 26 inches (~2 feet) immediately behind the boat. When they measured the height of the wake 325 feet from the boat, the wake height was 14 inches. When the Goudy and Girod data plots are extended to 500 ft, the extrapolated wake height is 10 inches. A 10-inch wake is far from normal. It has the potential to submerge the heads of swimmers, knocking paddleboarders over, and overturning kayaks. Such waves interfere with the safety and enjoyment of most traditional lake uses. The August 10 ANR written comment from Daniel Sharpe (also [included in a recent RWVL Newsletter](#)) points out that if this same study were done today using a current representative wake boat, which is capable of generating 3 to 4-foot wakes, the data would show that a 1,000-ft distance from shore is needed to achieve an acceptable wake height of 5-inches. In another pre-August 10 comment to the ANR (also [included in a recent RWVL Newsletter](#)), Physics Professor Philip Logsdon discusses the dynamics of the deep-water waves generated by wake boats and the wave energy shoaling impact on near-shore lake beds. His analysis explains why Vermont lakes' unique physical properties exacerbate the negative effects of wake boat waves, underscoring the need for the 1,000-ft rule proposed in [our original petition](#).

Second, some wake sport enthusiasts have asserted that enhanced wakes from wake boats do no more damage than natural, wind-driven waves. Based on the [post-petition data we provided](#) to the DEC that is placed on the DEC rulemaking website, this is incorrect. The impact of wind on inland lakes is concentrated only on shorelines exposed to the prevailing storm patterns. Those shorelines have been "hardened" over time by such wind-driven waves. Waves from wake boats, however, impact shorelines untouched by storm-driven waves. Additionally, wind-driven waves, even whitecaps formed during violent storms, are only surface waves. By contrast, wake boats generate waves by displacing water *four and five feet below the surface* to produce giant and massively powerful waves. The force needed to generate such huge waves is enormous; consequently, wake boats must have monstrous engines. A generation ago,

engines of this size were unheard of. The most powerful motor found on one of Vermont's inland lakes would have been in the range of 100-200 horsepower, with most boats having even smaller motors. Wake boats and their powerful 400-650 horsepower motors are unprecedented and pose unique hazards for Vermont's smaller lakes and ponds.

Third, wake sport enthusiasts are small in number, but their boats have an outsized negative impact on the majority of lake users. Wake boat users call for education and communication instead of rulemaking. However, despite having multiple opportunities to participate in DEC's public forums, wake boat advocates consistently fail to show up in any significant numbers. Where are they? If these are such popular and beneficial activities, why do we not hear from people personally engaged in wake sports? Those of us who immerse ourselves in research on this topic find that what we learn only increases our commitment to a strong, statewide management rule to protect Vermont's lakes and ponds.

The public's interest and involvement in wake boat regulation is unprecedented and continues to grow as more people learn about the impact of wake sports on inland lakes. DEC held five public hearings over two years, and overwhelmingly — by more than 80% — the public urges ANR to adopt a management rule either requiring wake sports to stay 1,000 feet from shore or prohibiting wake sports altogether on inland lakes. ANR must incorporate the public's voice into the development of a wake boat management rule.

We commend the Department of Environmental Conservation for examining existing science and developing its deliberative response to our petition. The addition of the "home lake" element to our proposal is a notable improvement. ANR now has the opportunity to go even further in contributing to the ecological preservation of Vermont's lakes and ponds. At the same time, ANR will be preserving the safety and enjoyment for tens of thousands of people who live in Vermont and travel here to enjoy our public waters. The science is clear: wake boats are not merely the latest iteration of motorboats — they are a new category entirely, dangerous, destructive, and not yet fully understood. If not sufficiently regulated, they will drive many thousands of "normal users," along with their economic benefits, away from our summer communities. The science is continuing to evolve while the marine industry's commitment to developing and marketing bigger and more powerful versions stands as a clear warning of what will follow.

In closing, we would like to address the question of why our group has dedicated so much energy to wake boat regulation when there are so many pressing environmental issues in Vermont. Wake sports are a tiny niche interest. This is true. We respond with another question: Why does Vermont, as a State with a national reputation for environmental excellence, allow tiny niche interests to flourish at the expense of our wider natural communities?

Indulging the private right to engage in wake sports degrades broader public rights to clean water, healthy shorelines, personal safety etc. An individual's desire to create ocean waves to surf on, far from the actual ocean, erodes the rights of everyone else. Boaters, swimmers, paddlers, sailors, plants, animals, shorelines, and the very quality of the water itself — all are deemed secondary to the enjoyment of a few individual wake boat owners.

Climate change and environmental degradation are real. Vermont is grappling with overwhelming water quality challenges that are complicated and massively expensive to address. A strong wake boat management rule provides Vermont with the rare opportunity to do something now — at no expense — to prevent ecological damage in the future. Public testimony from other states warns of the consequences of unchecked wake boat activity. Vermont has the rare chance to remedy this situation proactively before it becomes too overwhelming to fix.

Right now, with the distance from shore set at 500 feet, the State's rule favors a few individuals over the public good. Please remedy this imbalance by putting in place a rule to truly safeguard our lakes and ponds for future generations. To be effective, that rule must include a distance from shore of 1,000 feet.

Respectfully,



Jack Widness,
Chair, Responsible Wakes for Vermont Lakes
Lake Raponda, Wilmington, VT

And the over 1200+ Responsible Wakes for Vermont Lakes Supporters representing these lakes:

Caspian Lake	Lake Elligo	Marshfield Reservoir
Echo Lake	Lake Elmore	Memphremagog
Great Averill Pond	Lake Fairlee	Peacham Pond
Greenwood Lake	Lake Iroquois	Shadow Lake
Groton Pond	Lake Parker	South Pond
Harvey's Lake	Lake Raponda	Sunset Lake
Holland Pond	Lake Salem	Waterbury Reservoir
Joe's Pond	Lake Seymour	Willoughby Lake
Lake Dunmore	Lake Sunset	Woodbury Lake

CC: Governor Phil Scott
Jason Batchelder, DEC Commissioner
Pete LaFlamme, DEC Director, Watershed Management Division
Oliver Pierson, DEC Program Manager, Watershed Management Division