To: Quent Johnson, Chair, TOSL Health, Safety and Environment Committee

From: Bill Amery, Member, TOSL Health, Safety and Environment Committee

Date: June 14, 2026

Re: Response to document from Wisconsin Watersports Coalition on Wake Ordinances

In preparation for our upcoming meeting, I reviewed the document "WHY ARE TOWNS AND LAKE GROUPS BEING PRESSURED TO ADOPT WAKE ORDINANCES? , that was sent to us by group identifying as the WISCONSIN WATERSPORTS COALITION (Coalition).

Based on my review, the major issues presented in this document are familiar to us and were evaluated by the Board in our deliberations on establishing an enhanced wake ordinance. What is new or different, and what permeates this document, is an overarching argument that enhanced wake ordinances are wrong because they are not based upon objective evidence, and that Wisconsin towns are being influenced by activists to enact policies that are "unsupported, exaggerated, or contradicted by available scientific evidence."

I agree with the Coalition that using objective/scientific evidence is very important. Unfortunately, this document doesn't offer much of it. Instead, the importance of scientifically proving the damage by wake enhanced activities is used as a hammer to drive home the same point -- that in the absence of proof we should do nothing.. The argument goes something like this: *Decisions should be made on scientific evidence, but there is none, or what there is has been misinterpreted by activists and researchers; therefore, until there is incontrovertible scientific evidence/proof that damage is being done, all wake ordinances are wrong*" My problem with using this logic is that we would do nothing until there is proof, *that we all agree on*, of wake enhanced activities have causing

serious problems in our lakes. By then, the damage will be done, and the kind of damage we are talking about here may be irreversible. To me, this approach would be irresponsible -- it is bad public policy, and is not what the Town wants from its leadership.

So, while I am unconvinced by the Coalition's broader argument, I do feel it is important to analyze new data as it becomes available. The objective or scientific evidence that is referenced in the Coalition document is a research paper entitled "Wakesurfing, Wakeboarding, and Waterskiing: A Comparison of Wake Characteristics". The author is Gregor J. Mcfarlane, and he is associated with the Australian Maritime College, University of Tasmania, Australia. The paper was published in the Australian journal *River Research and Applications*. I downloaded the entire study and will make it available to the Committee.

This paper is a compilation of engineering/scientific data from three studies: 1. The study commissioned by the WSIA, 2. The St Anthony Falls Laboratory/University of Minnesota study and 3. The author's own study data. The first two studies are familiar to us, having been part of the BOAHC study and Board deliberations.

The Coalition document focuses specifically on one chart in the Mcfarlane paper -- Figure 10. The following is excerpted from their document:

> "The measured data does not support the substantially larger setbacks being advanced by activists and researchers. Instead, the evidence indicates that a setback —an additional 100 feet— greater than existing requirements for comparable boating activities would align with the observed wave characteristics existing on lakes today and documented in the studies. (Figure 1)
>
> Utilizing MacFarlane's 2025 data, the highlighted data points represent comparable boats and/or activities resulting in wave heights ranging from 8-17". The average surf wave height from all three studies at 200' from shore was approximately 11", well within the range of comparable boats and activities 100' from shore (Figure 1). In fact, this is where MacFarlane acknowledges comparable boats cruising at 20-24 mph

and his recommendation was 250 ft. Unfortunately, MacFarlane ignored a similar activities comparison which would have reduced his recommendation distance further."

My review yielded several discrepancies we should investigate, if we decide to take this matter further:

1. The chart from Mcfarlane's paper (Figure 10 in his original paper) has been altered in the graphic presented in the Coalition document (their Figure 1).

    a. Mcfarlane draws none of the conclusions that were added in the Coalition amended version. This looks like the Coalition used selected parts of raw data from the Mcfarlane presentation and came up with their own interpretation.
    b. The Coalition graphic speaks to "average" wave heights. Mcfarlane makes no reference to average wave height. Generally speaking, using average as a statistical measure can be problematic, which may be why Mcfarlane doesn't use it. Think tidal waves – they do massive devastation without changing the average wave height very much.
    c. Mcfarlane's reference to a 250' setback distance (page 1203) may not be related to Figure 10 and is not a "recommendation" as stated in the Coalition document.

2. Mcfarlane's **actual** conclusions were omitted in the Coalition document. His conclusions were that wave ***energy***, rather than wave ***height***, may be a more rational benchmark, and that this would suggest setback distance of 350 or perhaps 500 feet. Here is an excerpt from his paper (highlights added in yellow):

    Conclusions

    "A comparison of full-scale trials from three separate studies has confirmed that wake boats, either ballasted or unballasted, when operating around 10–12 mph, generally generate significantly higher and more energetic waves than "conventional" recreational craft operating within higher speed zones of 20 mph and above.

The data presented may assist in defining rational management options for waterways where the waves generated by sporting activities such as wakesurfing may be causing issues related to shoreline erosion, damage to maritime structures, and/or presenting a danger to other users of the waterway.

The leading advocate for the towed water sports industry in the USA, the WSIA, recommends wakesurfers stay at least 200 ft away from the shoreline, docks, or other structures. The appropriateness of this distance can be examined using the presented data from multiple locations from the sailing line of the test boats and compared against a suitable benchmark. It is likely that some rational benchmarks may recommend a greater distance, likely to be in excess of 350 ft when considering wave height and 500 ft when considering wave energy. In the vast majority of cases where vessel wave wake is being assessed, the author believes wave energy to be a notably more appropriate measure than wave height for the reasons presented in Section 1.2."

Coincidentally, our Board did consider allowing wake enhanced activities with a 500 ft setback. As I recall, and based on recommendations from the BOAHC study, we concluded that the Spider Lake chain is made up of lakes that do not have areas large and deep enough to accommodate the 500 ft option.

3. The Coalition document refers to a 200 ft measurement of wave height and argues this is meaningful in relation to the 100 ft measures in Mcfarlane's data. It is worth noting that Mcfarlane commented on possible bias in that the 200 ft setback recommendation originated with the WSIA and was not supported by their study's data. Here is an excerpt from the Mcfarlane paper, found on page 1193:

> "The WSIA report includes some valuable data. However, the report itself may be tainted by bias, as a number of the conclusions are not supported by the data presented. It appears that the consulting engineers commissioned by WSIA performed the study, but the WSIA may have

made their own interpretation of the results from which
they based their recommendations—most notably that wakesurf activities stay at least 200 ft from the shoreline, docks, or other structures. The following statement was available on the WSIA website: "*In 2015, Ocean Engineer and Naval Architect Clifford Goudey scientifically studied and collected wave energy data on the characteristics of boat wakes. WSIA analyzed the data to develop recommendations to protect shorelines, docks and other personal property*" (WSIA 2023)."

In conclusion, my analysis found nothing that would cause us to change our current position. I understand that the Coalition wants to eliminate enhanced wake ordinances, and I respect their right to pursue this goal. It does concern me, however, that objective data may be selectively interpreted to make their case. There are parts of their document I find questionable. That said, I am not an expert in these matters. Therefore, if we decide to pursue this further, I suggest we reach out to people with expertise in this area – perhaps members of the BOAHC group that have science or engineering backgrounds.

WISCONSIN WATERSPORTS COALITION

Why Are Towns and Lake Groups Being Pressured to Adopt Wake Ordinances?

A coordinated campaign is underway to persuade Wisconsin towns and lake organizations to adopt a pre-packaged "model ordinance" before conducting the due diligence necessary to determine whether restrictions are justified, effective, enforceable, or even needed.

Activist groups frequently portray Wisconsin lakes as facing an urgent and immediate threat from wake-surfing boats and encourage local governments to act quickly. However, many of the claims used to justify these ordinances are either unsupported, exaggerated, or contradicted by available scientific evidence.

Before restricting the activities of lake users, local officials should require objective evidence that a measurable problem exists on their specific lake, that wake-surfing activity is responsible for that problem, and that existing laws are inadequate to address it. Absent that evidence, regulation becomes a solution in search of a problem.

The following compares the most common claims made in support of wake ordinances with the available evidence.

CLAIM: "These ordinances will never be legally challenged, and we will defend any lawsuit free of charge to the town."

- Lawsuits regarding wake surfing ordinances are occurring throughout Wisconsin.
- There are at least 9 current, pending, or settled lawsuits involving wake surfing ordinances in Wisconsin...with more coming.
- The activist's attempts to "intervene" in the initial lawsuit was dismissed by a Federal Judge, advocacy interests like those asserted by the Alliance are not sufficient to support intervention as of right.

CLAIM: Wake boats are a major driver of aquatic invasive species (AIS).

- Wisconsin DNR leadership has publicly stated available research does not support claims that wake boats uniquely or disproportional spread aquatic invasives species.
- AIS existed in Wisconsin long before wake boats became popular.
- Data indicates the number of newly invaded lakes has declined over the past decade.
- Natural Resources Board 1/2026, Deputy Secretary Little stated:

"In spite of what you've heard over the past several years from individuals and organizations who have come before the NRB, the research has not demonstrated that wake boats uniquely or disproportionately drive AIS spread compared to other watercraft."

CLAIM: Wisconsin lakes are at immediate risk from wake boats.

- Activists have yet to identify through Aquatic Plant Management Plans and WDNR trophic state Data a lake exhibiting long term health degradation attributed to wake boats.
- There is no evidence that Wisconsin lakes are experiencing a statewide water quality crisis caused by wake-surfing activity. Source WDNR Water Quality Reports online
- WDNR has permitted weed cutting for decades on hundreds of Wisconsin lakes. Harvesting occurs repeatedly in shallow near-shore areas, the activity can disturb sediments, fragment plants, alter habitat, and resuspend nutrients

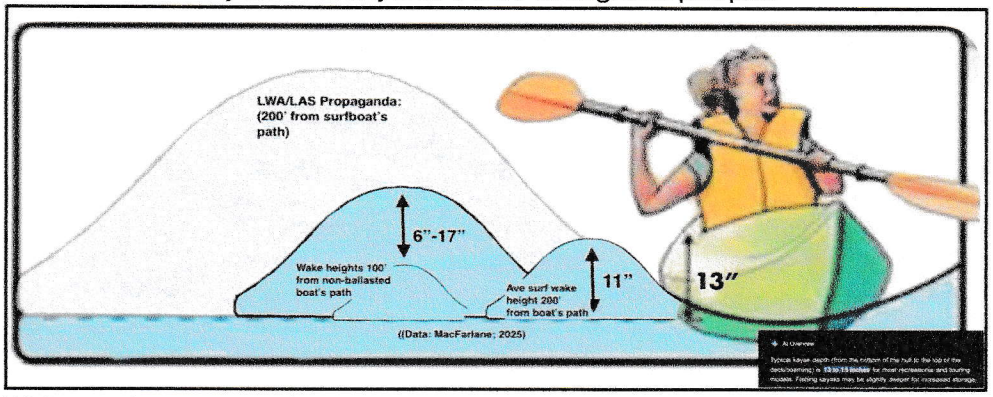
CLAIM: "Artificially Enhanced Wakes" are uniquely different from all other boating activity.

- "Artificially Enhanced Wakes" is an activist-created term rather than a recognized scientific or legal classification, to single out wake boats as "different".

- All motorized boats are capable of generating significant wakes under certain operating conditions (slow cruising, kids skiing and tubing etc).
- Many proposed ordinances single out wake-surfing boats while exempting other vessels capable of producing comparable wave height and energy.

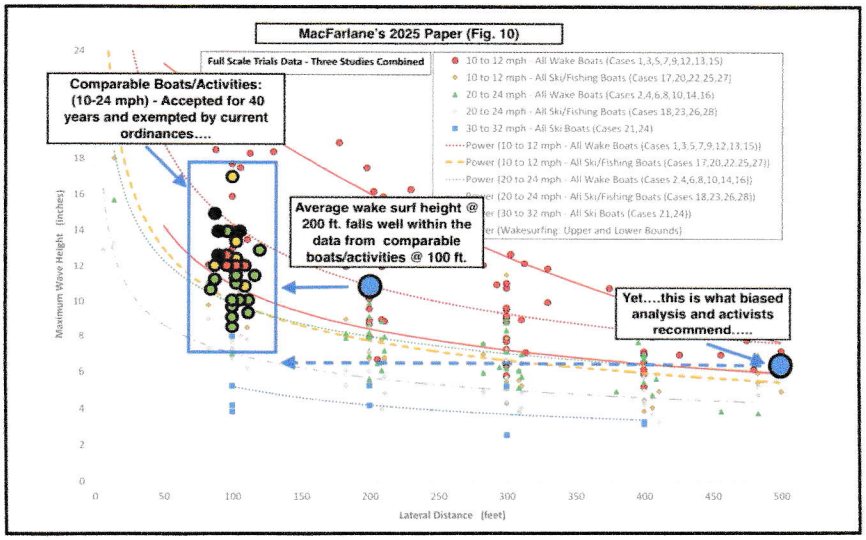
CLAIM: WAKE BOATS CREATE MASSIVE 4-FOOT WAVES. WAKE BOATS ARE DESTROYING SHORELINES AND REQUIRE 500-FOOT SETBACKS.

- The frequently cited "4–5 foot wake" by activists has not been documented in published studies...it's a myth. Actually....it's a lie to frighten people.



- Wake-surf waves are highly unstable and diminish rapidly with distance. While wave heights measured directly behind a wake boat average approximately 30 inches, the surf wave 100 feet from the boat averages approximately 14 inches. Comparable boats and activities without ballast systems, including tubing and skiing, have produced waves measuring 12–17 inches at the same distance (Figure 1).
- To date, neither activists nor researchers have identified any extensive shoreline that has been demonstrably affected by wake-surfing activity from the approximately 1% of boats equipped for the sport. Instead, concerns have largely been based on well-coached anecdotal observations and speculation rather than documented evidence.
- The measured data does not support the substantially larger setbacks being advanced by activists and researchers. Instead, the evidence indicates that a setback—an additional 100 feet— greater than existing requirements for comparable boating activities would align with the observed wave characteristics existing on lakes today and documented in the studies. (Figure 1)

Figure 1.

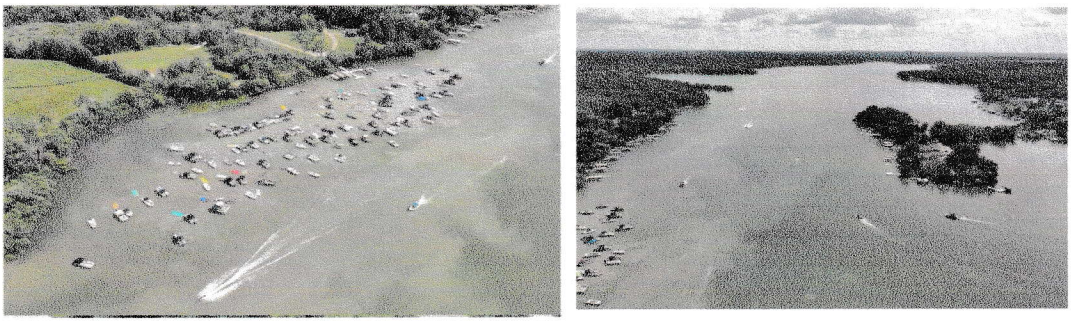


Utilizing MacFarlane's 2025 data, the highlighted data points represent comparable boats and/or activities resulting in wave heights ranging from 8-17". The average surf wave height from all three studies at 200' from shore was approximately 11", well within the range of comparable boats and activities 100' from shore (Figure 1). In fact, this is where MacFarlane acknowledges comparable boats cruising at 20-24 mph and his recommendation was 250 ft. Unfortunately, MacFarlane ignored a similar activities comparison which would have reduced his recommendation distance further.

CLAIM: WAKE BOATS ARE DESTROYING LAKE BOTTOMS. WAKE SURFING REQUIRES A MINIMUM DEPTH OF 25 FEET.

- Activists and researchers have not identified or documented a lake where wake-surfing activity alone has been shown to cause long-term ecological impacts. As a result, concerns are often based on observations of sediment resuspension rather than documented evidence of lasting ecological harm.
- A depth requirement premised on eliminating all sediment suspension creates an unrealistic standard that goes beyond what is required of any other activity on the lake, often in more shallow waters

Figure 2. Source SWRPC Big Cedar Lake



Wake surfing occurs on Big Cedar Lake in the deep part of the lake in the top of the right-hand picture. The sediment resuspension in the left picture is allowed in shallow waters. Sand bar hopping and other activities in shallow water happen throughout Wisconsin Lakes continuously.

- Much of the evidence presented consists of videos showing temporary sediment resuspension, localized scouring, or vegetation disturbance. While these observations demonstrate that disturbance can occur, they do not establish long-term ecological harm, or a specific correlation to a wake surfing boat.
- Multiple studies have failed to measure meaningful differences in sediment resuspension associated with wake surfing beyond approximately 14 feet of water depth. To date, no study has established a direct connection between wake-surfing-related sediment disturbance and measurable long-term degradation of lake health.
- Sediment disturbance is a well-documented and common occurrence on lakes. Studies dating back to the 1970s have identified sediment resuspension from numerous natural and recreational sources (Figure 2), including:
    - Wind, ice action, and stormwater runoff
    - Any boat operating in shallow water (less than 10-15 feet).
    - Rapid acceleration from piers, launches, or near-shore locations
    - Anchoring and anchor dragging
    - Mechanical weed-cutting and weed-harvesting operations, which have been conducted on Wisconsin lakes for decades under permits issued by the Wisconsin DNR

CLAIM: WAKE BOATS CREATE SIGNIFICANT SAFETY HAZARDS.

- Wake boats are federally approved vessels that are specifically designed and manufactured for wake-surfing activities.
- The U.S. Coast Guard permits the manufacture, sale, and operation of wake boats for their intended purpose. Wake boats do not present an inherent visibility or operational hazard that would prevent them from meeting applicable federal safety standards.
- The Wisconsin DNR annually identifies the state's most significant boating safety concerns. Wake boats and wake-surfing activity have not been identified among Wisconsin's primary boating safety issues.
- To date, concerns regarding wake-surfing safety have largely been based on anecdotal complaints rather than documented statewide accident trends or evidence demonstrating a unique safety risk associated with wake boats.

THE BOTTOM LINE

The issue before local governments is not whether wake boats alone can create waves, resuspend sediment, or contribute to user conflicts. All forms of boating can create impacts under certain conditions.

The real question is whether proposed ordinances are supported by measurable evidence, documented local impacts, and enforceable standards.

Local governments should conduct their own due diligence before adopting restrictions that affect property owners, businesses, and recreational users.

Public policy should be based on evidence, not fear. Facts, not anecdotes. Science, not activists' speculation.

When towns fall prey to activists' demands, they become susceptible to not performing the required due diligence to produce an effective ordinance. To prevent this pitfall, we are providing the following criteria to assist towns in creating a credible ordinance that's both enforceable and follows the intent of the law.

While Local Units of Government (LUG's) have the authority to enact boating ordinances, they must carefully consider the consequences of doing so based on fabricated, false, or misleading data. *If a LUG knowingly relies on inaccurate information to pass such an ordinance, the LUG—and potentially its individual board members—may face legal challenges seeking to overturn the ordinance, as well as possible penalties or other legal consequences.* Amending or addressing the incorrect facts in this ordinance can ***prevent potential legal challenges.*** **There are at least 9 current, pending, or settled lawsuits involving wake surfing ordinances in Wisconsin.**

It is important that any proposed ordinance be supported by clear, objective evidence. Decisions that are not adequately substantiated may be vulnerable to legal challenge. Accordingly, prior to enacting any ordinance, the Town should conduct thorough due diligence, including gathering and reviewing relevant data, studies, and expert input.

This process should include, but not be limited to, consideration of the following:

1. What criteria led the Town to identify wake surfing as posing a *distinct* impact compared to other forms of boating on the lake, such as restrictions or a ban may be warranted? Was an independent assessment conducted, and what sources informed this determination?
2. Are there annual lake quality studies demonstrating measurable changes over time that can be specifically attributed to wake boats (e.g., aquatic surveys, trophic state indicators)? If so, what impacts were identified, how were they measured, and by whom?
3. Are there documented records of incidents, hazardous wake events, or citations specifically involving wake boats on the lake, including data from the Wisconsin Department of Natural Resources or local boat patrol authorities?
4. Has an analysis been conducted regarding the number, frequency, and residency status of wake boats relative to other types of watercraft? If so, does the analysis support a conclusion that wake boats are the *specific cause* of any identified ecological impacts?
5. Has an economic impact analysis been performed? Potential restrictions may influence tourism, recreational use, and property values, including perceptions of the lake as a full-recreation resource.
6. Is the proposed ordinance grounded in established *scientific evidence*, or are its provisions based on assumptions and recommendations derived from poor analysis (e.g., distance-based requirements without clear scientific validation)?
7. Is the ordinance practicable and enforceable? How would compliance be defined, communicated to boaters, and monitored? Which authority would administer enforcement, and is the ordinance likely to withstand legal scrutiny?
8. If the ordinance is justified on the basis of public health, safety, welfare, or the preservation of natural resources, it is incumbent upon the town to review **all boating** on the lake to ensure they are not treating similar activities (boating) or groups (Fishing, Skiing, Tubing) differently without a valid, rational basis. This would include exempting all other boating than **can and do create the same action** as a wake boat.

Wisconsin courts have consistently held that ordinances must be based on reasoned judgment and factual support, and may not rest on speculation, unsupported assumptions, or the

preferences of a vocal majority. Regulatory actions that treat similarly situated activities differently without a clear, articulable, and evidence-based justification risk violating principles of equal protection and substantive due process under both the Wisconsin Constitution and the United States Constitution.

Accordingly, the Town must ensure that any proposed ordinance is supported by documented findings, credible data, and a clear nexus between the regulation and the harm it seeks to address. Absent such support, the ordinance may be subject to challenge as arbitrary, unreasonable, or an improper exercise of municipal authority under Wisconsin law.

Ordinance Considerations and Supporting Evidence Related to Wake surfing

Is the proposed ordinance grounded in established scientific evidence, or are its provisions based on assumptions and recommendations derived from poor analysis (e.g., distance-based requirements without clear scientific validation)?

A 200-foot shoreline setback for wake surfing is sufficient to provide reasonable shoreline protection. A 500-foot setback and/or prohibition is not supported by scientific evidence and is disproportionate to any demonstrated impact. **(Appendix A)**

On February 19, 2026, the Wisconsin Senate held a hearing regarding the regulation of wake surfing. During this hearing, testimony was provided by Dr. William Banholzer (a link to the hearing testimony is included below).

Dr. Banholzer is a Professor of Chemical Engineering at the University of Wisconsin–Madison and is highly credentialed in his field. The information he presented to the committee explained the scientific principles related to boats, waves and lake impacts. He further addressed the lack of scientific rigor present in existing studies on the subject along with inconsistencies in the data that do not conform to scientific standards rendering the use of these studies inadequate for use in creating ordinances.

In his presentation, Dr. Banholzer discussed why a 200-foot setback from shore is sufficient for shoreline protection and why a 20-foot water-depth claim is not supported by scientific evidence. He also explained that if wake boats were to be regulated for wake and wave impacts, then consistency would require **regulating all boats operating at any speed in water 10 feet or shallower.**

He specifically commented regarding the overreach of an overly restrictive 500-foot setback, "***After reviewing the full body of literature on wake boats, my conclusion is clear. The science supports a 200-foot setback. Setbacks beyond that, such as those proposed in (SB)1024, are not grounded in hydrodynamic science. Most studies used to justify 500 feet of wake boat distance or others don't meet the standards of scientific rigor required for legislation. They're self-published, they lack sensor calibration, they lack replication, statistical analysis, or formal peer review.***" In summary, groups suggesting a setback of 500 feet or a ban consistently ignore the data from the studies showing wave heights from unballasted activities that range from 6"-17" at 100 feet from shore, while demanding unreasonable restrictions on a single activity like wake surfing (6" @ 500 ft).

Dr. Banholzer's testimony and expertise provide important scientific context and will likely be referenced when evaluating claims that rely on unsubstantiated or misinterpreted scientific studies in policy discussions.

Dr Banholzer's testimony in the Wisconsin Senate can be found here:

https://www.dropbox.com/scl/fi/70withsjcizvcjqsiwhks/Senate-Hearing-SB1024-Dr-Banholzer-Testimony.mp4?rlkey=na4h1d2ku73kg6nz358bh0q60&st=kzf74ei3&dl=0

Dr Banholzer's website https://gn844xhd8f.wixsite.com/wake-surf-defense has comprehensive information regarding analysis of studies and water quality.

Further, while some refer to the **Wisconsin Natural Resources Board** meeting in January 2026 for guidance. Yet, the board **took no action nor provided recommendations regarding wake surfing were made at that meeting.**

Michelle Nault, Natural Resources Program Manager for Lakes and Rivers, reviewed four specific studies: St. Anthony Falls Study 1, St. Anthony Falls Study 2, Lake Beulah Terra Vigilis Study, and the Fay Study regarding wave characteristics and lake bottom impacts. This presentation was limited to the contents of those targeted studies and did not encompass the full body of research available.

In response to a board question about shoreline setbacks, Ms. Nault stated:

> "Because they did **use a 200-foot benchmark in most of their studies, there isn't a complete direct comparison to our current 100-foot regulation**. I will say there's compelling evidence that a greater setback distance from shore may be needed to mitigate wave power and energy. It's **probably** close to 500 feet—**it may not be exactly that—but it is difficult, without data points between 100 and 200 feet from shore, to understand how much difference that additional 100 feet makes**."

Her inability to recommend a definitive setback distance, **due to the lack of sufficient intermediate data points, and her use of the term "probably" when discussing a possible setback,** should serve as a caution to any local unit of government considering these studies as the basis for regulation.

If the Wisconsin Department of Natural Resources had a setback recommendation it was prepared to support, that recommendation likely would have been stated clearly to the board rather than expressed as a tentative estimate based on incomplete data.

Adopting setback requirements that extend beyond what the available data support could be viewed as **regulatory overreach and as an unnecessary restriction on the public's lawful use of navigable waters.** Such action may increase the likelihood of legal challenges.

Ms. Nault was also asked whether the two St. Anthony Falls Studies had prompted the State of Minnesota to adopt regulations on wake surfing. She responded:

"There hasn't been any regulatory action taken on wake boats in Minnesota."

This is a significant point. Despite being the location where these two studies were conducted, Minnesota has **not adopted regulations based on their findings**. Local units of government should therefore exercise similar caution before relying on these studies as the basis for new wake-surfing regulations.

A central issue that remains unanswered by both activists and municipalities is why other common boating activities—accounting for the vast majority of lake use—produce shoreline wave heights of 12–17 inches, a range widely accepted for over four decades, while wake surfing is subject to a different and more restrictive standard?

In some cases, this has led to proposals requiring wake surfing to reduce wave heights to approximately 6 inches at the shoreline or face potential bans enacted by Local units of Government (LUGS). This discrepancy raises important questions about consistency and fairness in how regulations are being applied.

As noted by Dr. William Banholzer, a central issue in many studies and reports is the use of inconsistent or incomplete comparisons. Analyses often compare wake surfing to boating activities operating at very different speeds and hydrodynamic conditions, while overlooking or excluding data from common activities—such as tubing, beginner skiing, and slow-speed cruising—that occur at similar speeds and can produce comparable wave characteristics. Without using appropriate benchmarks, conclusions about relative impact can be misleading.

Regarding MacFarlane's 2025 peer-reviewed paper, a consistent application of MacFarlane's trendline-benchmark methodology to all boats and activities in his dataset—not just wake surfing—reveals a critical conclusion: wave impacts are driven primarily by speed and displacement, not by the name of the activity. When comparable recreational activities are evaluated using the same methodology, MacFarlane's own data show that wake surfing at 200 feet is statistically comparable in both wave height and energy to other accepted boating activities operating at 100 feet.

Anyone citing MacFarlane's setback language should understand: they are citing a trendline extrapolation, not a data-driven finding — and one that, if applied consistently to every boat in MacFarlane's own dataset, would require restrictions no one is prepared to accept. **The measured data support a 200–250 ft standard applied consistently across all boating activities,** not a 400–500 ft restriction applied selectively to wake surfing alone.

Selectively applying these standards only to wake surfing while excluding other similar activities is not a scientifically consistent approach. **If shoreline protection is the true policy objective, then all boating activities producing comparable wave height and energy should be treated under the same regulatory framework.**

When comparable activities and proper benchmarks are used, the data supports a more balanced approach. When determining an appropriate setback for wake surfing using proper benchmarks—whether based on a state standard or a lake-specific rule such as 200'- to equate the wave height and energy of all the activities experienced on the lake, the distance for a wake boat needs to be 100' further (Details can be found in Appendix A). This type of consistent, evidence-based framework ensures that regulations are both effective, equitable and reduces the probability of a legal response.

A video created by residents on Lake Keesus aligns with the studies data, showing that a non-ballasted boat, on plane tubing can generate a larger wave than a surf wave with an additional 100' setback. This is validated by the data generated by current studies. Yet wake surfing is continually targeted for unreasonable restrictions or a ban.

Lake Keesus Video

Are there annual lake quality studies demonstrating measurable changes over time that can be specifically attributed to wake boats (e.g., aquatic surveys, trophic state indicators)? If so, what impacts were identified, how were they measured, and by whom?

To date, no credible or substantiated evidence has been presented showing that wakesurfing on Spider Lake degrades water quality.

Wake surfing has occurred on Wisconsin lakes for approximately 25 years, including regular boats using ballast for 35 years. During that time, the collective condition of Wisconsin's lakes has not shown ecological deterioration attributable to wake surfing. More broadly, Wisconsin lakes collectively have not proven substantial damage or long-term health impacts from recreational boating activity, including wake surfing.

Similarly, Spider Lake shows no negative impact specifically from wake surfing. A review of the most recent *Spider Lake Chain of Lakes Comprehensive Lake Mtg Plan (2021)* gives us the best picture of plant life and water quality on Spider Lake stating the following:

"The lakes in the Spider Chain of Lakes have good water quality. And, while the overall water quality goal may be to preserve rather than to improve water quality, development and increased human activity could increase nutrient loads and degrade water quality in the future. Reducing current phosphorus loading could offset nutrient increases predicted with development and therefore preserve existing water quality."

The Spider Chain of Lakes watershed is about 16,668 acres. Development in the watershed occurs primarily along the shoreland within the direct drainage area of the lakes. With approximately 95% of the watershed in an undeveloped state, near-shore development and land use pose the largest threats to water quality.

The three main indicators used to evaluate the lake are: Floristic Quality Index (FQI), Trophic State Index (TSI), and the Simpson Diversity Index (SDI):

Floristic Quality Index (FQI) status:

This index measures the impact of human development on a lake's aquatic plants. The 124 species in the index are assigned a Coefficient of Conservatism (C) which ranges from 110. The higher the value assigned, the more likely the plant is to be negatively impacted by human activities relating to water quality or habitat modifications. Plants with low values are tolerant of human habitat modifications, and they often exploit these changes to the point where they may crowd out other species. The higher the index value, the healthier the lake's macrophyte community is assumed to be. Nichols (1999) identified four eco-regions in Wisconsin: Northern Lakes and Forests, North Central Hardwood Forests, Driftless Area and Southeastern Wisconsin Till Plain. He recommended making comparisons of lakes within ecoregions to determine the target lake's relative diversity and health. Spider Lake is in the Northern Lakes and Forests Ecoregion.

The Spider Lake aquatic plant survey shows the Floristic Quality Index at 47.7 (down from 49.6 in 2012) was also well above the median FQI for this part of the state. Plants were present at 70.8% of the sample points within the littoral zone which extended to 15.5 feet. This represented 53.6% of the entire lake bottom which is over 64 feet deep at its maximum depth. In 2012, plants grew on 77.3% of the then 18.5 foot deep littoral zone.

Trophic State Index (TSI) status:

The Trophic State Index provides a long term picture of Secchi, Phosphorus and Chlorophyll data to determine trends and identify potential problems.

The most comprehensive water quality data set is Big Spider Lake where measures of lake clarity (Secchi depth), nutrients (total phosphorus), and algae growth (Chlorophyll a) have been collected since 1992. Water samples have been collected and analyzed from Little Spider Lake since 2002. With occasional exceptions, only Secchi depth was measured for the other lakes.

Overall, there has been little apparent change in the water quality of the Spider Chain of Lakes since data collection began in the early 1990s. The lakes can be classified as mesotrophic and have clear water with diverse submerged macrophyte (aquatic plant) communities. A graph of trophic state based on July and August water quality measures is shown for Big Spider Lake as Figure 9.

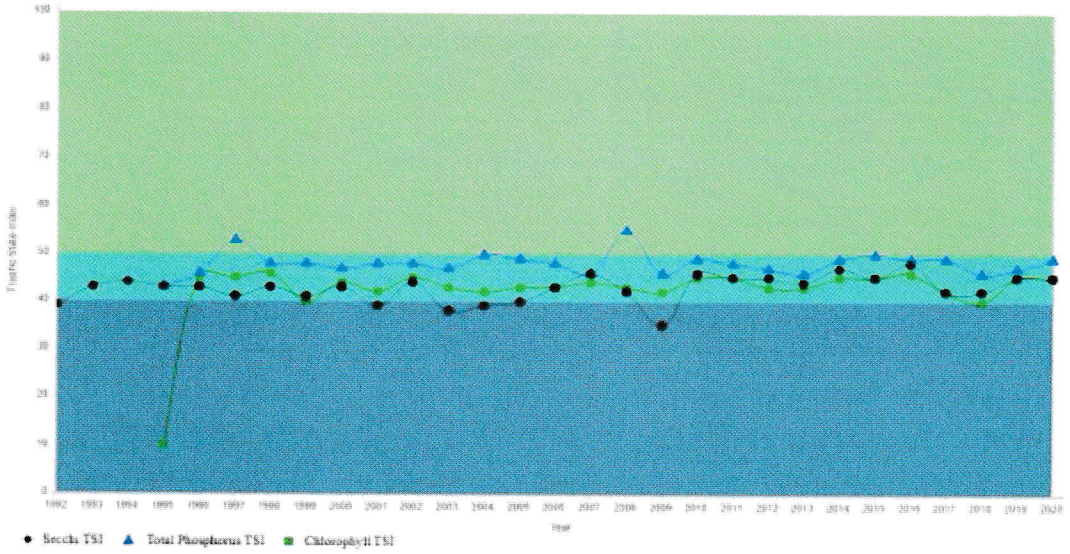


FIGURE 9. BIG SPIDER LAKE TROPHIC STATE INDEX 1992 – 2020.

Simpson Diversity Index (SDI) status:

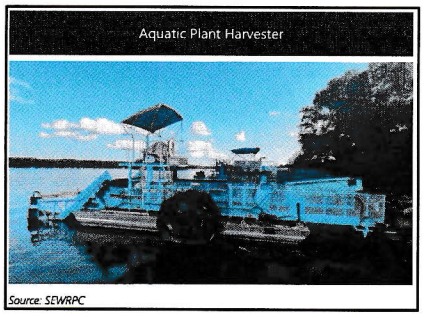
Simpson diversity index is used to quantify the biodiversity of a habitat. It considers the number of species present, as well as the relative abundance of each species. The index assumes a value between 0 and 1, with 1 having complete evenness. The Spider Lake aquatic plant survey found 61 different plant species growing in and immediately adjacent to the water (57 were found in 2012). The Simpson's diversity index was high at 0.94.

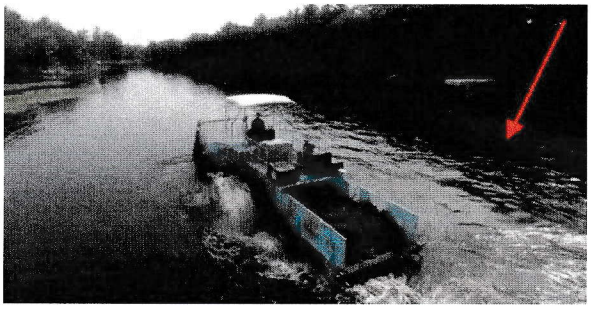
In summary, there is no evidence in the *Spider Lake Chain of Lakes Comprehensive Lake Mtg Plan (2021)* to support the claim that wake surfing boats are destroying the ecological makeup

of Spider Lake. On the contrary, **the lake continues to exhibit strong plant diversity, stable water quality, and resilience despite ongoing recreational use and historical management interventions.**

Wake surfing is currently the only boating activity being held to a standard in which virtually no sediment disturbance is considered acceptable. This is despite the fact that the activity typically occurs in the deeper areas of lakes, away from sensitive shoreline habitat, fish spawning areas, and the majority of aquatic plant growth. Ultimately, wake Surfing boats do not present a ***unique risk*** of sediment resuspension compared to other activities on the lake. In fact, many activities can disturb sediments on the lakebed.

For instance, mechanical weed harvesting and Diver Assisted Suction Harvesting (DASH) has potential to agitate bottom sediments. This equipment operates directly along the lakebed, typically in water with minimum depths of about 3 feet and stirs up sediment at even greater depth. *Although designed to cut vegetation, the propeller wash and cutting mechanisms create turbidity in water as deep as 6–8 feet. Because harvesting occurs in nearshore areas—where sediments are most easily disturbed—and often continues for many hours each season, sometimes on a weekly basis, its cumulative impact can be substantial.* https://www.youtube.com/watch?v=6X0MWKOg9ms&list=TLGGH1fGarwqOFMwOTAzMjAyNg&t=90s



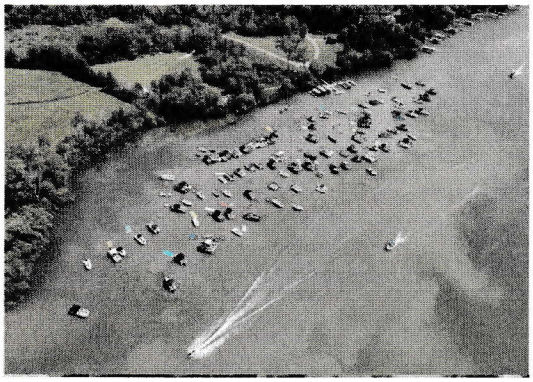


Sediment resuspension is an active part of any lake with weather (wind & ice) and development being the primary factors. Sediment resuspension fluctuates throughout the boating season, with higher turbidity usually resulting after busy weekends (WDNR TSI data)

The pictures below depict a common activity on many lakes throughout Wisconsin in the summer- Find a sand bar and anchor your boat. Note the amount of sediment suspension that occurs. Not an area wake boating occurs - yet this does not seem to be an issue for most on the lake. If this activity is tearing up the bottom, does it also need to be assessed? These pictures are from the Big Cedar Lake SWRPC report, this is happening, unregulated on the shores of the Lake where plant life and fish beds occur.

Dr. Banholzer stated in his testimony that, **"what you'll find is if we're really worried about boats stirring up sediment, you ought to be regulating every boat in 10 feet or shallower. Somebody who's skiing in 10 or 5 or 6 feet of water or a bass fisherman who's trolling in 4 feet of water, that's stirring up a lot of sediment."**





2.0 Activists and towns are currently citing the latest Terra Vigilis study in their documentation. The Terra Vigilis study is self-published with no editorial review, lacks scientific rigor, and fails to provide credible evidence to support its conclusions about wake boat wakes and prop wash. The study employs non-standard methods, such as drone video analysis, to measure wave height but provides no explanation of how or if this was validated against established measurement techniques like capacitance or pressure sensors. The report provides no information on the variation in the experimental measurements. This methodological shortfall undermines the reliability of the wave height data presented, which is inconsistent not only with more comprehensive studies but also with the author's own prior work.

The study's findings on wave dynamics are flawed. A proper comparison is to other heavy boats operating at slow speeds (e.g. tubing). The reported wave heights are significantly higher than those documented in previous, more precise studies, leading to misleading conclusions about required setbacks. The comparisons to ski boats, which generate the smallest wakes instead of heavier boats, skew the findings and fail to reflect the variation in real-world conditions. Regarding propeller downwash, the study again relies on subjective video imagery without quantification calibration or baseline measurements.

Three independent studies- Daeger et al. (2022) and Riesgraf et al. (2025), demonstrated minimal lakebed disturbance beyond 15 feet for wake boats, and Raymond and Galvez-Cloutier (2015), which utilized acoustic probes to quantify water velocity measurements at depth.

They concluded that any increase in turbidity from local sediment resuspension could not be measured after a wake surfing boat passed in depths greater than 15 feet. Furthermore, the studies admit **local sediment resuspension does not necessarily equate to long term health impacts for a lake.** 3.0

In an independent technical review by Water Environment Consultants (WEC) of the Terra Vigilis Lake Waramaug report for the Town of Kent, Connecticut (January 24, 2025). **WEC concluded formally that the Terra Vigilis report does not sufficiently establish that wake boat effects cause a significant degradation of water quality, that sediment movement alone is not an adverse impact without demonstrated secondary effects, and that the 500-foot recommendation lacks scientific rationale,** The report is publicly available at:

https://www.townofkentct.gov/sites/g/files/vyhlif3311/f/uploads/wec_technical_review_-_2025_01_24_final.pdf

Ultimately, the study does not adequately reference or reconcile its results with prior, more reliable research, further discrediting its findings. Its use of speculative models, video, and unvalidated claims demonstrates a lack of expertise in fluid mechanics and raises serious questions about its credibility. As such, the Terra Vigilis study fails to meet the standards of scientific inquiry and should not be considered a valid source of information on wake boat impacts.

This suggests that occasional sediment disturbance from boating activity, including wake boats, and other routine lake management activities, is unlikely to represent a significant long-term impact to overall lake health.

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2. **Has an analysis been conducted regarding the number, frequency, and residency status of wake boats relative to other types of watercraft? This is required under Wis Statute 30.77 (3) (cm) 3. If so, does the analysis support a conclusion that wake boats are the specific cause of any identified ecological impacts?** (AIS (Aquatic Invasive Species) risk is often used as an ecological reason to ban) 30.77(3) LR (2)

Like the lack of evidence in resuspension, there is no credible basis to conclude that wake surfing boats present a *unique aquatic invasive species risk* warranting regulations specific to wake surfing as compared to other boating activities.

All boats present risks of aquatic invasive species (AIS), not just wake boats. The Wisconsin DNR's Deputy Secretary Little's presentation to the Natural Resources Board on January 28, 2026 (link below) clearly confirmed that wake boats do not pose a greater risk of spreading AIS than other types of boats. The proposed rulemaking targeting wake boats was rejected because no specific correlation between these boats and AIS transfer was established. Notable is his quote to the NRB:

"In spite of what you've heard over the past several years from individuals and organizations who have come before the NRB, the research has not demonstrated that wake boats uniquely or disproportionately drive AIS spread compared to other watercraft".

Deputy Secretary Little also noted AIS in Wisconsin predates the popularity of wake boats. Data shows that there has been no increase in the number of invaded lakes since the 2010's, and in fact, new invasions have *declined over the past decade*. These conclusions are supported by available scientific data.

This link contains Deputy Secretary Little's comments:
https://www.dropbox.com/scl/fi/e9v4hs7o0bw86zedp7liu/Deputy-Sec-Little-NRB-Presentation.mp4?rlkey=61ii6d41k8uftjlt1ao2fz154&st=ijptn6zf&dl=0

Are there documented records of incidents, hazardous wake events, or citations specifically involving wake boats on the lake, including data from the Wisconsin Department of Natural Resources or local boat patrol authorities?

Available information does not support the conclusion that wake surfing boats create a safety hazard requiring specialized regulatory measures beyond existing boating laws.

Wake boats have been in use for over 30 years across the United States without significant safety issues. These boats have consistently operated safely in Wisconsin for over 25 years, with no reports of accidents or citations specifically involving wake boats. **In fact, wake boats are recognized as safe by the U.S. Coast Guard, including how they are intended to be used in wake surfing mode.**

The Wisconsin Recreational Vehicle 2024 Annual Report does not show Hazardous Wake citations to be in the top 10 Boating Citations on Wisconsin Lakes.

2024 Top 10 Boating Citations	
COUNT	**STATUTE DESCRIPTION**
334	Fail to carry required number/type of readily accessible portable flotation device for each person on board or being attended by boat
171	Operate at speed in excess of posted notice established by regulatory markers
151	Operate a personal watercraft greater than slow-no-wake within 100 feet of another boat
127	Operate Boat without valid certificate of number
109	Fail to have required fire extinguishing equipment on board
97	Operate motorboat while age 16 or older without valid safety certificate
86	Operate a personal watercraft greater than slow-no-wake within 200 feet of shore
77	Fail to properly display certification/registration decal on boat
75	Operate a personal watercraft greater than slow-no-wake within 200 feet of shore on any lake
70	Allow riding on decks or gunwales

If the ordinance is justified on the basis of public health, safety, welfare, or the preservation of natural resources, it is incumbent upon the town to review all boating on the lake to ensure they are not treating similar activities (boating) or groups (Fishing, Skiing, Tubing) differently without a valid, rational basis. This would include exempting all other boating than can and do create the same action as a wake boat.

What criteria led the Town to identify wake surfing as posing a distinct impact compared to other forms of boating on the lake, such as restrictions or a ban may be warranted? Was an independent assessment conducted, and what sources informed this determination?

Has an economic impact analysis been performed? Potential restrictions may influence tourism, recreational use, and property values, including perceptions of the lake as not a full-recreation resource.

Proceeding with the enactment of an ordinance necessitates a sufficient evidentiary record supported by specific and reliable factual data.

Please note the underlined parts of the law that need to be considered when creating an ordinance. The first statute is in direct relationship to maintaining the Public Trust.

> 30.77(1)(b) Except as provided in subs. (2) and (3), enact any ordinance or local regulation that in any manner excludes any boat from the free use of the waters of this state or that pertains to the use, operation or equipment of boats or which governs any activity regulated by ss. 30.50 to 30.71.

For a Local Unit of Government (LUG) attempting to justify an ordinance, the statutory language requires more than general statements. The statutes require that the LUG consider the specific

characteristics and conditions of ***the body of water*** in question and a specific reason the issues are ***only related to wake surfing.***

> 30.77 (3) (cm) In enacting ordinances under par. (a), (ab), (am), or (b) for a given body of water, municipalities and public inland lake protection and rehabilitation districts shall take into account factors that include all of the following:
>
> **1.** The type, size, shape and depth of **the body of water** and any features of special environmental significance that **the body of water** has.
>
> **2.** The amount, type and speed of boating traffic on **the body of water** and boating safety and congestion.
>
> **3.** The degree to which the boating traffic on **the body of water** affects other recreational uses and the public's health, safety and welfare, including the public's interest in preserving the state's natural resources.

Because multiple types of watercraft can produce similar wake effects, regulatory distinctions targeting only wake surfing require a clear and scientifically supported justification to ensure consistent and non-discriminatory application.

Absent such a record, selective regulation may be vulnerable to challenge as arbitrary or lacking a rational basis under applicable legal standards.

Municipal regulation should be based on a developed evidentiary record demonstrating necessity and a rational basis, ensuring that any ordinance is not arbitrary or unsupported by facts.

Is the ordinance practically enforceable? How would compliance be defined, communicated to boaters, and monitored? Which authority would administer enforcement, and is the ordinance likely to withstand legal scrutiny?

Has the town contemplated enforcement? Or have you been told by activists to "just pass it and people will comply"?

Compliance must be clearly defined and easily understood by town officials, enforcement personnel, and the boating community. Unlike speed limits—where noncompliance is obvious—standards based on variables such as water depth or distance from shore are far less clear. Water levels fluctuate daily, altering both depth and shoreline boundaries, and maps may not reflect current conditions. This makes it difficult for boaters to accurately determine whether they are in compliance while operating on the water.

To withstand legal scrutiny, compliance standards must be ***objective, consistent, and verifiable by both enforcement and those being regulated***. If the ordinance is not thoroughly vetted, it risks creating confusion, inconsistent enforcement, and citations that will not hold up in court.

In addition, unclear standards can lead to increased costs for staffing, training, and enforcement, as well as potential legal expenses if challenged. Without careful planning and clarity, these burdens may ultimately fall on taxpayers.

In his testimony to the Natural Resource Board, Deputy Sec Little commented" **Putting an unenforceable rule on the book is *probably worse than doing nothing at all*"**. He went on to note it creates a "High Litigation risk". "Potential loss of … authority", "unintended consequences" and "credibility impacts".

When policy is driven primarily by persistent or highly vocal advocacy rather than balanced evidence and local conditions, there is a risk that decisions become more reactive than effective. The lack of any information from an opposing view could be perceived as predetermined bias.

Further, if the stated basis for the Spider Lakes ordinance does not provide a scientifically established or factually demonstrated justification for imposing additional restrictions, rather, it relying primarily on hypothetical outcomes—conditions that "may" or "might" occur—without verifiable evidence that any actual harm is occurring on Spider Lake is problematic.

Some potential asserted concerns, including the spread of aquatic invasive species (AIS), have already been considered and rejected by the Wisconsin Department of Natural Resources as unsupported grounds for imposing additional wake-surfing restrictions.

Similarly, claims that wake surfing causes sediment resuspension at depths of 25 feet are not supported by direct scientific observation. The most relevant peer-reviewed study, Raymond and Galvez-Cloutier Study, concluded only that sediment disturbance at that depth was theoretically possible based on modeling. The researchers did not observe measurable sediment resuspension at 25 feet during their field study.

Accordingly, ordinance language stating that wake surfing causes sediment resuspension at depths of 25 feet is not supported by the cited scientific evidence and may overstate the study's findings. As written, such a statement could be considered factually inaccurate and subject to challenge if used as a basis for regulation.

As an example, ordinance language containing broad or ambiguous statements—such as those highlighted below—may be vulnerable to legal challenge if not supported by specific factual evidence applicable to the waterbody in question.

- Artificially enhanced wakes can cause environmental impacts to lakes and shorelines, including sediment resuspension, nutrient release, increased algal bloom potential, turbidity, shoreline erosion, and potential effects on aquatic life and waterfowl.
- Artificially enhanced wakes can damage shorelines, lake bottoms, moored boats, and shoreline structures, including docks.
- Operating boats in a stern-down manner can create downward prop wash that may disturb lake-bottom sediments, including in water depths greater than 25 feet.
- Artificially enhanced wakes can create safety concerns for swimmers, anglers, and other watercraft.
- The use of ballast and wake-enhancing devices can affect vessel trim and may reduce forward visibility under certain operating conditions.

As Wisconsin DNR Department Secretary Little noted in his comments to the Natural Resources Board, sound policymaking requires using the full range of available tools. He emphasized that

"Sometimes that means acting aggressively and other times it means acting with restraint. If you only have a hammer as a tool everything looks like a nail to you. The wake boat administrative rule petitioners, individuals and organizations who come before the board monthly on the issue will only be satisfied if the department uses a hammer even if the use is not supported by the science, statutory authority, effective enforcement or desired outcomes."

The statement underscores an important caution for local leaders: some individuals and organizations advocating against wake surfing will only be satisfied with the most aggressive regulatory response, even when that response may not be supported by science, statutory authority, enforceability, or the outcomes communities hope to achieve. When policy is driven primarily by persistent or highly vocal advocacy rather than balanced evidence and local conditions, there is a risk that decisions become more reactive than effective. For LUGs , this serves as a reminder to carefully evaluate proposals against credible data, and practical enforcement realities.

By prohibiting or restricting wake surfing while allowing other lawful boating activities that create substantially similar conditions through different methods, and by relying on speculative rather than demonstrated harms, the ordinance may constitute an arbitrary and discriminatory restriction. As such, it may lack a rational, fact-based justification under the Equal Protection Clause of the Fourteenth Amendment and may also represent an unreasonable interference with the public's right to use navigable waters under Wisconsin's Public Trust Doctrine.

To this point - Law enforcement recognizes the issue

"Some of the ordinances might not be constitutional," Fath said Oneida County sheriff. Grady Hartman, Vilas County Sheriff Joe Fath and chief deputy Pat Schmidt have said there would be no enforcement by the sheriff's offices with regard to enhanced wakes and wake boats (Northwood River News)

To reiterate: While public input is essential, responsible governance requires weighing all perspectives and ensuring that regulations are grounded in facts and follow the required statutes. Acting without that fundamental foundation exposes towns to future legal challenges and unintended consequences that may burden taxpayers and strain local governance.

For all of the reasons above, we encourage you not to adopt an unnecessary and overly restrictive ordinance such as the one proposed for wake surfing on Spider Lake. If you need further assistance, please contact us at info@SWSCWi.org.or the sender of this email.

Wisconsin Watersports Coalition

Appendix A and References Follow

Appendix A

Summary: When establishing an appropriate setback for wake surfing—whether through a statewide standard or a lake-specific ordinance such as 200 feet—the goal should be to align wave height and energy with those produced by other commonly accepted, non-ballasted boating activities. **Based on available data, most of which does not adequately assess multiple activities on the lakes, achieving comparable conditions still requires a recommendation of wake surfing operations to occur approximately 100 feet farther from shore than the minimum setback applied to general boating activities.** This approach provides a consistent, data-driven framework that aligns impacts across recreational uses while maintaining fairness and clarity in regulation.

Importance of Appropriate Data Analysis and Benchmarking

Several studies have produced useful and credible data on wave behavior and boating impacts. However, the policy recommendations drawn from these studies don't always align with the data. In many cases, conclusions seem influenced by initial assumptions rather than the actual results.

A key issue is that common recreational boating activities—like slow cruising, tubing, beginner water skiing, and wakeboarding—typically occur at speeds between about 8 and 20 mph, yet they aren't always properly included or are actively ignored in the analysis. This creates an incomplete picture of real-world lake use.

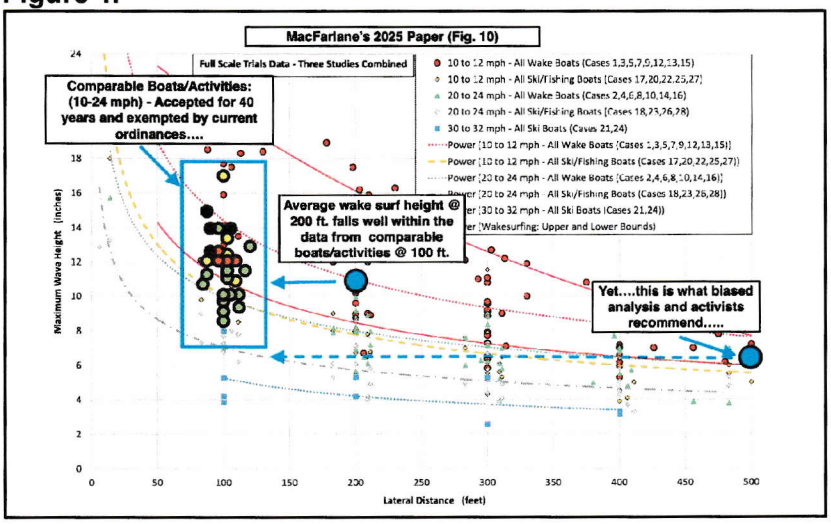
A critical component of any scientifically sound analysis is the use of proper benchmarks. Many studies fail to incorporate comparable boats and activities when establishing baseline conditions. Instead, they often rely on smaller, lighter, or older vessels operating in entirely different hydrodynamic regimes, which leads to inconsistent and non-comparable results. For an analysis to be valid, both the control and comparison conditions must share similar characteristics, including vessel type, speed, and operating conditions. Without this alignment, conclusions may not accurately reflect real-world conditions and can lead to ineffective or misdirected policy decisions.

Importantly, comparable data does exist but is often overlooked. For example, MacFarlane's 2025 analysis—using datasets from WSIA, St. Anthony Falls Laboratory, and earlier research—shows that many non-ballasted boats and activities produce wave heights similar to wake surfing. Under comparable conditions, wave heights from wake surfing at around 200 feet from shore on average about 11 inches, which falls within the range of other widely accepted recreational boating activities.

The State Standard - 100' Setback

Utilizing MacFarlane's data, WWC highlighted the data points that represented comparable boats and/or activities resulting in wave heights ranging from 8-17". The average wave height from all three studies at 200' from shore was approximately 11", well within the range of comparable boats and activities 100' from shore (Figure 1). In fact, this is where MacFarlane acknowledges comparable boats cruising at 20-24 mph and his recommendation was 250 ft. Unfortunately, MacFarlane ignored a similar activities comparison which would have reduced his recommendation distance further.

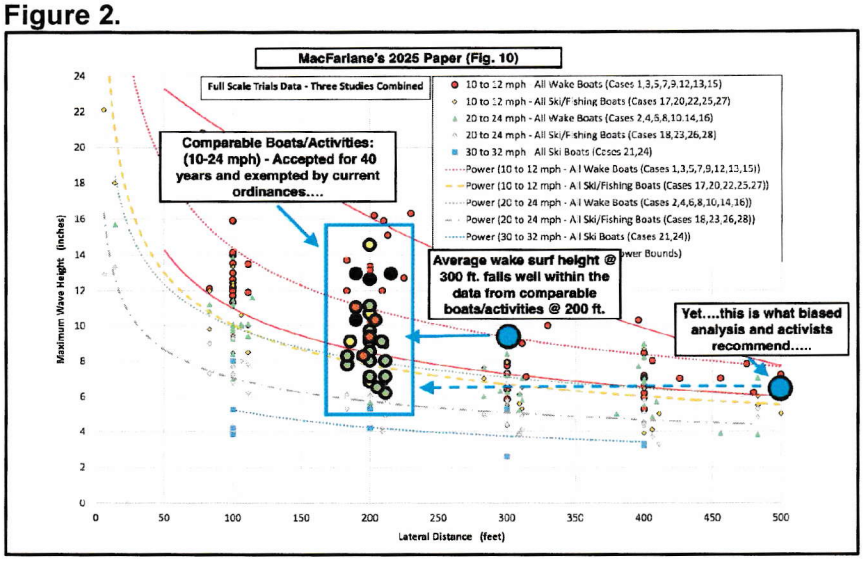
Figure 1.



Is The Formula Consistent Even With A 200' Setback from Shore?

Several lakes, usually larger, have adopted a 200' setback from shore for all watercraft, requiring a no-wake zone. Figure 2 documents that the analysis is consistent at starting at 200 feet. Comparable boats and activities generate wave height ranges that equate to the average wake surfing wave at 300'.

Figure 2.



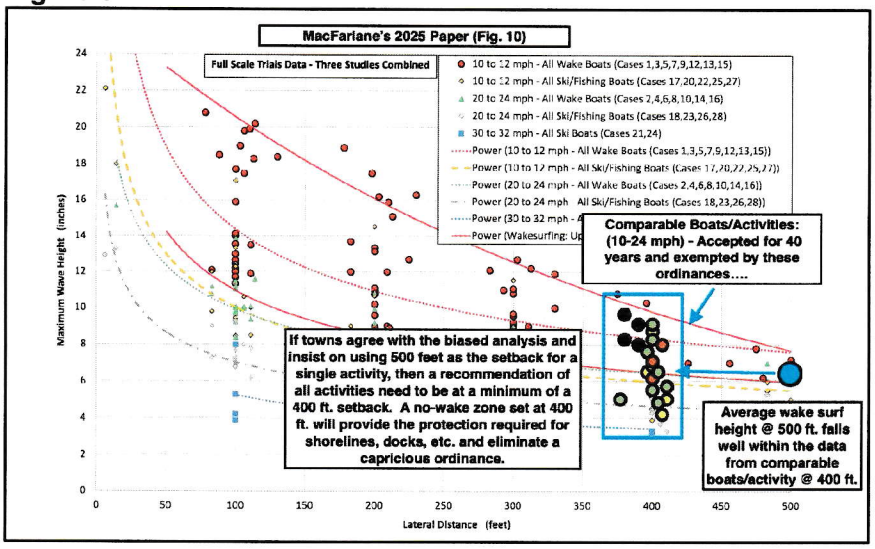
Is a 500-Foot Setback Fair—or Is It Singling Out One Activity?

A proposed 500-foot setback deserves closer review in light of the available data. Setting a distance this large for wake surfing—while allowing other common boating activities to operate much closer to shore—raises questions about consistency and proportionality.

As shown in the data (Figure 3), comparable boats and widely accepted recreational activities can produce wave heights of roughly 4 to 10 inches at distances around 400 feet, with many measurements exceeding the average wake-surf wave height of about 6.5 inches at 500 feet.

If a 500-foot setback is considered necessary to manage wave height and energy for wake surfing, consistency would suggest that similar activities should also face setbacks of roughly 400 feet. Aligning standards this way helps ensure that regulations are based on comparable impacts and applied fairly across all boating activities.

Figure 3.



Overall, consistency with available data and scientific understanding suggests that all recreational boating activities should be evaluated using the same standards for wave height and energy. Applying uniform, data-driven benchmarks when determining setback distances helps ensure that regulations are both scientifically grounded and applied equitably across users.

Overall, setting setback requirements beyond what the data supports is unlikely to produce measurable improvements in lake health, while potentially placing unnecessary limits on recreational boating.

Comparison of Methodological Rigor in Boat Wake Studies

Table 3: Comparison of Methodological Rigor in Boat Wake Studies

Reference	# Wake Boats	# Non-Wake Boats	Repeat Meas.	Calibration	Varied Speed	Semi-Disp. Non-Ballast	Statistical Rigor	Match Froude #	Overall
MacFarlane 2025[1]	8	4	✓	±	✓ (AMC only)	✓–	X	X	Notable
MacFarlane AMC 2018	5	2	✓	✓	✓–	✓–	X	X	Notable
Goudey & Girod 2015	1	0	✓	✓	X	X	X	X	Moderate
Ruprecht 2015[1]	3	0	✓	✓	✓	X	X	X	Low
Marr 2022 (SAFL)[2]	2	2	✓	±	X	X	X	X	Low
WEC 2021	1	0	±	±	X	X	X	X	Low
Terra Vigilis 2024	2	2	X	X	X	X	X	X	Very Low
Terra Vigilis 2022	1	2	X	X	X	X	X	X	Very Low
Terra Vigilis 2021	1	–	X	X	X	X	X	X	Very Low
Ray (Payette Lake)	Uncontrolled	0	X	X	–	X	X	X	Very Low

Notes: ✓ = Yes, ✓– = matched speed but not Froude number, X = No, ± = Partial/inconsistent or not reported. [1] completed a rigorous peer review. [2] Sent to reviewers but did not follow the standard process requiring all reviewer comments be addressed before publication.

Here are available studies by Dr. Banholzer references, in addition to Wisconsin Watersports Coalition uses in their assessment.

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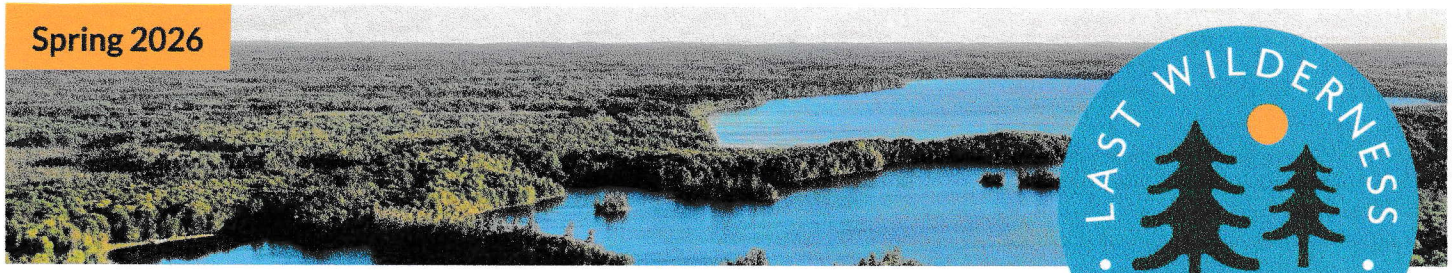
https://dnr.wisconsin.gov/topic/WildlifeHabitat/ActionPlanAquaticCommunities

Wisconsin Department of Natural Resources. Shoreline Erosion: Causes, Prevention, and Control Options. https://dnr.wisconsin.gov/topic/Waterways/shoreline/info-erosion.html

Little, Steven (Wisconsin DNR Deputy Secretary). Testimony before the Wisconsin Senate Committee on Transportation and Local Government on SB-1024 and SB-1025 (Wake-Enhanced Boating Regulation), February 19, 2026. As reproduced in the Senate hearing packet for SB-1024 (linked from Sen. Cabral-Guevara's office) and summarized in East Troy Sanitary District No. 3 board materials. See also: Wisconsin Public Radio. "Wisconsin Lawmakers Weigh Competing Bills to Regulate Wakesurfing, Wake Boats." February 12, 2026. https://www.wpr.org/news/wisconsin-lawmakers-bills-regulate-wakesurfing-wake-boats

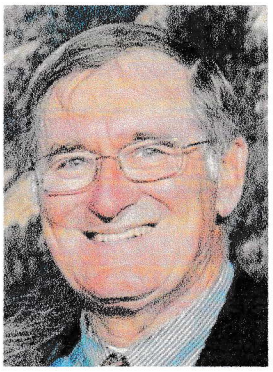
Zabawa, C., and C. Ostrom. The Role of Boat Wakes in Shoreline Erosion in Anne Arundel County, Maryland. Maryland Dept. of Natural Resources, 1980.

Spring 2026



LWA Is Here For You!

Message From the President - Richard Phillips



Many towns, lake associations and citizen groups are anxious to protect their lakes from the safety, environmental, lake usurpation and other problems of wake surfing, but are slowed or thwarted entirely by the seeming complexity of the process for getting an ordinance drafted, reviewed and enacted. Be of good cheer, highly experienced and free assistance is available from the Last Wilderness Alliance, a phone call or email away!

Created in 2021, the Last Wilderness Alliance is a Wisconsin nonprofit corporation. Our board and staff are all volunteers-- none of us receive a penny in compensation. One of our founding purposes is assisting with evaluating the impact of wake surfing on your lakes and helping establish ordinances to protect your lakes, where you request our assistance. We are retired engineers, business managers, attorneys and others, skilled in areas critical to our work. Our mission in retirement is helping you protect your local lakes from this relatively new form of boating—wake surfing—that presents great challenges to Wisconsin lakes and those who use them.

We work across the entire state, with key personnel located in Vilas, Oneida and Waupaca Counties. While we cannot provide on-site service in every county of the state, we can help by phone, email and in some critical instances do drive an hour or two for on-site presentations to town boards, lake associations and lake districts.

Seventy-eight Wisconsin municipalities now have ordinances in place--- the great majority of these were done with LWA assistance and follow a standard template that has been favorably reviewed by the DNR. While Wisconsin does not require DNR approval of proposed town boating ordinances, it does require DNR advisory review… this is one of the areas in which we have extensive experience.

Please consider asking for assistance if you feel we can ease your path to protecting your lakes. Simply go to our website: www.lastwildernessalliance.org scroll to the bottom of our home page and click either "contact us" or "request assistance", explain in a few words your needs and we will be in touch promptly.

LWA Officers and Board of Directors 2025-2026

President – Richard Phillips
Past President – Bob Berdan
Secretary – Ann Milne
Treasurer – Steve Kessler

Jeff Meessmann
Tom Olson
Tom Preston

John Richter
Mary Jung
Fred Silloway

Sign-up to be on our list-serve by going to www.lastwildernessalliance.org. Our mail list is never shared.

The Invasion of the Invasives

By John Richter

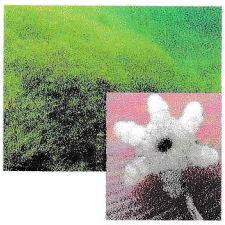


On the heels of the discovery of Quagga mussels in Geneva Lake in southern Wisconsin comes news from another Geneva - Lake Geneva in Switzerland and France. Covering 143,000 acres and up to 1100 ft deep, Lake Geneva is one of the largest lakes in Europe. In 10 years, quagga mussels have completely taken over the lake. "It's too late for this lake," says ecology Professor Ibelings from the University of Geneva. "It's like a meadow down there. Every spot is taken. Instead of seeing sand, you see mussels". They coat the lake bottom in density up to 35,000 per square meter.

This mussel is a quick and certain death sentence for an inland lake. The impact is permanent. By filtering up to two liters of water every day by each individual mussel, all forms of life are removed, reducing the water to a state of sterility that will not support fish and wildlife. Keeping it out of Wisconsin's clean lakes requires boat decontamination, most particularly the volumes of water in ballast boats. **Time is short, if we are not too late already.**

New AIS Arriving in Wisconsin Lakes

New species of invaders coming from the Great Lakes are on our doorstep now. Let's look at some new arrivals.



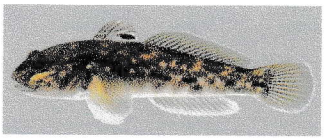
STARRY STONEWORT

Starry stonewort was first discovered in Little Muskego Lake in 2014 and is now in 65 lakes and rivers in Wisconsin. This is a chara - a macro algae. It has no food value and dominates the bottom to the exclusion of aquatic plants. Local dispersal occurs by star shaped bulbils or plant fragments being transported by water currents or boats within the lake.



EUROPEAN FROGBIT

This floating lily pad-like invasive has a leaf that is less than 2" and a very small white flower. The dense growth form of this species gets caught in boat motors, forms very dense mats of interlocking plants, affects fish and waterfowl movement and decreases oxygen levels in water as plants decompose. European frogbit is extremely difficult and costly to control, and its ability to form new plants vegetatively has allowed it to spread and proliferate quickly. It came ashore, so to speak, in Oconto County and has spread to Marinette, Brown and Door counties. The DNR is working very hard to contain it. It is now in 50 locations in NE Wisconsin.



ROUND GOBY

This is a Round Goby, brought in by ballast in Ocean freighters along with Quagga Mussels. It is expanding in rivers in states adjacent to the Great Lakes. The Goby is a small, but aggressive bottom-dwelling fish that grows rapidly and reproduces several times in one spawning season. It is a threat to aquatic ecosystems as it causes declines in native species of fish and poses a threat to health as it can harbor contaminants such as heavy metals, PCBs, harmful bacteria, and toxins in its fatty tissues. Goby's routinely thrive at the expense of native fish populations by out-competing them for food and breeding habitat. It feeds on aquatic macroinvertebrates, small native freshwater mussels and the eggs and young of native fish species. The Round Goby poses a particular threat to Smallmouth Bass, as it often feeds on their eggs and fry. The Round Goby has a competitive advantage over native fish because it can feed in complete darkness and aggressively defends prime spawning areas.

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RED SWAMP CRAYFISH

This is Red Swamp Crayfish. This invasive is of great concern since it is a very aggressive predator on young of the year fish and carries a fungus plague to native crayfish. It also burrows and impacts shorelines and dykes.



NEW ZEALAND MUD SNAIL

This is a New Zealand mud snail, brought into Wisconsin trout streams, likely by trout fishermen on the felt soles of their waders after trips to western streams. The New Zealand mud snail has no natural predators or parasites in the United States. Consequently, it has become an invasive species. Densities have reached greater than 300,000 individuals per m^2 in the Madison River in Montana. It can reach concentrations greater than 500,000 per m^2, endangering the food chain by outcompeting native snails and water insects for food, leading to sharp declines in native populations. Fish populations then suffer because the native snails and insects are their main food source.

There are 186 foreign aquatic invasive species in Lake Michigan looking for a lift from a wake boat to a new home in one of our lakes. Add to that a new mussel, the Golden Mussel (worse than quagga if that is possible), which has come ashore in California from Southeast Asia and anxious to visit us in Wisconsin. It is a fast mover so it might not be long.

There was an old phrase that we used regarding AIS....An ounce of prevention is worth a pound of cure. The sad truth is that hundreds of pounds of cure is worthless when it comes to AIS. There is no "cure" for most invasive species. They can't be eradicated. There is only prevention.

More than ever before, ***"We are the last line of defense for our lakes".***

FACT or FICTION? Sorting Out the Science

By Carol Wood Phillips, retired former Registered Professional Civil Engineer

FACT or FICTION?

The National Marine Manufacturers Association (NMMA) sponsored study by Fay, 2022, is a peer reviewed published study that justifies surfing 200' from shore and in water 10' deep.

FICTION on all counts. This study has been fully discredited. Fay's study involved no real-world data, it is an unvalidated computer model. Peer reviewers are never identified and the study appears only in a pay-to-publish online "journal" based in Wuhan, China. Fay's source, Prof. Macfarlane, Australian Maritime College said, "this study fails to provide the material and evidence from which to make any sound conclusions".

Other studies show about 500' or more is needed for surf wakes to dissipate enough to be similar to conventional boating at 100' (Australian Maritime College, U of MN, Water Environment Consulting, Terra Vigilis, Quebec University)

The 7' depth of impact predicted by Fay's computer model for surfing is undermined by video showing the lakebed explode in water 14' deep from the U of MN St. Anthony Falls study, 2025, see https://www.youtube.com/watch?v=TuS3rNECq-A. U of MN recommends a depth of at least 20' for surfing (measured from the top of any aquatic plants, so 23' if plants are 3' tall). Terra Vigilis found an even deeper impact.

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The Water Sports Industry Association (WSIA) study shows surf wakes are still 16" high after traveling 200' toward shore.

FACT. The WSIA sponsored study by Goudey, 2015, reports 16" waves at 200'. (Lower numbers were for surfing in water 8' to 10' deep where friction with the lakebed reduced wake height. Good for the shore, but terrible for the lakebed.)

WSIA's Goudey study recommends surfing 200' from shore.

FICTION. Engineer Goudey never recommends 200' or any other distance. Employees of WSIA came up with 200' based on a misinterpretation of their engineer's data. Per WSIA.net, "In 2015, Ocean Engineer and Naval Architect Clifford Goudey scientifically studied and collected wave energy data on the characteristics of boat wakes. WSIA analyzed the data to develop recommendations to protect shorelines, docks and other personal property" (now removed from website).

Those unnamed WSIA employees wrongly claim that dozens of tiny wind waves are more damaging than one massive surf wake. That's like saying that being pelted with marshmallows for several minutes is more harmful than one Rollie Fingers fastball. Those hundreds of marshmallows can add up to the same "total energy", but they would not break your jaw!

Goudey's graph is actually in good agreement with other studies, indicating about 500' is needed.

Wakes from surfing 200' from shore are less damaging than wind waves.

That depends. Clearly a FACT on Lake Michigan, but FICTION on most inland lakes. Shorelines and lakebeds have acclimated over centuries to the wind conditions they typically experience. But only the most exposed shores of Wisconsin's very largest lakes experience wind waves as large as the 16" wake from surfing 200' away. An hour of 25 mph wind blowing across 3 miles of open water generates waves 16" high per Goudey. But shorelines exposed to 3 miles of open water are extremely rare in Wisconsin. Most shores can be damaged.

Wakesurfers stay in deep water because that makes the best wake.

FICTION. Some surfers are suing the Town of Scott so they can continue surfing on Birch Island Lake, max depth 13'/average depth 6'. Even on deep lakes, surfers stray into shallow water. It is true that the wake is best in water over 20' deep. This observation by surfers is further evidence that their wake can have a very deep impact because if the lakebed is impacting their wake, then their wake is impacting the lakebed.

Existing state laws protect other boaters from large surf wakes.

FICTION. Wisconsin boating regulations state you cannot "approach or pass" another boat and cause a hazardous wake. But surf wakes are still dangerous even if the boats are too far apart to be considered approaching or passing. See Wisconsin's Boating Law Administrator's presentation, 8/14/2024, time 2:15:00 at https://vimeo.com/showcase/10935677

A sterndrive motor is as likely to spread zebra mussel larvae as a wakeboat ballast system.

FICTION. A University of MN study found that all the larvae in the sterndrive motor were **DEAD** because that engine cooling water gets hot! The 2018 Adam Doll study compared residual water left in various boats after "draining" and found that a ballasted wakeboat is more likely to transport larvae than any other boat tested. And unlike other boat compartments, ballast tanks are difficult or impossible to inspect, the closed systems do not dry out and cleaning requires a great deal of hot water.

There's a lot of FICTION out there. Please rely on credible studies and sources. And listen to your own common sense.

For more details and sources see LastWildernessAlliance.org

"I'LL SUE!!"

WAKE SURFERS THREATEN LAWSUITS TO CONTINUE UNRESTRICTED WAKE SURFING

Enhanced wake ordinances are now in place in 78 towns across Wisconsin. Few people now believe the Water Sports Industry's claims that wake surfing is harmless. Towns want to protect their lakes and lake users from the environmental and safety problems of wake surfing.

A few surf boat owners now resort to threatening "I'll Sue!" to intimidate towns. Sad to say, this tactic often works. Many towns have put enacting an enhanced wake ordinance on pause. Why? Not because the legal arguments are valid... but because the threats are scary.

The key argument made by wake surfers is 'even if the ordinance is legally valid, you owe me the full value of my boat because I cannot use it for wake surfing on my lake.' A million-dollar claim, no matter how sketchy, can terrify a community.

We will spare you the legal briefing, but neither U.S. nor Wisconsin law supports such claims. It is common for municipalities and states to regulate the use of personal property to protect the public health, safety, welfare and environment. Establishing such laws is one of the key reasons government exists.

We are all aware of laws that regulate how we use and where we place ATV's, snowmobiles, drones, house trailers and many other things. Can you think of a single instance in which anyone has been paid because they cannot put a house trailer wherever they want or use an ATV wherever they want? No! This is because the U.S. Supreme Court has clearly stated that where the government is regulating how, where and when you use something in the interest of protecting the public or environment, no damages are owed. The Wisconsin courts agree.

The first of these cases in Wisconsin was filed in May 2025 in Burnett County and it will be some time before there is a ruling on the damages issue. But think about this.... the case was brought by two wake surfers/property owners on Birch Island Lake. According to DNR records, Birch Island Lake has an average depth of 6' and a maximum depth of only 13'. These two wake surfers are claiming their rights under both the U.S. and Wisconsin Constitutions are violated by a prohibition against surfing on "their lake". They argue they have a Constitutional right to wake surf on so shallow a lake - even if it damages the lake. And they argue they have a Constitutional right to make big wakes and disrupt the ability of other boaters to safely enjoy the lake.

Government exists to make such decisions. Though our cars can travel at 100mph, we are forbidden from doing so in the interest of protecting others.

Many Wisconsin lakes have been far more heavily regulated. Wisconsin requires only "slow-no-wake" operation on all lakes under 50 acres. Many towns have designated their lakes "no motor" or "no internal combustion engine" lakes.

Have you ever heard anyone claim they are owed compensation for these much more restrictive town ordinances? No. So, do the affluent owners of these very expensive boats (the average surf boat costs

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Donations Always Welcome - Always Needed

LWA is supported solely by donations. Thank you very much for your generous support so that we can advocate on your behalf and keep you informed. To donate go to www.lastwildernessalliance.org or send your contribution to PO Box 265 Presque Isle, WI 54557

Last Wilderness Alliance was established in 2021 as a 501 (c) (4) non-profit organization to advocate for the protection of our natural resources and to support the long-standing economic viability of Wisconsin's northwoods. We are committed to sound environmental practices and the principles of democratic decision-making.

continued from page 5

more than $200,000) get to live by different rules?

Eventually, we will have a court ruling that no damages are available to wake surfers. Until then, it is sad but true that a minority of wake surfers will misrepresent the law in an attempt to continue making big waves and downward prop wash even on lakes as shallow as Birch Island Lake.

Wake Surfing Legislation Update

It's been a wild ride the past several months as two vastly different wake surfing bills made their way to respective Assembly and Senate committees. AB 1033, a Water Sports Industry supported bill, introduced by Rep. Robert Brooks (R) from Ozaukee and co-sponsored by Sen. Dan Feyen (R) from Fond du Lac, was scheduled for a public hearing before the ten member Assembly Committee on State Affairs chaired by Rep. Rob Swearingen (R) from Rhinelander. Following the Water Sports Industry's platform, the bill provided for wake surfing 200' from shore with no depth requirement and no provision for local towns to enact a more restrictive ordinance. Immediately prior to the hearing, this Industry bill was changed to 300' from shore but the sponsor refused to add local control. Despite the overwhelming opposition by members of the public who personally appeared before the Committee, the Committee voted along party lines 7-3 to advance the unpopular bill to the Assembly floor for a vote.

Within days of this action, Senate Bills 1024 and 1025 were introduced and forwarded to the Senate Committee on Local Government and Transportation, chaired by Senator Cory Tomczyk (R) from Mosinee. SB 1025, also supported by the Water Sports Industry, was a duplicate of AB 1033. An alternate bill, SB 1024, introduced by Sen. Rachael Cabral-Guevera (R) from Appleton, had not only bi-partisan support but also the support of LWA and nearly 90 other environmental organizations. SB 1024 provided for wake surfing 500' from shore with a depth of at least 20' and allowed for local control where a town could pass a more restrictive ordinance.

The public hearing before the Senate Committee went for more than 7 hours and mid-way through the hearing, Committee Chair Tomczyk announced that the Assembly had just taken up AB 1033. The bill's sponsor, Rep. Brooks, facing a possible defeat of the bill, in a last minute Hail Mary effort, amended the Industry supported bill to allow for the hunting of sandhill cranes. The Republican majority refused to take a roll call vote and approved AB 1033 with the Sandhill Crane hunting amendment!

Back in the Senate Committee hearing, Chair Tomczyk announced that both bills were now dead and going nowhere.

So for now, with both houses heading for recess prior to the mid-term elections, all wake surfing legislation is now "dead in the water".

You just can't make this stuff up!

Upcoming Events

April 15 – 17, 2026 - Wisconsin Lakes and Rivers Convention
"Decades of Dedication" Holiday Inn Stevens Point
LWA will be there! Our workshop presentation is already sold out! But there are many additional workshops and keynote presentations on water advocacy. For more information go to WisconsinWaterWeek.org

April 24, 2026 – North Lakeland Woods and Water Conference
Discovery Center, Manitowish Waters
For more information go to www.discoverycenter.net

July 17, 2026 – Northwoods Six County Lakes and Rivers Conference
James Williams Middle School , Rhinelander (new location)
For more information go to www.vclra.org

Proposal for a community response program to for monitor compliance with TOSL Boating Ordinances

Background:

Going back to the 1960s, the Town of Spider Lake has relied upon community "policing" of its boating ordinances. To the community it was a satisfactory, if not particularly effective, way to encourage compliance. More recently things have changed, and Towns are expected to demonstrate that their boating ordinances are both *enforceable*, and being *enforced*. This proposal is offered as a way to enhance the TOSL community response mechanism in a way that is better, inexpensive, provides useable data and does so without creating conflict or ill will.

Purpose:

This program will:

- Provide a way for community members to report ordinance infractions or activities that are not in compliance with TOSL boating ordinances
- Provide the Town Board with data to help assess boating ordinance compliance.
- Demonstrate the Town is actively monitoring its boating ordinances in ways that will enhance education and communication.

This program will not:

- Be used to enforce Town ordinances. This is a data reporting tool, not a tool for ordinance enforcement. No enforcement actions will be made based on reports received through this program.
- Record or retain details of reported events. To further underscore it is not an enforcement tool, no information or records of parties that may be violating an ordinance, nor any records or information on parties reporting a violation, will be retained. All submitted information will be discarded or destroyed. This is intended to discourage one neighbor "telling on" another neighbor, or any party feeling they have been unfairly accused of an infraction.
- This program is not intended to provide full and comprehensive reporting. That is, it is understood that not all infractions will be observed, and those infractions observed may not be reported. It is understood to be partial and imperfect data, with the notion that some information is better than no information at all.

DRAFT

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Program Organization

- A summary of data will be submitted to the TOSL Board on a monthly basis (see attached reporting form).
- The source of information will include telephone message and email messages received via the "Hey Gov" feature of the website.
- An individual will be appointed by the Board to collect and repsort on all data. This individual will have no obligation to report specific details to the Board, however, he/or she may be asked to respond wo ways to improve the quality of reporting for this program.
- This will be a trial program with a designated starting and ending date for its effectiveness to be evaluated.

TOSL Boating Ordinance Compliance -- Community Reporting

Date	Body of Water	Description of Incident	Applicable Ordinance	Confirmed	Unconfirmed	Notes

WELD RILEY S.C.

EAU CLAIRE
BLACK RIVER FALLS
MENOMONIE
WAUSAU

June 9, 2026

Chairman Quentin Johnson
Town of Spider Lake
10896 W Town Hall Rd
Hayward, WI 54843

VIA E-MAIL
Quentin.Johnson@townofspiderlakewi.gov

RE: Ordinance 2025-1 Enforcement and Collaboration

Dear Chairman Johnson:

Greetings and we hope all is well. Our office represents several riparian owners on Spider Lake that own wake boats who have reached out to us and would like to continue use of their wake boats for wake surfing on Spider Lake.

We are aware the Town already passed Ordinance 2025-1 last year and is now seeking to have a public safety officer enforce the Ordinance. Notwithstanding the Ordinance's passage, and before the Town spends additional time and resources on enforcement, our clients would like to work collaboratively and cooperatively with the Town to balance and accommodate all lake users.

Please know that in writing to the Town, we approach this issue having the perspectives of both representing towns elsewhere throughout the state as their legal counsel, as well as representing individuals and boating organizations which advocate for boaters' rights – including wake surfing. We come to this discussion with the understanding of the service you all provide to the community, and in the spirit of compromise here, our riparian clients seek the end-goal of accommodating all uses on Spider Lake, including theirs.

Compromise

With that in mind, we hope the Town is willing to discuss potential carveouts or compromises, and our group of riparian owners has some potential ideas that accommodate all lake users and would be in furtherance of the Town's goals under Ordinance 2025-1.

If you are willing to meet with us and/or one of our clients, we will gladly make the drive up from Eau Claire and have coffee to discuss.

Enforcement Issues

When representing riparian owners across the state, we have noticed significant enforceability issues with the ordinance language that the Town of Spider Lake adopted. We have warned towns about the vagueness and unenforceability of this language for a couple of years, but almost universally, the organization (and the "retired attorney" unlicensed to practice law in Wisconsin) pushing these bans repeatedly tells towns not to worry about enforcement. That was and continues to be irresponsible "advice" from the special interest organization that is looking to rack up as many bans as possible.

Now that some municipalities are trying to enforce their ordinances through local police officers, they have encountered the difficulties with enforcement that we have long-warned towns about. Such examples include:

- Enforcement occurred against a person wake boarding, even when the person did not have ballast tanks in use and that wake boarding activity was exempted by the ordinance as a "legal" activity;

- Enforcement against a person wake surfing without the use of ballast tanks, but enforcement occurred because of "bow high" operation, which we understand the officer to have said was anything that wasn't "parallel" with the water's surface (i.e., it's being enforced as a boat ban which presents significant issues); and

- In response to enforcement occurring, one board member who voted for an ordinance nearly identical to Spider Lake's asked, "How do you know if it's an enhanced wave unless you pull them over?" That is the classic case of "shoot first, ask questions later," but in this context of using a wake boat, "conduct a stop first, determine whether it's an enhanced wake later." That is arbitrary and discriminatory and raises significant constitutional issues.

We only mention those few examples to note here that enforcement of the Ordinance is going to come with significant time spent, costs, and attorney fees to prosecute uncertainty, but likely with little to show for those efforts in terms of anything that's actually enforceable.

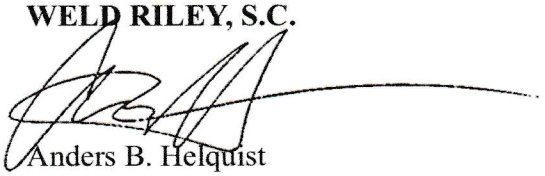
Instead of spending resources on enforcing an unenforceable or difficult to enforce Ordinance, our clients seek to compromise with the Town, accommodate all uses, and in turn, money used for enforcement could potentially be routed to other programs that would have a tangible benefit to Spider Lake, whether it be some form of shoreline restoration projects, fish stocking, or other ways to physically enhance enjoyment of the lake for all.

Conclusion

Thank you in advance for your time and review and our clients hope to work collaboratively with the Town on this issue.

Very truly yours,

WELD RILEY, S.C.



Anders B. Helquist

ABH/aao
cc: Town Supervisors (via e-mail)
Town Clerk (via e-mail)
Client (via e-mail)

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Amery, WI 54001
(715) 268-2687
www.monarchpaving.com
EOE including disability / vets

To:	SPIDER LAKE TWP	**Contact:**	DON FOGAL
Address:	10896 W TOWN HALL ROAD HAYWARD, WI 54843	**Phone:** **Fax:**	715-462-3977
Project Name:	SPIDER LAKE TWP - HAYWARD PATCHING -TEWS RD	**Bid Number:**	20642-2026
Project Location:	TEWS ROAD, HAYWARD, WI	**Bid Date:**	6/11/2026

Item Description	Total Price
PATCHING - TEWS ROAD APPROX. 520'x20'*	$24,725.00
MILL TRANSITION JOINTS	
Fine Grade Base Course To Drain, Water, And Compact.	
Pave 2.5" Average Compacted Depth Asphalt.	
1156 SY Included In Proposal.	

Notes:

- A signed contract is required prior to the start of work.
- Final price will be determined by Unit(s) Used & Unit Price(s) listed above.
- After signing, please retain one copy and forward a copy to our office on or before the cancellation date.
- This proposal shall be automatically cancelled if written acceptance has not been received by Contractor within **15 days** of the Proposal Date and/or at any time before performance of the work hereunder upon CONTRACTOR'S determination that there is inadequate assurance of payment.
- Base course shall be supplied & installed by others to +/- .10 ft of finished base elevation prior to fine grading.
- Minimum of 1% drainage required. (2+% preferred)
- All private utilities shall be located & marked by customer. Not responsible for repairs if not marked.
- Due to harsh winter weather, future cracking of the asphalt pavement is not covered by warranty.
- Customer shall be responsible for backfilling asphalt edges as desired. Lawn restoration not included.
- Customer shall obtain all required permits and approvals prior to the start of work.
- Areas inaccessible to standard paving equipment may have a differing cosmetic appearance.
- Additional work beyond the scope of the contract will require an "Extra Work" contract change order. This includes, but is not limited to: subgrade corrections/undercut, additional base course supplied and hauled to site, sawcutting, and utility adjustments.
- **Temporary traffic control and signage provided while our crews are on site working.**
- **Any shouldering/backfilling/landscaping/restoration items to be completed by customer.**

Payment Terms:

Payment is due upon receipt of invoice.
By my signature herein I authorize CONTRACTOR to review personal OR business Credit Reports to evaluate financial readiness to pay amounts set forth in this Proposal/Contract.

ACCEPTED: The above prices, specifications and conditions are satisfactory and hereby accepted. **Buyer:** TOWN OF SPIDER LAKE CHAIRMAN **Signature:** **Date of Acceptance:** 6/15/26	**CONFIRMED:** **Monarch Paving** **Authorized Signature:** **Estimator:** Chris Veness 715-299-1423 chris.veness@monarchpaving.com

TERMS AND CONDITIONS

NOTICE OF LIEN RIGHTS

AS REQUIRED BY THE WISCONSIN CONSTRUCTION LIEN LAWS, CONTRACTOR HEREBY NOTIFIES OWNER THAT PERSONS OR COMPANIES FURNISHING LABOR OR MATERIALS FOR THE CONSTRUCTION ON OWNER'S LAND MAY HAVE LIEN RIGHTS ON OWNER'S LAND AND BUILDING IF NOT PAID. THOSE ENTITLED TO LIEN RIGHTS, IN ADDITION TO THE UNDERSIGNED CONTRACTOR, ARE THOSE WHO CONTRACT DIRECTLY WITH THE OWNER OR THOSE WHO GIVE THE OWNER NOTICE WITHIN SIXTY (60) DAYS AFTER THEY FIRST FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION. ACCORDINGLY, OWNER PROBABLY WILL RECEIVE NOTICES FROM THOSE WHO FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION, AND SHOULD GIVE A COPY OF EACH NOTICE RECEIVED TO THE MORTGAGE LENDER, IF ANY. CONTRACTOR AGREES TO COOPERATE WITH THE OWNER AND THE OWNER'S LENDER, IF ANY, TO SEE THAT ALL POTENTIAL LIEN CLAIMS ARE DULY PAID.

ACCEPTANCE OF WORK

All labor and material is conclusively accepted as satisfactory unless accepted to in writing within seven (7) days of performance.

EXTRA WORK

All alterations or deviations from any of the terms of this contract shall be in writing and executed by the parties hereto. Any extra cost involved therein will become an extra charge to be paid by PURCHASER over and above the contract price.

PURCHASER'S RESPONSIBILITIES

PURCHASER acknowledges and understands that it shall be responsible for obtaining any and all permits which may be required in connection with performance of this Proposal/Contract. Where applicable, PURCHASER shall also be responsible for backfilling areas that border along the newly paved surface with appropriate material to eliminate potential cracking and uneven surface at the edge of the paved surface and for installing, replacing, maintaining and repairing shoulders. PURCHASER assumes all liability for any damages done to underground utilities and/or structures unless CONTRACTOR has been notified, upon acceptance of this Proposal, as to the specific location and depth of any such buried utility/structures.

INCLEMENT WEATHER

Inclement weather may alter the completion of the work to be furnished hereunder. Furthermore, special consideration should be given if work is to be performed before May 1 or after October 15 in light of less than desirable weather conditions which could potentially impair the quality of the work performed hereunder.

WARRANTY

All material is guaranteed to be as specified and all work is to be completed in a workmanlike manner according to standard practices. All labor and materials will be guaranteed against defect for one (1) year from date of installation. Due to Wisconsin winters and expansion and contraction of the ground, some cracking of the pavement may be experienced. There are no express or implied warranties of merchantability, quality, and quantity or of fitness for any particular purpose, which extend beyond those specifically set out in this document.

All warranties are void if payment is not made as stipulated.

DELINQUENCY CHARGE

Payment is due and payable upon completion of each stage of the work. If PURCHASER defaults on the payment required, PURCHASER will be liable for all costs of collection, including reasonable attorney's fees, and a delinquency charge on the balance at the maximum rates allowed by law. If PURCHASER is an organization as defined by Wis. Statutes, Section 421.301(28), the Delinquency Charge rate shall be 1.5% per month (18% APR) plus all costs of collection, including reasonable attorney's fees. CONTRACTOR retains title to all merchandise covered by this Agreement until full payment is received according to the above terms of sale. PURCHASER consents in any action or legal proceeding relating to this Contract commenced by the CONTRACTOR to the personal jurisdiction of any court that is either a court of record in the State of Wisconsin or a court of the United States located in the State of Wisconsin. It is hereby agreed that no legal action with respect to this contract may be brought by either party later than one (1) year after the cause of action accrues and that the party asserting such a legal action shall be barred from any remedy thereto.

INDIVIDUAL LIABILITY

The undersigned PURCHASER agrees to be individually liable for all terms of the Agreement, regardless of whether he or she signs individually or as an agent for the owner of the property upon which the work is being performed or for any other individual, partnership or corporation.

PRODUCT INFORMATION AND MAINTENANCE

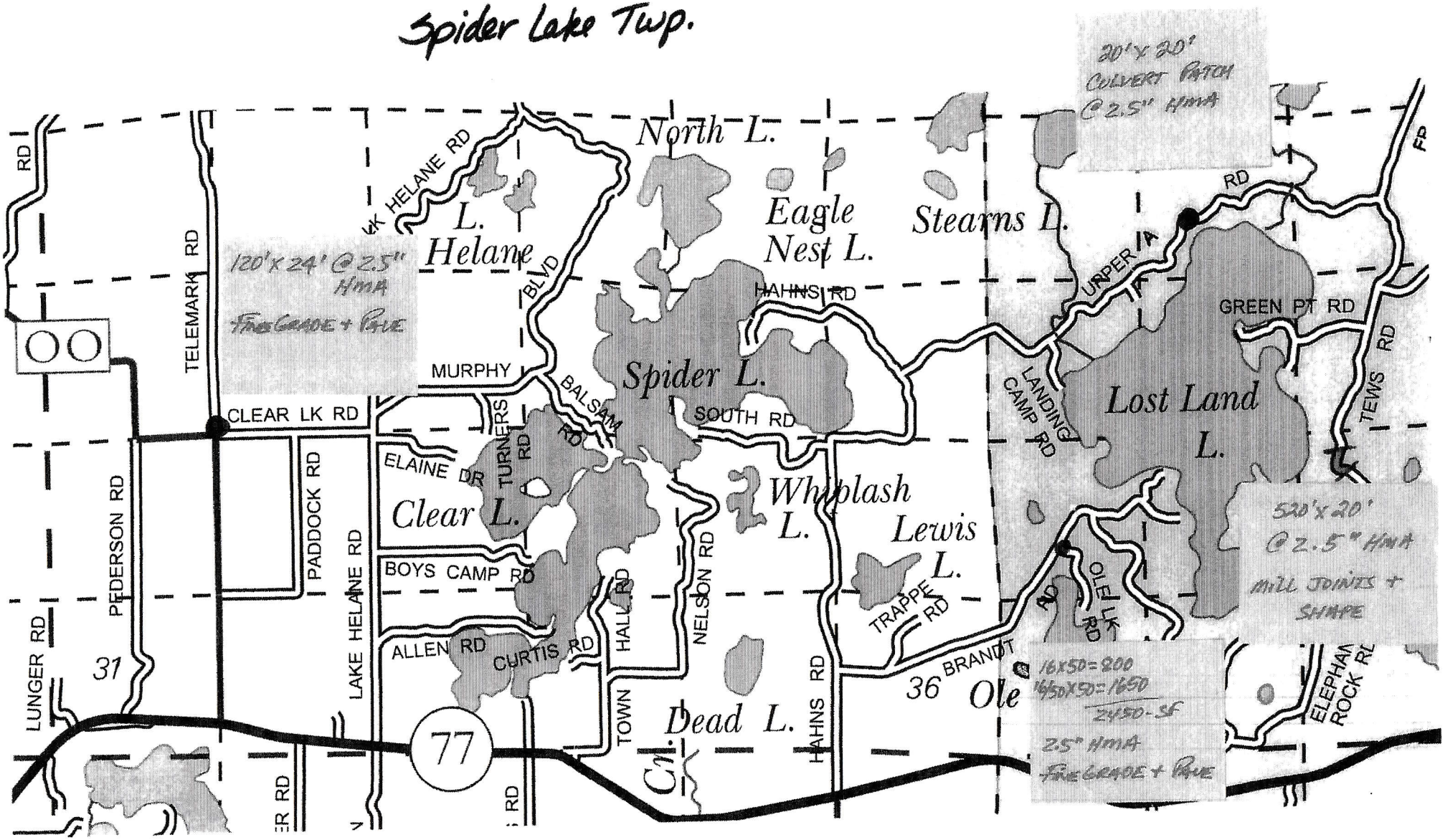
Since the asphalt in blacktop needs time to harden and cure, usually 6-12 months, your asphalt pavement will remain soft and pliable during warm weather. During this time, don't park in the same spot every time and do not turn your steering wheel back and forth when your car is not moving. It is not unusual to experience some cracking over the winter due to the contraction and expansion of the ground, especially over culverts, pipes, electric wires, etc. Avoid gasoline and petroleum product spills as they will destroy your pavement. If spills do occur, immediately flush with lots of soapy water. If you decide to seal coat your pavement, wait until the summer following installation.

BINDING EFFECT

This Agreement shall be binding upon the parties hereto, their heirs, personal representatives, successors and assigns.

ENTIRE AGREEMENT

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Spider Lake Twp.
20'x 20'
CULVERT PATCH
@ 2.5" HMA
North L.
Eagle
Nest L.
Stearns L.
L.
Helane
4K HELANE RD
120'x 24' @ 2.5"
HMA
FINE GRADE + PAVE
BLVD
HAHNS RD
UPPER A
RD
GREEN PT RD
FD
TELEMARK RD
MURPHY
BALSAM
RD
Spider L.
SOUTH RD
LANDING
CAMP RD
Lost Land
L.
TEWS RD
CLEAR LK RD
TURNERS
RD
ELAINE DR
Clear L.
Whiplash
L.
Lewis
L.
520'x 20'
@ 2.5" HMA
MILL JOINTS +
SHAPE
PADDOCK RD
PEDERSON RD
BOYS CAMP RD
LAKE HELANE RD
NELSON RD
HALL RD
TRAPPE
RD
OLE LK
RD
LUNGER RD
31
ALLEN RD
CURTIS RD
TOWN
16'x50'=800
16'x50'x50=1650
2450-SF
2.5" HMA
FINE GRADE + PAVE
36 BRANDT
Ole
Dead L.
HAHNS RD
ELEPHAM
ROCK RL
77
Cr.

MONARCH PAVING COMPANY
A DIVISION OF MATHY CONSTRUCTION CO. • AMERY, WI

768 U.S. Highway 8
Amery, WI 54001
(715) 268-2687
www.monarchpaving.com

To:	SPIDER LAKE TWP	**Contact:**	DON FOGAL
Address:	10896 W TOWN HALL ROAD HAYWARD, WI 54843	**Phone:** **Fax:**	715-462-3977
Project Name:	SPIDER LAKE TWP - HAYWARD PATCHING	**Bid Number:**	19985-2026
Project Location:	UPPER A, OLE LAKE & TELEMARK ROADS, HAYWARD, WI	**Bid Date:**	6/11/2026

Item Description	Total Price
PATCHING - TELEMARK, OLE LAKE & UPPER A*	$20,650.00
Fine Grade Base Course To Drain, Water, And Compact.	
Pave 2.5" Average Compacted Depth Asphalt.	
637 SY Included In Proposal.	

+1429

Notes:

- A signed contract is required prior to the start of work.
- Final price will be determined by Unit(s) Used & Unit Price(s) listed above.
- After signing, please retain one copy and forward a copy to our office on or before the cancellation date.
- This proposal shall be automatically cancelled if written acceptance has not been received by Contractor within **15 days** of the Proposal Date and/or at any time before performance of the work hereunder upon CONTRACTOR'S determination that there is inadequate assurance of payment.
- Base course shall be supplied & installed by others to +/- .10 ft of finished base elevation prior to fine grading.
- Minimum of 1% drainage required. (2+% preferred)
- All private utilities shall be located & marked by customer. Not responsible for repairs if not marked.
- Due to harsh winter weather, future cracking of the asphalt pavement is not covered by warranty.
- Customer shall be responsible for backfilling asphalt edges as desired. Lawn restoration not included.
- Customer shall obtain all required permits and approvals prior to the start of work.
- **Base Course, Sawing, Traffic Control, Pavement Markings, Signage, Utility Adjustments, and Removals not included.**
- Areas inaccessible to standard paving equipment may have a differing cosmetic appearance.
- Additional work beyond the scope of the contract will require an "Extra Work" contract change order. This includes, but is not limited to: subgrade corrections/undercut, additional base course supplied and hauled to site, sawcutting, and utility adjustments.
- **Temporary traffic control and signage provided while our crews are on site working.**

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Signature: CHAIRMAN

Date of Acceptance: 6/17/26

CONFIRMED:

Monarch Paving

Authorized Signature:

Estimator: Chris Veness
715-299-1423 chris.veness@monarchpaving.com

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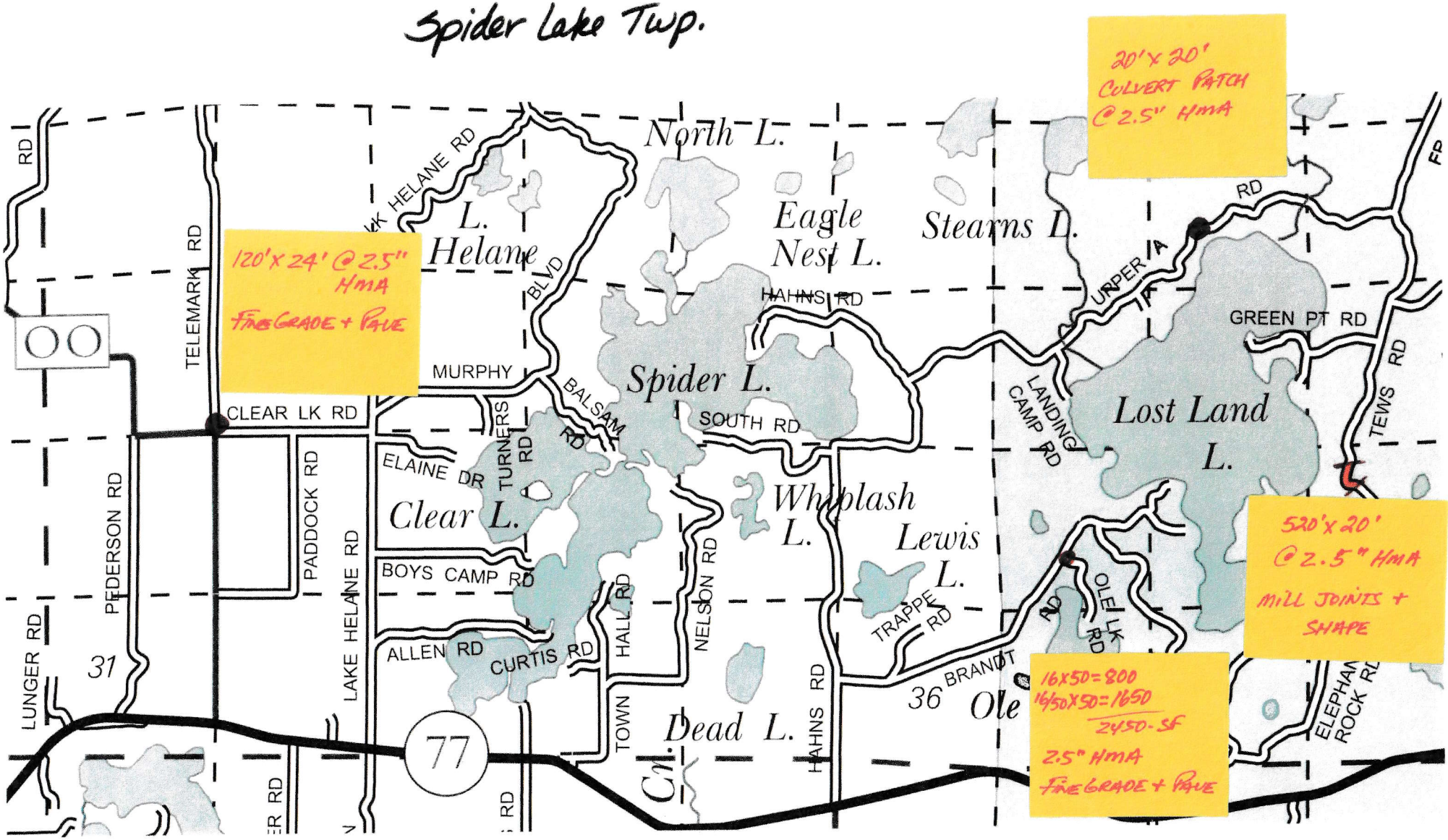
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Spider Lake Twp.



Sawyer County Highway Department



John Pinnow, Commissioner
14688 W County Road B, Hayward, WI 54843
Office Phone 715-634-2691
Shop Phone 715-634-2692
Cell Phone 715-492-7180



Petition

The Supervisors/Trustees of the Town/Village of SPIDER LAKE, Sawyer County, Wisconsin hereby petition the Honorable County Board of Sawyer County, Wisconsin for aid under Statute 82.08 to be used in the construction or repair of any culvert or bridge to be done within said Town/Village, setting forth the following facts:

That the Town/~~Village~~ of SPIDER LAKE has voted to rebuild or replace the bridge/culvert known as the LYNCH CREEK ~~bridge~~/culvert located on FR 203 road; and that the estimated local/total cost of said bridge/culvert is $75,000 (½ FOREST SERVICE TOTAL) WITH THE FOREST SERVICE (SEE ATTACHED); that the Town/~~Village~~ of SPIDER LAKE has provided for the payment of one-half of the estimated local/total cost of said bridge/culvert, namely $37,500; that the assessed valuation of the Town/Village of SPIDER LAKE is $428,089,100. Request is hereby made that the County appropriate the sum of $37,500 to pay one-half the estimated local/total cost of said bridge/culvert.

Board of Supervisors of the Town of SPIDER LAKE

By _____ Dated _____
Town Chairman
QUENTIN JOHNSON

Board of Trustees of the Village of _____

By _____ Dated _____
Village President

Sawyer County Highway Department



John Pinnow, Commissioner
14688 W County Road B, Hayward, WI 54843
Office Phone 715-634-2691
Shop Phone 715-634-2692
Cell Phone 715-492-7180



EMERGENCY PETITIONS FOR BRIDGE AID

The emergency provision provided in the statute applies to construction or repair of any bridge/culvert that has failed and must be replaced without delay. The Highway Department will determine eligibility based on a pre-inspection of the failed culvert. **Do not make repairs to the failed bridge or culvert without a pre-inspection or the repairs will not be eligible.** The same guidelines and procedures above apply to emergency installations. Contact the Highway Department immediately if you have a failed culvert that might be eligible under this provision.

Site ID - 22303

Lynch Creek
FR 203

Information collected by:
MSA

GPS Coordinates: 46.1436464,-91.0938785
T 042N R 006 Sec 03

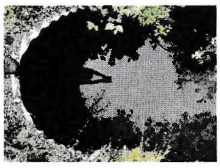
Fish Passability: Not a Barrier
Structure is NOT Perched
Total Erosion: 1.8 tons/year
Overall Score: 16
Severity: Moderate
Date Inventoried: 6/22/2022


Road Approach - Left


Road Approach - Right

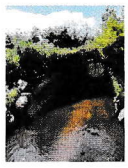

Inlet


Upstream Conditions


Outlet


Downstream Conditions


Representative Reach


Inlet


Upstream Conditions


Outlet


Downstream Conditions

Crossing Information*

Type of Crossing: Culvert(s)
Number of Structures: 1
Structure Shape: Pipe Arch
Inlet Type: Mitered
Outlet Type: At Stream Grade
Structure Material: Metal
Structure Substrate: Sand
General Conditions: Severe deterioration from corrosion or abrasion (more than 50% of the structure is rusted through) or cracking or spalling or chipping (more than 50% of the structure is compromised). Or Major shape changes (described above) reducing the capacity of the structure by greater than 50%. OR Segment disconnect causing major subsurface erosion/piping and/or partial fill failure and/or sink holes in the fill.

Structure Interior: Corrugated
Is Structure Rusted through? No
Dimensions of Structure: Length 48 ft. Width 8.5 ft. Height 5.5 ft.
Percentage Plugged: None or 0%
Percentage Crushed: None or 0%
Structure is NOT Perched

Structure Inlet
Water Depth: 1.1 ft.
Embedded Depth of Structure: 0 ft.
Water Velocity*: 0.8 ft./sec.

Structure Outlet
Water Depth: 1.3 ft.
Embedded Depth of Structure: 0 ft.
Water Velocity*: 0.8 ft./sec.

*Water Velocities were measured 0.5 ft. below the surface (via Flow Meter).

Stream Information

Stream Flow: = Bankfull – Water has completely filled the stream channel, but is not flowing onto the floodplain.
Stream Flow Type: Perennial (if flowing during the time of assessment.)
Is Scour Pool Present? No
Is Upstream Ponding Present? No

Riffle Information

Water Depth: 1 ft.
Bankfull Width: 10.1 ft.
Wetted Width: 9.2 ft.
Water Velocity: 0.8 ft./sec. (measured via Flow Meter)
Dominant Substrate: Sand – particles are smaller than a pinhead and feel gritty between fingers

Road Information

Road Surface: Gravel
Road Condition: New Pavement or Well Graded, Same condition as initial placement.
Road Core Integrity: Good (no symptoms of lack of integrity)
Road Width at Culvert: 21 ft.
Location of Low Point: At Stream
Runoff Path: Ditch

Embankments

Upstream
Fill Depth: 0.5 ft.

Downstream
Fill Depth: 0.7 ft.

RE: Lynch Creek at FR 203

From: Koshak, Mark - FS, WI mark.a.koshak@usda.gov
To: Quentin Johnson Quentin.Johnson@townofspiderlakewi.gov
Date: Mon, Jul 28, 2025, 16:10

You don't often get email from mark.a.koshak@usda.gov. Learn why this is important

Good afternoon, Quentin:

I am your USDA Forest Service Point of Contact.

Our hydrologist, Chris Ester, has asked me to break the ice with you.

Chris wants to change out the existing culvert at FR203 at Lynch Creek. He knows something of the mechanics of obtaining grants and other forms of funding by which the Town might acquire funding to assist in the purchase or installation of the new culvert.

Is it OK with you for me to give Chris your contact information? Let me know.

Mark Koshak

Mark Koshak, ER, COR2
Civil Engineering Technician
Forest Service
Chequamegon-Nicolet National Forest
Medford-Park Falls Ranger District
p: 715-762-5129
c: 715-661-0253
f: 715-762-5179
mark.a.koshak@usda.gov
1170 South Fourth Avenue
Park Falls, WI 54552-1921

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email

year estimated life span. Preliminary design analysis landed on a 10 or 11' span round polycoated steel culvert deeply buried. A very preliminary estimate of construction cost to hire a contractor to construct this culvert replacement would be $150,000. Therefore a ***potential*** cost share breakdown could be:

- Township 25% cost share: $37,500
- Bridge aid request: $37,500
- Forest Service share: $75,000

The reason we bring this to your attention now is to give you time to consider if and how much you might want to share costs and then submit a petition for bridge aid by the deadline for 2027 construction projects which is July 31, 2026. Town funds would come from your 2027 budget.

Please do not hesitate to reach out to me for clarification.

Thanks for your consideration,

Chris Ester
Hydrologist
Watershed Program Manager
Forest Service
Chequamegon-Nicolet National Forest
p: 715-362-1304
c: 715-499-5297
christopher.ester@usda.gov
500 Hanson Lake Rd
Rhinelander, WI 54501

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3 Emails