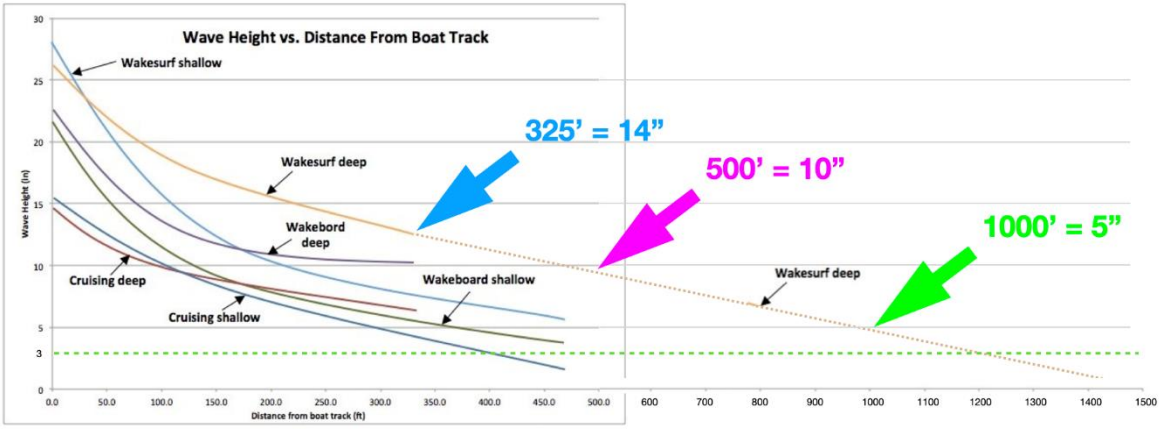
Wave height at different distances from originating wave.

Original wave height measured at wakeboat track

Wake boats are currently advertised as creating 4' wake heights. The technology is heading toward ever increasing boat sizes and wave heights. This analysis of the boating industry data charted in the study in Florida by Goudy, et al, is based on the summary chart taken directly out of the research study referenced in the addendum to this analysis.

The data clearly shows the shoreline safety zone virtually would be constantly violated at a setoff distance of 500 ft from shore. It takes at least 1000 ft for waves to dissipate to safe levels of between 3 to 5 inches – **before they cross the 200 ft shoreline safety zone.** The yellow curve at the top of the chart of their data shows that for a 27" wake boat wake. It clearly demonstrates that it would take about 1200 ft. for 27" waves to dissipate to 3". This would indicate the rule should be 1400 ft, not 500 ft, nor even 1000 ft from shore.

Safe Wave Height



Dissipation wave height at different distances from originating 27" wave.

300' 500' 1000'

Boat running in deep water (yellow top curve)

13.5" 10" 5"

Boat running in shallow water (blue - next curve down)

8" 5" 3"

Estimating what it would mean for 4 ft. or 5 ft. originating wave heights, a back of the envelope estimate obtained by examining all the curves indicates that out beyond a dissipation distance of about 300 ft the curves become nearly linear. Thus if the originating wave is about twice as high as the real data here (27") the wave height can be estimated by simple ratio.(if anything the wave height are higher that shown as a linear height function of distance.

For wake boats running parallel to and 500 ft from shore or 300 ft from the 200 ft shoreline safety no-wake zone:

Four foot initial wave height at boat:

48/27 x 13.5 = 24 inches (two foot waves are entering the edge of the 200 ft no-wake zone)

Five foot initial wave height at boat:

60/27 x 3.5 = 30 inches (two and a half ft waves are entering the edge of the 200 ft no-wake zone.

This result has been qualitatively attested to by many citizen testimonies from lake front owners sent into the ANR – the vast majority of them.

Thus, the ANR's 500 ft from shore proposal would moot its own shoreline safety zone regulations. With even a 1000 ft rule we would be setting up a future of increased conflict with users and property owners as well as increased erosion of shorelines.

Note: My career has been 1) a decade long high school physics teacher and then 2) a 22 yrs. scientist/engineer for IBM. I am very familiar with lakes and ponds, and rivers and streams, and water dynamics from a common sense, experienced perspective having whitewater and flatwater canoed for 50 year. That includes having been an American Canoe Association -certified whitewater instructor and canoe school designer with Vermont's only canoe club, Vermont Paddlers (formerly called Northern Vermont Canoe Cruisers). My education and career centered around understanding data in charts such as these - having been a mathematics scholarship recipient.

Addendum

Remember that this analysis is based on data provided by the wakesports industry itself, It comes from an older-model wakeboat much less powerful than those being sold today, with a wake about half as high as today's boats. If we were to repeat the experiment with a new surf boat making a 48″ wake, the distance needed for wake dissipation and the mitigation of adverse impacts would be much greater — well beyond 1,000 feet from shore, even well beyond he shoreline safety zone..

The study from which the graph was taken and analyzed.

https://www.wsia.net/wp-content/uploads/2020/03/WSIA_draft_report_Rev_II.pdf

Prepared for the Water Sports Industry Association

Foreword

With a goal to scientifically measure the wakes produced by wave-sport towboats, the first-ever Towed Water Sports Wave Energy Study was conducted in the Spring of 2015 in Orlando, Florida. The research was commissioned by the Water Sports Industry Association (WSIA) and conducted by engineering consultants from C.A. Goudey & Associates of Newburyport, Massachusetts. The study was led by founder and principal Clifford A. Goudey who holds master's degrees from MIT in naval architecture and marine engineering and in mechanical engineering and is an expert in waves, vessel performance, and the conduct of instrumented field tests. Assisting was Lewis D. Girod, a software and sensing engineer who holds a master's degree from MIT in electrical engineering and computer science and a PhD in computer science from UCLA. The tests were conducted from March 20 to 27, 2015 on the Conway Chain of Lakes at two sites chosen to represent shallow-water and deep-water conditions. Precise measurements of wave height by an array of sensors have provided the first rigorous measure of wakes produced by this type of boat. The results and the authors' conclusions are offered here in hopes that they begin to clarify issues related to the role of towed water sport wakes.

John Archer, WSIA President Larry Meddock, WSIA Executive Director

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to the Committee on Legislative Rules for the Feb 1 2024 LCAR hearing on the "Use of Public Waters" wake boat proposal.