# Wisconsin's Great Lakes Beach Monitoring & Notification Program 2024 Beach Season Summary

**Office of Great Waters**
**Wisconsin Department of Natural Resources**
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## Acknowledgements

**Thanks to everyone who helps make Wisconsin's Great Lakes Beach Program a success!**

## County participants include:

Ashland County Health and Human Services
Bayfield County Health Department
Brown County Health and Human Services
City of Milwaukee Health Department
City of Oak Creek Health Department
Door County Health and Human Services
Douglas County Health and Human Services
Iron County Health Department
Kenosha County Division of Health
Kewaunee County Public Health Department
Manitowoc County Health Department
North Shore/Shorewood Health Department
City of Racine Public Health Department
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South Milwaukee Health Department
Washington Ozaukee Public Health Department

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## Compiled by:

Diane Packett, Wisconsin Coastal Beach Program Manager
Wisconsin Department of Natural Resources
Office of Great Waters
101 S. Webster Street
Madison, Wisconsin, 53703

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"Waiting" by Wendy Huffman

# 2024 Beach Season: Program Highlights

Wisconsin's Great Lakes Beach Monitoring & Notification Program has operated since 2002, making the summer of 2024 its 23rd season.

Each year, the beach program collaborates with local stakeholders to evaluate the beach list for accuracy and prioritize beaches for monitoring. The beach list is annually published for public notice on the DNR website with specific notes soliciting any program changes. This includes the following:

- Are there coastal beaches missing from the list (e.g. new parks with beach areas)?
- Are beach locations and beach measurements correct?
- Have conditions surrounding any beaches changed (e.g. restoration, drainage, water levels)?
- How is the water quality? Do we have historical data?
- How many people use the beaches? What do local people call (name) the beaches?
- Are nowcasts or other same-day tools in place to improve the timing for posting advisories?
- Is the monitoring frequency appropriate for the usage, conditions, and public notification tools in place?
- Have beach program contacts changed?

The beach program coordinator reached out to local cooperators and health departments in advance of the beach season to identify needed adjustments. Coastal processes change beach dimensions over time, individual beaches may be improved or restored, and beach usage patterns can also change, so local beach managers are given an opportunity to re-evaluate their priority classification and update their information annually. Beach tier, the existence of an operational Nowcast, and impairment status are major considerations in determining the frequency for monitoring and thus in determining funding allocations.

**Bacteria monitoring and Annual Sanitary Surveys**

The federal fiscal year 2023 Beaches Environmental and Coastal Health (BEACH) Act grant from the United States Environmental Protection Agency (USEPA) supported monitoring and public notification programs in 13 of the 15 coastal counties in calendar year 2024. The beach list included 195 coastal beaches extending 57.8 miles. The BEACH grant funded water sampling and public notification of water quality conditions at 120 beaches, and all 24 Tier 1 beaches participated in the program. Basic sanitary survey information, *Escheria coli* bacteria (*E. coli*) concentrations, and the status of the beach (open, advisory, or closure) were posted to the Wisconsin Beach Health website (www.wibeaches.us). Seven counties chose to conduct EPA's annual sanitary surveys at one or more of their beaches, and 6 declined due to lack of capacity. Multiple communities supplemented their allocated funding to intensify monitoring, conduct contaminant source tracking, and evaluate effectiveness of restorations.

**New beaches**

At the request of Door County Public Health, the University of Wisconsin (UW)-Oshkosh added 9 BEACH Act beaches to its monitoring list in 2024, bringing the County total to 41. The beaches were designated at Tier 3 and monitored weekly.

At the request of Northland College and Ashland County Health Department, Maslowski Beaches was split into two Tier 2 beaches, Maslowski East and West, monitored twice weekly. Maslowski Beach West was added to the Beach List.

**Database functionality**

The coastal beach monitoring data are used to classify the beaches as Impaired Waters, Waters in Restoration, or Waters Attaining Standards, published every two years in Water Condition Lists required by Clean Water Act Sections 303(d) and 305(b). These data are pulled from DNR's Surface Water Integrated Monitoring System (SWIMS) database. In the past, the data from the Beach Health database were downloaded and entered manually into SWIMS each year by a contractor. In spring 2024, database functionality was added to generate an appropriately formatted .csv file of all the data entered during the season, which can be submitted directly to SWIMS through DNR's Lab Data Entry System (LDES). The 2023 season data were submitted by the Beach Program Manager and the time required was minimal compared to the manual process. It is expected that data quality will improve due to elimination of transcription and beach identification errors in this new process.

**Management actions**

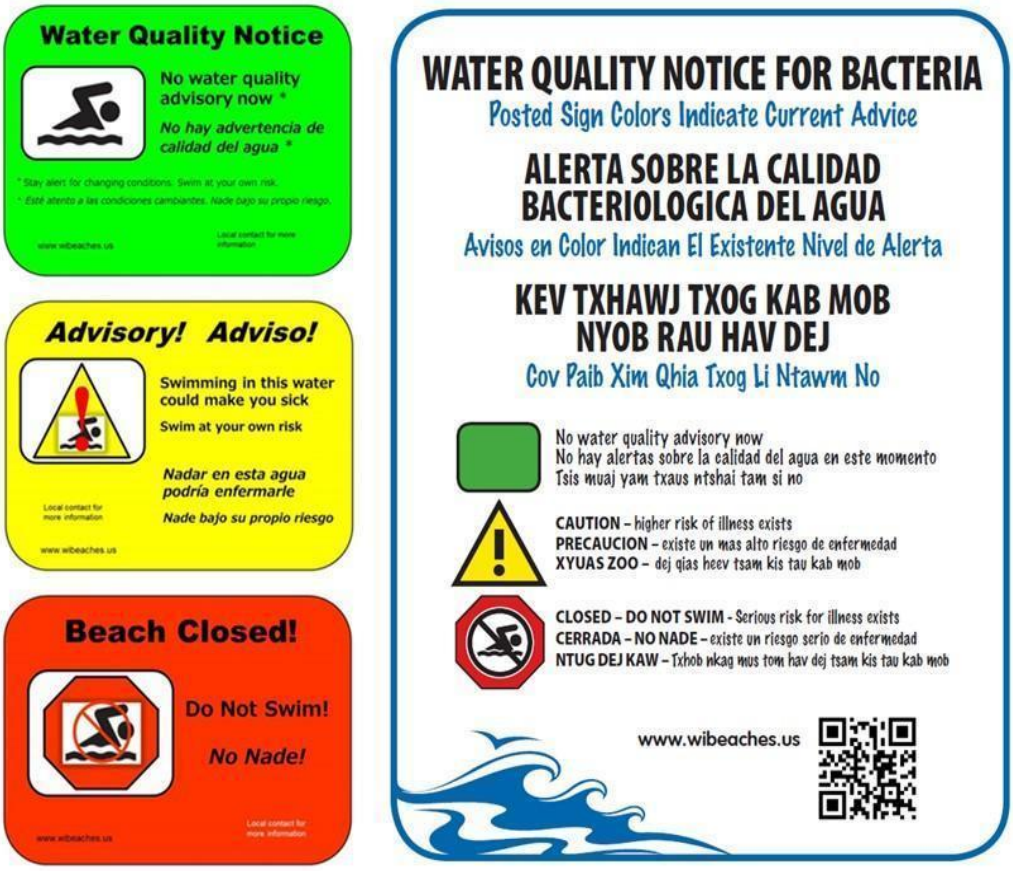
The Wisconsin Beach Program relies on local public health organizations along the coastline for primary outreach and communication. DNR and the health departments often coordinate closely with local parks departments for on-the-ground beach management. Additionally, beaches are often adjacent to public infrastructure, so developing effective management practices may involve public works or transportation departments. When considering the number of departments with functions that may affect beach management, stakeholders have come to appreciate the importance of coordinating beyond the usual department boundaries, particularly for implementing best management practices (BMPs), addressing sources of contamination, and implementing beach restorations. An example of this coordination is the Waterway Restoration Partnership working to implement BMPs and beach restorations in the Milwaukee Estuary Area of Concern; there are many diverse partners including the City of Milwaukee, Milwaukee County Parks, EPA, Milwaukee Metropolitan Sewerage District, and DNR.

**Water Quality Signage**

The program uses color-based signs to indicate status of monitored beaches. Green signs are used to indicate that the beach is open and there is no known water quality exceedance. Yellow advisory signs are posted when bacteria levels exceed 235 colonies/100 milliliter (mL) of water or conditions indicate that an advisory is warranted (e.g. after a rain event). The red beach closure signs are posted when conditions are judged unsafe for swimming. Examples of conditions when these signs may be used include bacteria levels exceeding 1000 colonies/100 mL, following heavy rainfall or flooding, chemical spills, observations of a harmful algal bloom (HAB), or dangerous (rip) current warnings.

Distribution of the signage is coordinated with Wisconsin State Parks so consistent messaging occurs at inland beaches that use the program's monitoring and notification systems. Inland communities are encouraged to implement the program voluntarily. Sign templates are made available to inland communities upon request.

The signage design has evolved over the years since the beach monitoring program began in 2002. In response to concerns that the original signs were text-heavy and not sufficiently noticeable, the signs were redesigned in 2017 with brighter colors, simpler text, larger symbols, and Spanish translations. There is also a general sign with explanations in English, Spanish, and Hmong.




In 2022 and 2023 Door County and the City of Racine Health Department each deployed electronic signs from SwimSmart Technologies at seven beaches along Lake Michigan using their own funding. The signs use “traffic light” symbology to indicate the beach status. They are controlled remotely using a smartphone app, allowing status to be updated as soon as water tests results are available, saving staff time in deploying the sign placards. The Door County signs are located at Egg Harbor, Fish Creek, Bailey’s Harbor, Sunset Park, and Murphy Park, and the lights refer to the beach water quality. The signs deployed at North Beach in Racine County have the capability of being triggered when the National Weather Service (NWS) surf zone forecasts indicate that high waves and dangerous currents may be present. The City of Racine Health Department uses this feature when water quality is good (or not monitored) but the beach is not being observed, i.e. weekends and during the month of September.

In 2024, the City of Two Rivers in Manitowoc County procured three SwimSmart electronic signs for Neshotah Beach that can receive NWS forecast data, and two jurisdictions in Milwaukee County began discussing options for purchasing signs of their own. For the 2024 season, the Neshotah signs displayed warnings for dangerous waves and currents, and the water quality status was posted separately on steel signs. Any message discrepancies could potentially confuse or mislead beachgoers.


BEACH Act beaches where monitoring is grant-funded are required to comply with grant requirements for public notification and public accessibility of data. It is important to assure that any posted notifications at beaches convey the same messages and that are consistent with the data and advisories posted by monitors to the Beach Health database and website. In addition, Wisconsin State Statute 254.46 specifies that local Public Health Agencies have the authority to close beaches for human health hazards. To those ends, beach managers from counties hosting or hoping to host Swim Smart signs, SwimSmart representatives, and interested parties such as DNR Park managers were convened to discuss how to align the electronic sign content, functionality, and operation with the BEACH Act grant requirements and contracts, state statute, and long-standing statewide beach monitoring policy.

The result was a new signage policy document stipulating that the beach monitors, who act as agents for the local Public Health Departments, have the ability to control the electronic signs so that they are consistent with what is posted to the database and reported to EPA. SwimSmart revised the language on the signs to be consistent with the hundreds of steel signs currently in use around the state, (i.e. referring to “Open”, “Advisory” and “Closed” instead of low, medium, or high hazard), and modified the software to accept water quality input from beach monitors as well as NWS forecasts and post according to the greatest hazard. Increasing storm events causing dangerous waves and currents also led to new static sign designs suitable for use at coastal beaches that are susceptible to hazardous conditions. Both the sign design and policy document were circulated to all coastal beach managers, Wisconsin Coastal Management, and the Wisconsin Department of Health Services for review and comment. The finalizing of the signage design and document occurred during the fiscal year 24 grant period and will be documented in that year’s final report.

## Monitoring Summary Results

Summary data in this section provides information for each county and statewide (Table 1) followed by data for each monitored beach organized by county and grouped by lake. Statistics for the *E. coli* monitoring results were derived from the Wisconsin's Beach Health database. Results are reported in Colony Forming Units (CFU) or Most Probable Number (MPN) per 100 mL of water, with the "Advisory" level at 235 MPN/100 mL and the "Closure" level of 1000 MPN/100 mL. As a function of Wisconsin's prioritizing monitoring at impaired waters and more intensive monitoring at beaches with higher numbers of exceedances, the monitoring program is designed to be inherently biased toward locations with higher risk of exceeding the water quality standard. Beach managers may issue advisories based on local conditions or modeled results and some locations sample more frequently to minimize the length of time an advisory may be in effect. Advisories or closures remain in effect until the next monitoring or modeling result indicate that water quality has improved.

**Table 1. 2024 Annual sample percentages that exceed the *E. coli* advisory level of 235 CFU (or MPN) /100mL and closure level of 1000 CFU (or MPN)/100mL**

| County | # of Monitored Beaches | Samples Collected | Beach Action Days* | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|---|
| Ashland | 5 | 150 | 101 | 34 | 10 | 22.7 | 6.7 |
| Bayfield | 15 | 353 | 86 | 35 | 12 | 9.9 | 3.4 |
| Brown | 2 | 30 | 0 | 0 | 0 | 0.0 | 0.0 |
| Door | 41 | 1336 | 102 | 96 | 26 | 7.2 | 1.9 |
| Douglas | 6 | 94 | 77 | 15 | 5 | 16.0 | 5.3 |
| Iron | 3 | 47 | 2 | 2 | 0 | 4.3 | 0.0 |
| Kenosha | 6 | 193 | 41 | 28 | 7 | 14.5 | 3.6 |
| Kewaunee | 2 | 111 | 41 | 22 | 7 | 19.8 | 6.3 |
| Manitowoc | 11 | 496 | 231 | 170 | 39 | 34.3 | 7.9 |
| Milwaukee | 11 | 297 | 260 | 48 | 19 | 16.2 | 6.4 |
| Ozaukee | 5 | 166 | 22 | 8 | 3 | 4.8 | 1.8 |
| Racine | 5 | 182 | 66 | 21 | 5 | 11.5 | 2.7 |
| Sheboygan | 7 | 231 | 55 | 37 | 6 | 16.0 | 2.6 |
| **Grand total** | **119** | **3686** | **1067** | **516** | **139** | **14.0** | **3.8** |

*Beach action days may result from a number of hazardous conditions including bacterial contamination, algal blooms, dangerous currents, etc.

Note:In Douglas County, beach conditions at Shafer Beach were based on adjacent sampling at Dutchman Creek. In Kewaunee County, beach conditions at Selner and Pioneer Parks were based on results from the same sample. In Manitowoc County composite sampling was considered and approved for Point Beach based on statistical assessment of the water quality data.

Of the 13 counties monitored along both Lake Superior and Lake Michigan coasts, only Brown County experienced the same or fewer *E. coli* exceedances than in 2023, and the overall percentage of exceedances was higher (Table 2). Only Brown and Ozaukee Counties experienced fewer beach action days (days when the beaches were under advisory or closure for any reason). The number of beach action days statewide nearly doubled: 1067 beach days in 2024 compared to 576 in 2023.

The high number beach action days result not only from bacterial exceedances, but also from closures for dangerous waves and currents. Both are attributable to the increased storm events experienced in 2024. According to the Wisconsin State Climatology Office records, the counties along Lake Superior were drier than normal in 2023 and wetter than normal in 2024; the counties along Lake Michigan experienced near-normal precipitation in 2023 and above-normal precipitation in 2024. There were 44 days of preemptive advisories or closures due to rainfall in 2024, and a total of 86 beach action days due to dangerous waves and currents, mainly in Milwaukee, Racine, and

Kenosha Counties. Beach action days also resulted from beach closures due to physical hazards at beaches, including a sinkhole and stormwater outfall reconstruction at Milwaukee County beaches.

**Table 2. Historic Summary of Percentages that Exceed the *E. coli* Advisory Level of 235 CFU/100mL**

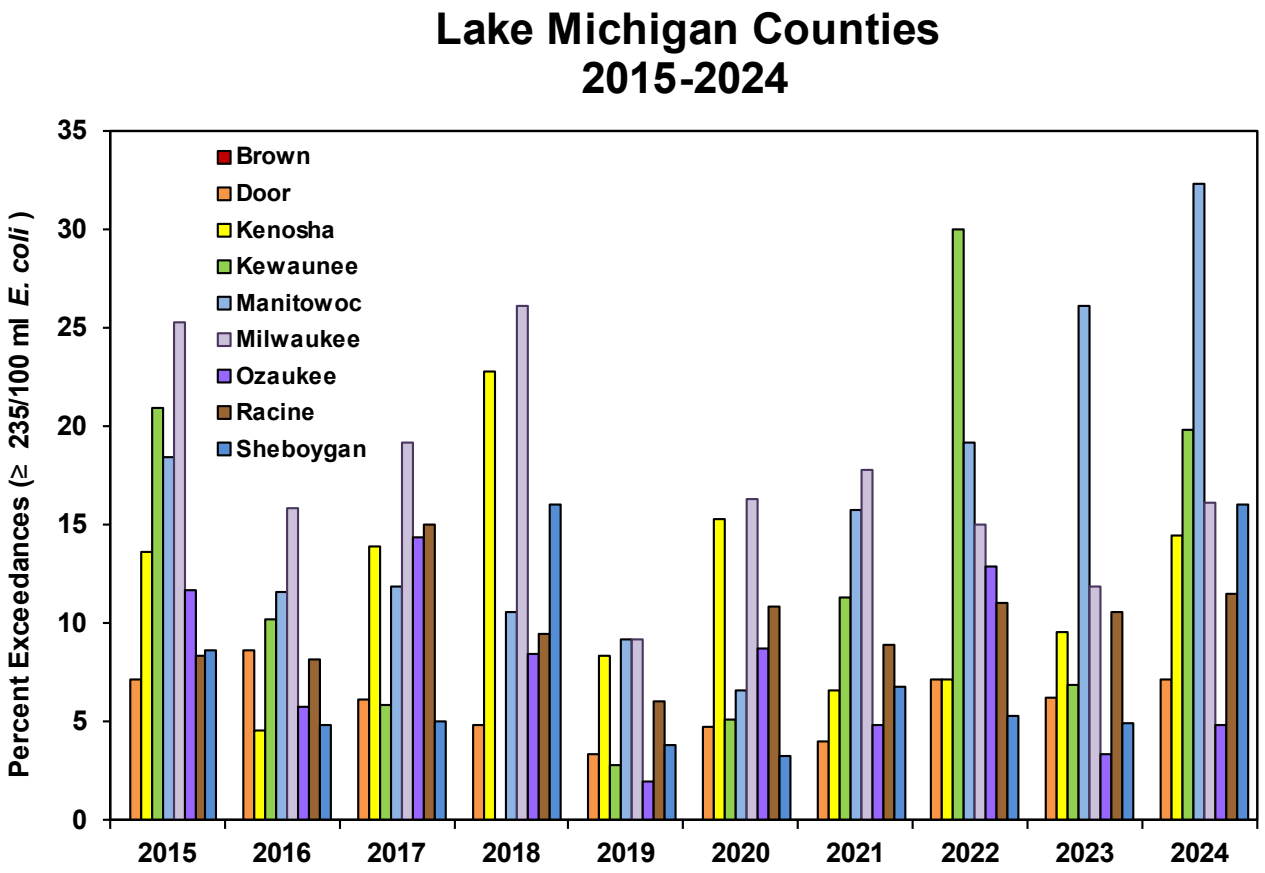
Blue highlighted cells indicate the same or fewer beach action days in 2024 compared to 2023

| COUNTY | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ashland** | 5.8 | 8.9 | 13.1 | 18.8 | 20.6 | 20.1 | 23.4 | 14.9 | 34.4 | 13.1 | 21.0 | 19.4 | 12.1 | 13.4 | 22.7 |
| **Bayfield** | 5.8 | 8.0 | 5.2 | 4.0 | 5.6 | 2.4 | 8.6 | 2.9 | 8.2 | 2.6 | 5.4 | 2.0 | 3.4 | 3.7 | 9.9 |
| **Brown** | 5.9 | 2.1 | 8.7 | 0.0 | NA | NA | NA | NA | NA | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Door** | 4.7 | 6.0 | 4.1 | 5.5 | 6.7 | 7.2 | 8.7 | 6.1 | 4.8 | 3.3 | 4.8 | 4.0 | 7.2 | 6.3 | 7.2 |
| **Douglas** | 18.4 | 23.3 | 29.7 | 12.0 | 29.8 | 25.7 | 20.3 | 26.1 | 27.7 | 13.6 | 6.7 | 4.9 | 6.3 | 6.7 | 16.0 |
| **Iron** | 7.1 | 10.5 | 11.4 | 16.7 | 22.2 | 0.0 | 0.0 | NA | NA | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 | 4.3 |
| **Kenosha** | 24.0 | 11.7 | 18.6 | 25.9 | 30.3 | 13.6 | 4.6 | 14.0 | 22.8 | 8.3 | 15.3 | 6.6 | 7.1 | 9.6 | 14.5 |
| **Kewaunee** | 10.9 | 33.2 | 8.1 | 15.3 | 15.3 | 20.9 | 10.2 | 5.9 | 0.0 | 2.8 | 5.1 | 11.3 | 30.0 | 6.9 | 19.8 |
| **Manitowoc** | 16.3 | 18.9 | 16.1 | 16.1 | 34.6 | 18.5 | 11.6 | 11.9 | 10.6 | 9.1 | 6.6 | 15.8 | 19.2 | 23.5 | 34.3 |
| **Milwaukee** | 26.1 | 19.4 | 25.1 | 18.6 | 24.6 | 25.3 | 15.9 | 19.2 | 26.1 | 9.2 | 16.3 | 17.8 | 15.0 | 11.9 | 16.2 |
| **Ozaukee** | 22.9 | 6.4 | 26.1 | 14.3 | 17.2 | 11.7 | 5.8 | 14.4 | 8.5 | 2.0 | 8.8 | 4.8 | 12.9 | 3.4 | 4.8 |
| **Racine** | 0.7 | 6.8 | 8.8 | 12.4 | 17.2 | 8.3 | 8.2 | 15.0 | 9.5 | 6.0 | 10.9 | 8.9 | 11.0 | 10.6 | 11.5 |
| **Sheboygan** | 22.7 | 8.2 | 17.1 | 17.1 | 14.1 | 8.6 | 4.9 | 5.1 | 16.1 | 3.8 | 3.3 | 6.8 | 5.3 | 4.9 | 16.0 |
| **Coastal Average** | **12.4** | **11.8** | **14.4** | **11.0** | **18.1** | **12.6** | **10.0** | **10.3** | **12.1** | **5.7** | **7.8** | **7.9** | **10.1** | **9.3** | **14.0** |

Shore Bubbles | Bill Carroll

## Lake Michigan

Ninety beaches in nine counties were monitored along Lake Michigan in 2024. Marinette and Oconto County beaches are designated Tier 4 with no monitoring and do not receive BEACH Act funding. Maps for all Lake Michigan beaches can be found on the DNR beaches webpage. There were 818 beach action days in 2024, compared to 485 in 2023.




***Brown County***

This was the 7th year of monitoring at Bayshore County Park, which was added to the list of monitored beaches in 2019 because of its high use. There were no *E. coli* exceedances, nor closures due to algae blooms, at Bayshore Beach during the 2024 season.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Brown | 30 | 0 | 0 | 0 | 0.0 | 0.0 |
| Bayshore Park Beach | 15 | 0 | 0 | 0 | 0.0 | 0.0 |
| Sunset Beach Road | 15 | 0 | 0 | 0 | 0.0 | 0.0 |

***Door County***

Door County, with 12 Tier 1 beaches, has the highest number of coastal beaches in the state, making it one of the most popular summer tourist destinations in Wisconsin. Door County places an emphasis on regular monitoring, contracting with UW-Oshkosh to regularly test 32 of 54 coastal beaches throughout the summer. In 2024, Door County added 9 BEACH Act beaches to its

monitoring schedule, bringing the total to 41. As with past years, the county used a combination of BEACH Act support and local funding to implement their program. There were 102 beach action days compared to 74 in 2023, due mainly to the higher number of exceedances at Otumba Park Beach, Haines Park Beach, LaSalle Park Beach, and Sand Bay Beach 1.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| **Door** | **1336** | **102** | **96** | **26** | **7.2** | **1.9** |
| Anclam Park Beach | 43 | 1 | 1 | 0 | 2.3 | 0.0 |
| Baileys Harbor Ridges Park Beach | 54 | 2 | 2 | 0 | 3.7 | 0.0 |
| Bittersweet Lane Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Clay Banks Beach 2 | 28 | 2 | 2 | 1 | 7.1 | 3.6 |
| County Tt Beach | 15 | 1 | 1 | 1 | 6.7 | 6.7 |
| Deer Path Lane Beach | 13 | 0 | 0 | 0 | 0.0 | 0.0 |
| Egg Harbor Beach | 56 | 4 | 4 | 0 | 7.1 | 0.0 |
| Ellison Bay Town Park Beach | 56 | 1 | 1 | 0 | 1.8 | 0.0 |
| Ephraim Beach | 59 | 7 | 7 | 2 | 11.9 | 3.4 |
| Europe Bay Beach 1 | 42 | 1 | 1 | 0 | 2.4 | 0.0 |
| Europe Bay Beach 3 | 42 | 0 | 0 | 0 | 0.0 | 0.0 |
| Fish Creek Beach | 58 | 8 | 8 | 1 | 13.8 | 1.7 |
| Gislason Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Goldenrod Lane Beach | 15 | 1 | 1 | 1 | 6.7 | 6.7 |
| Haines Park Beach | 31 | 8 | 5 | 1 | 16.1 | 3.2 |
| Hemlock Lane Beach | 15 | 1 | 0 | 0 | 0.0 | 0.0 |
| Hotz Memorial Park (Europe Bay #2) | 34 | 3 | 2 | 1 | 5.9 | 2.9 |
| Jackson Harbor Ridges - Wi | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Lakeshore Drive Beach Door | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Lakeside Park Beach | 47 | 6 | 5 | 2 | 10.6 | 4.3 |
| Lily Bay Boat Launch Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Murphy Park Beach | 54 | 0 | 0 | 0 | 0.0 | 0.0 |
| Newport Bay Beach | 55 | 2 | 2 | 0 | 3.6 | 0.0 |
| Nicolet Beach | 53 | 3 | 3 | 1 | 5.7 | 1.9 |
| Otumba Park Beach | 54 | 25 | 25 | 8 | 46.3 | 14.8 |
| Pebble Beach Road Door | 13 | 0 | 0 | 0 | 0.0 | 0.0 |
| Percy Johnson Memorial Park Beach | 4 | 0 | 0 | 0 | 0.0 | 0.0 |
| Portage Park Beach | 28 | 0 | 0 | 0 | 0.0 | 0.0 |
| Potawatomi State Park Beach 1 | 41 | 1 | 1 | 0 | 2.4 | 0.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Robert E Lasalle Park | 31 | 6 | 6 | 2 | 19.4 | 6.5 |
| Rock Island State Park Beach | 13 | 0 | 0 | 0 | 0.0 | 0.0 |
| Sand Bay Beach 1 | 34 | 8 | 8 | 4 | 23.5 | 11.8 |
| Sand Dune Beach | 15 | 1 | 1 | 0 | 6.7 | 0.0 |
| Sandy Bay Town Park Beach | 27 | 0 | 0 | 0 | 0.0 | 0.0 |
| School House Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Sister Bay Beach | 55 | 2 | 2 | 0 | 3.6 | 0.0 |
| Sturgeon Bay Ship Canal Nature Preserve | 42 | 2 | 2 | 0 | 4.8 | 0.0 |
| Sunset Beach Fish Creek | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Sunset Park Beach Sturgeon Bay | 43 | 6 | 6 | 1 | 14.0 | 2.3 |
| Whitefish Bay Boat Launch Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Whitefish Dunes Beach | 54 | 0 | 0 | 0 | 0.0 | 0.0 |


Whitefish Dunes SP | Adam Smith

***Kenosha County***

BEACH Act monitoring for Kenosha County beaches continues to be done through an assistance agreement with the City of Racine Public Health Department. Lakeshore Park North and Prairie Shores Beaches were historically monitored as north and south stations of what was known locally

as Lakeshore Drive Beach. High water levels on Lake Michigan precluded monitoring from 2020 through 2022. At the request of Kenosha County, when water levels subsided in 2023 monitoring recommenced at Prairie Shores Beach, but not Lakeshore Park North. The number of beach action days in Kenosha County increased from 30 in 2023 to 42 in 2024, with the largest increases at Pennoyer Park and Simmons Island.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Kenosha | 193 | 42 | 28 | 7 | 14.5 | 3.6 |
| Alford Park Beach | 26 | 2 | 0 | 0 | 0.0 | 0.0 |
| Eichelman Beach | 43 | 9 | 6 | 2 | 14.0 | 4.7 |
| Pennoyer Park Beach | 34 | 13 | 9 | 3 | 26.5 | 8.8 |
| Prairie Shores Beach | 16 | 2 | 2 | 2 | 12.5 | 12.5 |
| Simmons Island Beach | 46 | 11 | 9 | 0 | 19.6 | 0.0 |
| Southport Park Beach | 28 | 5 | 2 | 0 | 7.1 | 0.0 |

***Kewaunee County***

Sampling and analyses for Kewaunee and Manitowoc Counties are contracted with UW – Oshkosh. Two of the 5 Kewaunee County beaches were monitored in 2024. Pioneer and Selner Parks are separated by one city lot, and this proximity combined with the higher usage of Selner Park caused Kewaunee County Public Health Department to use the monitoring results from Selner Park to post advisories at Pioneer Park Beach. After falling from a 10-year high of 30% in 2022 to 7% in 2023, the percent exceedances increased back to 20% in 2024.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Kewaunee | 111 | 41 | 22 | 7 | 19.8 | 6.3 |
| Crescent Beach | 57 | 13 | 12 | 4 | 21.1 | 7.0 |
| Selner Park/Pioneer | 54 | 11 | 10 | 3 | 18.5 | 5.6 |

***Manitowoc County***

UW – Oshkosh monitored 11 of 17 beaches in 2024, including Lakefront Park Beach (formerly Warmwater Beach), which was added to the Beach List in 2021 and monitored weekly. At the request of Manitowoc County Health Department, the shoreline at Memorial Drive/Mariner's Trail at Waldo was designated as "open" but remained unmonitored.

There was a large increase in beach action days: 231 in 2024 compared to 137 in 2023. Every beach except Neshotah showed more exceedances. Exceedances at Blue Rail Marina, which was added to the Impaired Waters 303(d) List in 2024, increased from 31% of samples to nearly 54%.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Manitowoc | 496 | 231 | 170 | 39 | 34.3 | 7.9 |
| Blue Rail Marina Beach | 65 | 35 | 35 | 9 | 53.8 | 13.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Fischer Park Beaches | 41 | 34 | 16 | 5 | 39.0 | 12.2 |
| Hika Park Bay | 41 | 43 | 19 | 5 | 46.3 | 12.2 |
| Lakefront Park Beach | 65 | 32 | 32 | 9 | 49.2 | 13.8 |
| Memorial Drive Parkway | 58 | 10 | 10 | 1 | 17.2 | 1.7 |
| Memorial Drive Thiede | 56 | 8 | 8 | 1 | 14.3 | 1.8 |
| Neshotah Beach | 57 | 8 | 8 | 2 | 14.0 | 3.5 |
| Point Beach State Forest – Concession Stand Beach | 46 | 10 | 10 | 1 | 21.7 | 2.2 |
| Point Beach State Forest - Lakeshore Picnic Area Beach* | 46 | 10 | 10 | 1 | 21.7 | 2.2 |
| Point Beach State Forest - Lighthouse Picnic Area Beach* | 46 | 10 | 10 | 1 | 21.7 | 2.2 |
| Red Arrow Park Beach Manitowoc | 67 | 31 | 32 | 6 | 47.8 | 9.0 |

* Composite sampling was approved for Point Beach based on statistical assessment of the water quality data.

Neshotah Beach Grooming | Michael Henderson.

***Milwaukee County***

Multiple government jurisdictions have responsibility for monitoring and making public health decisions for Milwaukee County beaches. Eleven beaches were open for the 2024 season. There were 260 beach action days compared to 115 in 2023, but 136 days were due to physical hazards at the beaches unrelated to *E. coli*.

The City of Milwaukee continued its partnership with UW – Milwaukee to monitor Bradford, South Shore, McKinley and Watercraft beaches. McKinley Beach re-opened for the 2024 season after construction to address recreational safety at that location. Bradford and McKinley Beaches were preemptively issued advisories for 9 days due to rainfall, while South Shore Beach was under a rainfall advisory for 3 days. Bradford, McKinley, and South Shore beaches were each closed for 8 days due to dangerous waves and currents. *E. coli* exceedances at South Shore increased 30% relative to 2023. That location was permanently closed at the end of the season, and construction of the new swimming beach at the "rocky beach" area to the south commenced in late 2024 as a management action to address the Beach Closings Beneficial Use Impairment (BUI) in the Milwaukee Estuary Area of Concern. Watercraft Beach, however, was only sampled for the first month and then remained open but unmonitored at the request of the City of Milwaukee Health Department. The jet ski rental ceased operations at that location, and without use the area collected large amounts of surface algae making sampling problematic.

Northshore Health Department is responsible for monitoring northern Milwaukee County beaches (Atwater, Klode, and Doctor's Park). In 2024 the health department began monitoring at Big Bay Beach but closed it on June 10th when a sinkhole appeared at the park entrance. Repairs were not done during the beach season, resulting in an 85-day closure. Klode Park Beach was closed by the Village of Whitefish Bay for two days August 8-9 for slope stabilization work, then again on August 12-14 for a stormwater project. This initial 3-day closure stretched through the rest of the beach season, resulting in 26-days of closure.

Bay View, Bender, and Grant Park beaches in the South Milwaukee/Oak Park jurisdictions were monitored through an arrangement with the City of Racine Public Health Department. These beaches experienced 2-6 beach action days compared to 0-3 in 2023.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Milwaukee | 297 | 260* | 48 | 19 | 16.2 | 6.4 |
| Atwater Park Beach | 28 | 4 | 1 | 0 | 3.6 | 0.0 |
| Bay View Park Beach | 17 | 2 | 2 | 2 | 11.8 | 11.8 |
| Bender Beach | 32 | 6 | 5 | 1 | 15.6 | 3.1 |
| Big Bay Park Beach | 4 | 85 | 0 | 0 | 0.0 | 0.0 |
| Bradford Beach | 43 | 23 | 3 | 2 | 7.0 | 4.7 |
| Grant Park Beach | 32 | 5 | 4 | 0 | 12.5 | 0.0 |
| Klode Park Beach | 21 | 30 | 1 | 0 | 4.8 | 0.0 |
| McKinley Beach | 43 | 28 | 6 | 2 | 14.0 | 4.7 |
| South Shore Beach | 43 | 63 | 24 | 12 | 55.8 | 27.9 |
| Tietjen Beach/ Doctor's Park | 28 | 7 | 2 | 0 | 7.1 | 0.0 |
| Watercraft Beach | 6 | 7 | 0 | 0 | 0.0 | 0.0 |

*135 days due to physical hazards at beaches.

Kites at Bradford Beach | Dawn Omernik-Nimmer

***Ozaukee County***

The Ozaukee-Washington Health Department (OWHD) monitors five beaches including two in Harrington Beach State Park. There were fewer beach action days in 2024 than 2023. Harrington State Park Beaches were sampled on two consecutive days each week and not re-sampled after exceedances, which lead to two 6-day advisories at Harrington South.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Ozaukee | 166 | 22 | 8 | 3 | 4.8 | 1.8 |
| Concordia University | 15 | 6 | 1 | 0 | 6.7 | 0.0 |
| Harrington State Park - North | 53 | 1 | 2 | 2 | 3.8 | 3.8 |
| Harrington State Park - South | 54 | 13 | 3 | 0 | 5.6 | 0.0 |
| South Beach | 27 | 1 | 1 | 0 | 3.7 | 0.0 |
| Upper Lake Park (aka North Beach) | 17 | 1 | 1 | 1 | 5.9 | 5.9 |

Sandpiper Shoreline Stroll | Wendi Huffman

***Racine County***

The City of Racine places a high priority on monitoring its beaches and uses rapid methods and multiple tools to determine water quality conditions. Racine typically uses a weight of evidence approach at North and Zoo beaches that includes sanitary surveys, *E. coli* testing, qPCR and Nowcasting. Twenty-five of the beach action days at North Beach and at Zoo Beach were due to dangerous currents and nearshore conditions forecast by the National Weather Service or observed by lifeguards.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Racine | 182 | 66 | 21 | 5 | 11.5 | 2.7 |
| Myers Park Beach | 15 | 2 | 2 | 0 | 13.3 | 0.0 |
| North Beach | 70 | 31 | 8 | 1 | 11.4 | 1.4 |
| Parkway Beach | 13 | 0 | 0 | 0 | 0.0 | 0.0 |
| Wind Point Lighthouse Beach | 15 | 2 | 2 | 0 | 13.3 | 0.0 |
| Zoo Beach | 69 | 31 | 9 | 4 | 13.0 | 5.8 |

***Sheboygan County***

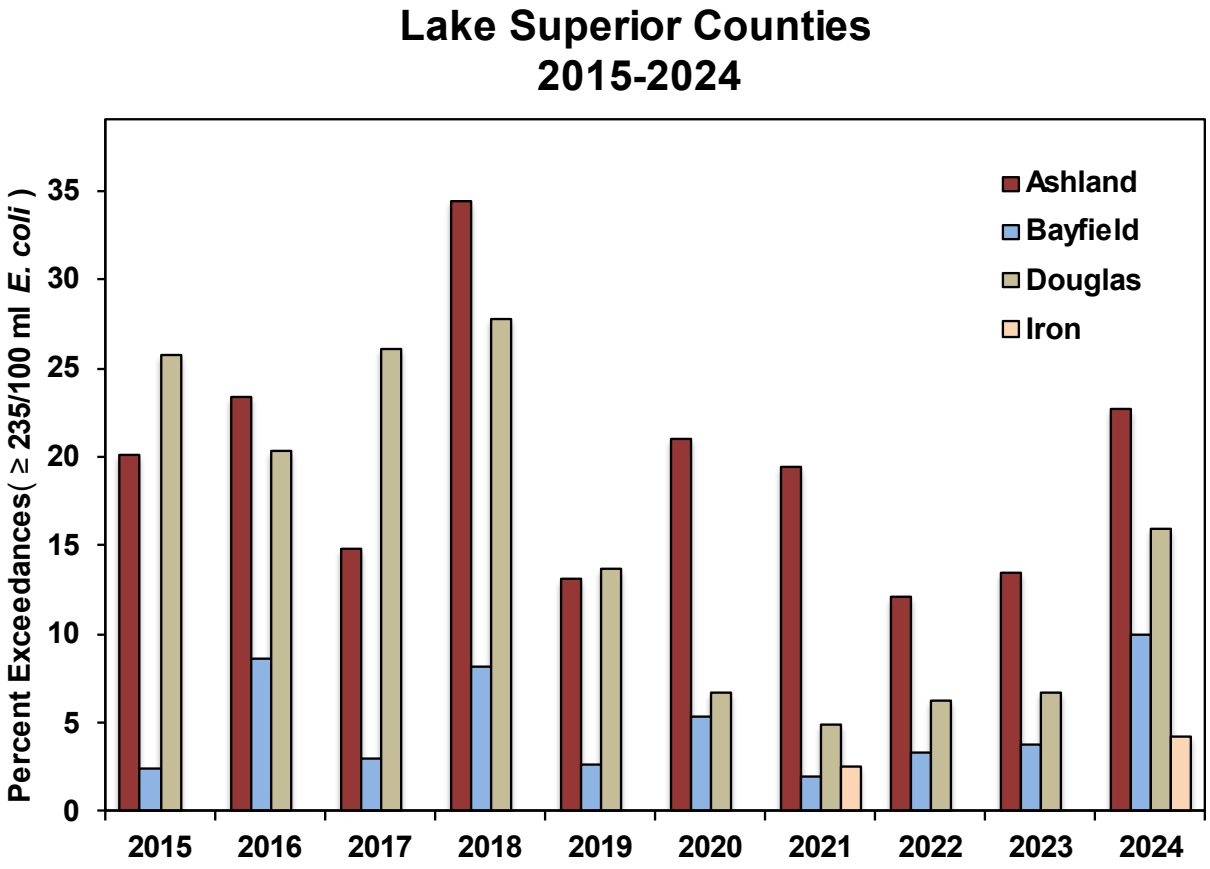
Sheboygan County monitors 7 of 14 coastal beaches including two at Kohler-Andrae State Park. The overall numbers of *E. coli* exceedances and beach action days have remained under 10% for the last 10 years, except for 2018 and 2024, when they spiked to 16%.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Sheboygan | 231 | 55 | 37 | 6 | 16.0 | 2.6 |
| Amsterdam Beach | 19 | 5 | 3 | 0 | 15.8 | 0.0 |
| Blue Harbor Beach | 33 | 4 | 5 | 1 | 15.2 | 3.0 |
| Deland Park Beach | 36 | 10 | 8 | 0 | 22.2 | 0.0 |
| General King Park Beach | 34 | 6 | 5 | 1 | 14.7 | 2.9 |
| Kite Surfing Area - Clara Ave | 18 | 4 | 3 | 1 | 16.7 | 5.6 |
| Kohler Andrae State Park North/Nature Center Beach | 45 | 13 | 6 | 2 | 13.3 | 4.4 |
| Kohler Andrae State Park Picnic Beach North and South | 46 | 13 | 7 | 1 | 15.2 | 2.2 |

Dune Grass Sunrise, Kohler - Andrae | Gwen Saer

## Lake Superior

While storms continue to be an issue in Lake Superior, beaches were open and monitored during the 2024 season. All counties saw an increase in the number of beach action days compared with 2023. Maps for all Lake Superior beaches can be found on the DNR beaches webpage.




***Ashland County***

Coastal beach monitoring in Ashland County is contracted with Northland College with approval of Ashland County Health and Human Services. At the request of Northland and Ashland County, Maslowski Beaches was split into two Tier 2 beaches, Maslowski East and West, in 2024. A special project begun in 2020 collected data from two stations at Maslowski Beaches and posted the status based upon the higher *E. coli* reading. Each beach has a separate parking lot and is accessed from a different location, with a rocky promontory separating them. Comparing 4 years of data showed that there were 13 sample days on which one beach was open while the other was under advisory or closure, so treating the areas as separate beaches would have allowed several more open beach days per season. The number of beach action days more than doubled in Ashland County from 2023 to 2024, partly due to the addition of Maslowski West Beach to the list but also to much higher *E. coli* exceedances and 8 preemptive advisories due to rainfall.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Ashland | 150 | 101 | 34 | 10 | 22.7 | 6.7 |
| 6th Ave W Beach | 30 | 16 | 6 | 3 | 20.0 | 10.0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bayview Park Beach | 29 | 21 | 6 | 2 | 20.7 | 6.9 |
| Kreher Park Beach | 33 | 19 | 9 | 2 | 27.3 | 6.1 |
| Maslowski East | 28 | 15 | 3 | 1 | 10.7 | 3.6 |
| Maslowski West | 30 | 30 | 10 | 2 | 33.3 | 6.7 |

Beachgoers Little Sand Bay | Pam Buss

***Bayfield County***

Bayfield County received BEACH Act funding to monitor 15 beaches. The number of *E. coli* exceedances increased from 10 in 2023 to 35 in 2024, and beach action days increased from 37 to 86. Only 4 beaches had any exceedances in 2023, while 12 beaches exceeded action values in 2024.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Bayfield | 353 | 86 | 35 | 12 | 9.9 | 3.4 |
| Broad Street Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Herbster Beach - Clover Town Park Beach | 30 | 6 | 3 | 0 | 10.0 | 0.0 |
| Herbster Beach West - Fisherman's Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Little Sand Bay Beach | 14 | 7 | 1 | 1 | 7.1 | 7.1 |
| Memorial Park Beach Washburn | 31 | 13 | 5 | 2 | 16.1 | 6.5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Port Wing Beach East | 15 | 5 | 2 | 0 | 13.3 | 0.0 |
| Port Wing Beach West | 15 | 5 | 2 | 1 | 13.3 | 6.7 |
| Sioux River Beach North | 28 | 5 | 1 | 0 | 3.6 | 0.0 |
| Sioux River Beach South | 29 | 7 | 3 | 0 | 10.3 | 0.0 |
| Siskiwit Bay Beach East | 28 | 5 | 1 | 1 | 3.6 | 3.6 |
| Siskiwit Bay Beach West | 30 | 8 | 4 | 1 | 13.3 | 3.3 |
| Thompson West End Park Beach | 32 | 16 | 8 | 2 | 25.0 | 6.3 |
| Washburn Marina Beach | 29 | 1 | 1 | 1 | 3.4 | 3.4 |
| Washington Avenue Beach | 14 | 0 | 0 | 0 | 0.0 | 0.0 |
| Wikdal Memorial Boat Launch Beach | 30 | 8 | 4 | 3 | 13.3 | 10.0 |

***Douglas County***

In recent years monitoring at Douglas County beaches has been performed by the Lake Superior Research Institute at UW-Superior, with approval from Douglas County Health and Human Services. Departure of staff at LSRI left them without capacity to carry out the monitoring program in 2024. Multiple alternatives were examined, and the result was that DNR field staff collected samples and posted signs as an extension of their nearshore monitoring activities in Douglas County, and the Health Department analyzed the samples and posted the results to the Beach Health database. Beach Act funds were only used to reimburse the Health Department for analysis costs.

Although the number of beach action days at Wisconsin Point beaches had remained low following the completion of restoration work in 2019, in 2024 the number of *E. coli* exceedances doubled from 2023. Because Wisconsin Point beaches were only sampled weekly, with no resampling after exceedances due to lack of capacity, this led to multiple week-long advisories or closures.

| **County/Beach** | **Samples Collected** | **Beach Action Days** | ***E. coli* Exceedances (>235)** | ***E. coli* Closures (>1000)** | **% Exceedances** | **% Closures** |
|---|---|---|---|---|---|---|
| Douglas | 94 | 77 | 15 | 5 | 16.0 | 5.3 |
| Barker's Island Inner Beach | 25 | 21 | 5 | 1 | 20.0 | 4.0 |
| Wisconsin Point Dutchman Creek | 14 | 22 | 3 | 2 | 21.4 | 14.3 |
| Wisconsin Point Lighthouse (# 5) | 13 | 11 | 1 | 1 | 7.7 | 7.7 |
| Wisconsin Point Lot 1 (#1) | 14 | 14 | 3 | 1 | 21.4 | 7.1 |
| Wisconsin Point Lot 3 (formerly Lot 12) | 14 | 7 | 2 | 0 | 14.3 | 0.0 |
| Wisconsin Point Lot 4 (SE of Breakwater) | 14 | 2 | 1 | 0 | 7.1 | 0.0 |

***Iron County***

Iron County beaches were rebuilt following storm damage in 2016 and re-opened in 2019. Since then, water quality has been excellent. In this sixth full year post-restoration, there were only 2 *E. coli* exceedances, at Saxon Harbor Marina, a new "beach" established at the request of the Iron County Health Department in 2023.

| County/Beach | Samples Collected | Beach Action Days | *E. coli* Exceedances (>235) | *E. coli* Closures (>1000) | % Exceedances | % Closures |
|---|---|---|---|---|---|---|
| Iron | 47 | 2 | 2 | 0 | 4.3 | 0.0 |
| Saxon Harbor Beach East | 15 | 0 | 0 | 0 | 0.0 | 0.0 |
| Saxon Harbor Beach West | 15 | 0 | 0 | 0 | 0.0 | 0.0 |
| Saxon Harbor Marina | 17 | 2 | 2 | 0 | 11.8 | 0.0 |

Little Sand Bay Sunset | Andrew Jalbert

## Funding Priorities and Budget

Funding for monitoring considered the beach priority (Tier), ability to leverage other funding or partnership arrangements, locations with operational Nowcasts, travel considerations, and status on the 303(d) impaired waters list. A high priority for funding continued to be upgrading and maintaining the Wisconsin Beach Health database and website, a central tool for notifying the public about beach conditions and managing the data reported to EPA as required by the BEACH grant. State funds supplement the BEACH Act funding to cover operational costs and provide access to the site for inland counties who report their monitoring data voluntarily. Several counties supplement their BEACH grant funding to increase the number of beaches monitored or sample beyond the minimum frequency specified by their contract. The budget spending was in line with what was presented in the workplan.

## Lessons Learned and Improvement Opportunities

Multiple organizations (e.g. parks, public works, public health, transportation) are involved in beach management or have operations that affect water quality at the beach. Their operations and budgets may not be connected on the local level which may require extra coordination and communication. Through Wisconsin statutes, public health departments have the authority to issue advisories and closures based on conditions at the beaches. Beach program operations and communications must consider those authorities and relationships.

The need to navigate these relationships was evident in 2024 with the interest in purchasing electronic signs. Each jurisdiction operates independently, and the responsibilities for beach management and parameters for beach monitoring are not always apparent to all parties or the public. Several issues were noted during discussions with the involved parties:

- Municipalities may not realize that local public health departments are monitoring the beaches and that they have statutory authority to post closures.
- Municipalities or parks departments may be reluctant to post beach signs or close beaches because they fear public opposition or loss of tourist business.
- Municipalities or parks departments may fear liability if they post a sign warning of a hazard at a specific beach and a member of the public is injured or sickened at a different beach or by a different hazard than posted.
- Parties may not be aware of BEACH Act notification requirements under which the health departments operate as a condition of grant funding for monitoring.
- Parties desire consistency in messaging to avoid public confusion but also want signs to be tailored to specific beaches or aesthetics.

Other ongoing challenges are the increasing costs of labor, instrumentation, and testing materials, coupled with the relatively flat funding available from the BEACH grants over the years. For the 24 years since the first annual awards in 2002, the mean award amount is $223,893, +/- $11,275. In the early years of the program beaches were monitored more frequently and there was still funding available for investigations such as source tracking and sanitary surveys to improve beach health. Currently there are sufficient funds only for monitoring and limited sanitary surveys. Some municipalities are able to contribute their own funding, e.g. from tax levies, to supplement the BEACH act funds. Jurisdictions with fewer resources are forced to monitor fewer beaches and/or monitor less frequently.

Life Preserver Sunrise | Linda Olig