



Wisconsin's Great Lakes Beach Monitoring & Notification Program 2021 Beach Season Summary



**Office of Great Waters
Wisconsin Department of Natural Resources
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Madison, Wisconsin, 53703**

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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 Department	Kewaunee County Health Department
Bayfield County Health Department	Manitowoc County Health Department
City of Milwaukee Health Department	North Shore/Shorewood Health Department
Door County Health Department	Ozaukee County Health Department
Douglas County Health Department	City of Racine Public Health Department
Iron County Health Department	Sheboygan County Human Services
Kenosha County Division of Health	South Milwaukee Health Department

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2021 Beach Season: Program Highlights

Wisconsin's Great Lakes Beach Monitoring & Notification Program has operated since 2002 making the summer of 2021 its nineteenth 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 posted on the DNR website with specific notes of program changes. This includes the following:

- Are there coastal beaches missing from the list (e.g. new parks with beach areas)?
- Is the location for the beach and its measurements correct?
- Have conditions surrounding the beach changed (e.g. restoration, drainage, water levels)?
- How is the water quality? Do we have historical data?
- How many people use the beach? What do local people call (name) the beach?
- 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.



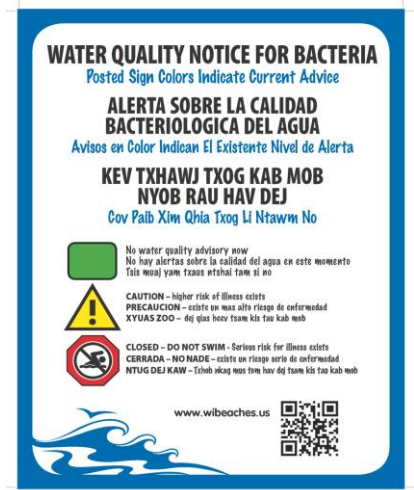
The federal fiscal year 2020 BEACH Act grant of \$213,000 from the United States Environmental Protection Agency (USEPA) supported monitoring and public notification programs in 12 of the 15 coastal counties in 2021. The 2021 beach list identified 191 coastal beaches extending 59.5 beach miles. The BEACH grant funded public notification of water quality conditions at 103 locations and all 24 Tier 1 beaches participated in the program. Basic sanitary survey information, *E. coli* results, and the status of the beach (open, advisory, or closure) were posted to the Wisconsin Beach Health website (www.wibeaches.us). Various communities supplemented their allocated funding to intensify monitoring, investigate contaminant sources through sanitary surveys or source identification through DNA testing, and evaluate effectiveness of restorations.

Wisconsin's Great Lakes Beach Monitoring & Notification Program relies on local public health organizations along the coastline for primary outreach and communication. These organizations are the primary point of contact for answering questions and responding to requests for information about beach water quality. However, on-the-ground beach management is often the purview of parks departments, which coordinate closely with local public health organizations. 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, our 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.

During the winter of 2020-2021, Wisconsin Department of Natural Resources (DNR) took over management and ownership of the Beach Health website and database. During this process, the database and user interface was completely redesigned to enhance functionality for users. DNR contractors transferred all historical records from the United States Geological Survey (USGS) into a system with new architecture on DNR servers. Contractors also redesigned the user interface to increase functionality and be more intuitive for users. DNR beach managers redesigned the Beach Health website providing new information about monitoring and reporting. After extensive testing, including by users at health departments, universities, and other entities, the website and data portal were live for the start of the 2021 beach season. DNR produced a user guide and video for the data entry portal and worked with users throughout the season to assist with data entry, refine the system, and address issues. In late 2021 and 2022, DNR worked with EPA to adapt and refine the data reporting files to accommodate the new system structure. This work was completed with BEACH Act funds and Great Lakes Protection Fund money provided by the DNR's Office of Great Waters. The Beach Program would like to thank the DNR staff, IT contractors, USGS, EPA, and website testers that made the transition to the new Beach Health website and database so successful.

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 mL or conditions indicate that an advisory is warranted (e.g. after a rain event). The red beach closure signs are posted when conditions indicate that conditions are 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, toxins present, or dangerous (rip) current warnings are in effect.



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.

Monitoring Summary Results

Summary data in this section provides information for each county and statewide (Table 3) 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. As a function of Wisconsin's prioritizing monitoring at impaired waters and more intensive monitoring at beaches with higher numbers of exceedances, our monitoring program is 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. As a result, the frequency with which samples exceed the water quality criteria may not be the same as what beach visitors experience. Advisories or closures remain in effect until the next monitoring or modeling result indicate that water quality has improved.

Table 3. 2021 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*	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ashland	4	134	92	26	14	19.4	10.4
Bayfield	11	251	13	5	3	2.0	1.2
Brown	1	14	19	0	0	0.0	0.0
Door	32	1071	47	43	11	4.0	1.0
Douglas	6	103	5	5	0	4.9	0.0
Iron	3	40	1	1	0	2.5	0.0
Kenosha	5	166	11	11	5	6.6	3.0
Kewaunee	2	106	12	12	2	11.3	1.9
Manitowoc	11	336	129	53	11	15.8	3.3
Milwaukee	9	258	123	46	11	17.8	4.3
Ozaukee	4	166	20	8	2	4.8	1.2
Racine	5	179	24	16	4	8.9	2.2
Sheboygan	7	207	20	14	2	6.8	1.0
Grand total	103	3031	516	241	65	7.9	2.1

*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 considered and approved for Point Beach based on statistical assessment of the water quality data.

In 2021 eight of 13 counties monitored along both Lake Superior and Lake Michigan coasts experienced the same or fewer *E. coli* exceedances than in 2020, and there was only a slight increase in the percentage of exceedances overall. However, there was an appreciable increase in the number of beach action days: 516 days in 2021 compared to 420 in 2020. This increase occurred mainly in the Lake Michigan Counties and may be reflective of the increased number of beaches monitored and the increased numbers of beach closures for algal blooms, rainfall events, and dangerous currents.

Table 4. Historic Summary of Percentages that exceed the advisory level of 235 CFU/100mL

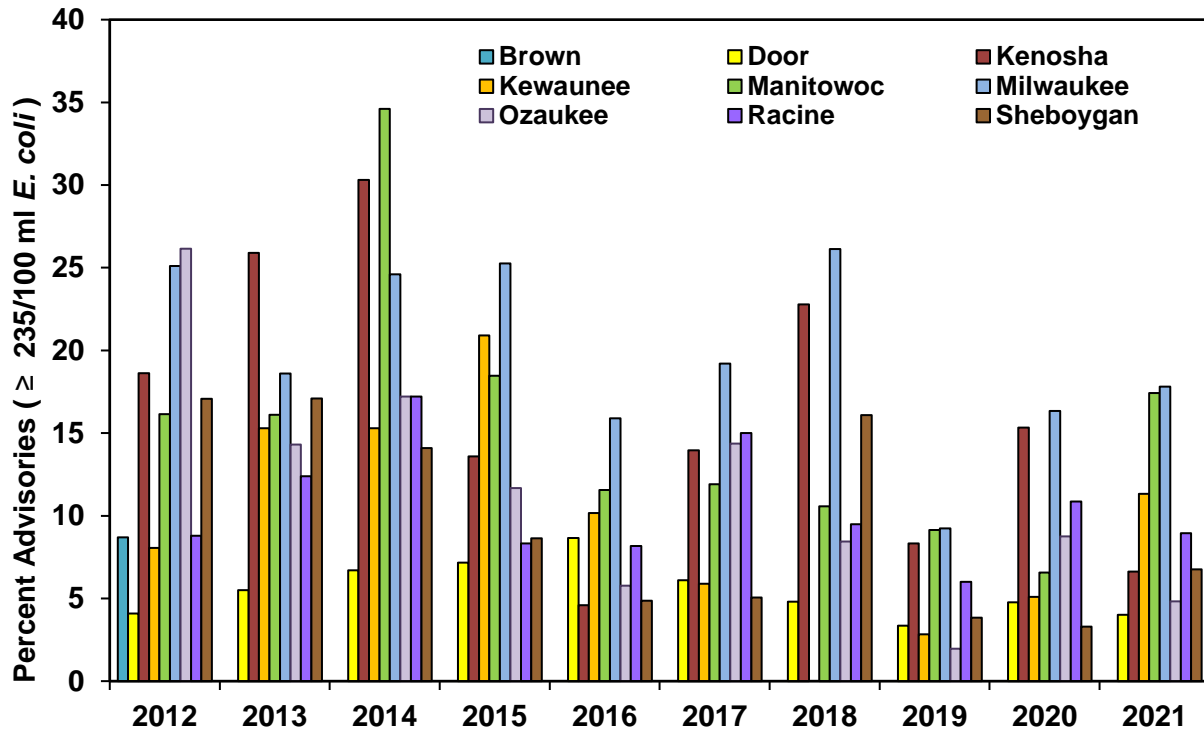
Blue highlighted cells indicate fewer beach action days in 2021 compared to 2020

COUNTY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ashland	10.2	4.6	3.5	3.8	3.3	4.0	5.8	8.9	13.1	18.8	20.6	20.1	23.4	14.9	34.4	13.1	21.0	19.4
Bayfield	2.2	4.3	7.1	7.1	3.1	0.8	5.8	8.0	5.2	4.0	5.6	2.4	8.6	2.9	8.2	2.6	5.4	2.0
Brown	2.0	1.8	0.0	4.5	0.0	5.2	5.9	2.1	8.7	0.0	NA	NA	NA	NA	NA	0.0	0.0	0.0
Door	8.2	6.9	7.3	4.8	6.3	8.1	4.7	6.0	4.1	5.5	6.7	7.2	8.7	6.1	4.8	3.3	4.8	4.0
Douglas	11.8	23.7	12.9	11.3	18.8	1.5	18.4	23.3	29.7	12.0	29.8	25.7	20.3	26.1	27.7	13.6	6.7	4.9
Iron	1.5	2.7	3.5	0.0	0.0	0.0	7.1	10.5	11.4	16.7	22.2	0.0	NA	NA	NA	0.0	0.0	2.5
Kenosha	36.3	31.9	29.9	32.2	31.7	23.5	24.0	11.7	18.6	25.9	30.3	13.6	4.6	14.0	22.8	8.3	15.3	6.6
Kewaunee	33.9	26.9	33.9	49.7	11.1	9.1	10.9	33.2	8.1	15.3	15.3	20.9	10.2	5.9	0.0	2.8	5.1	15.8
Manitowoc	40.1	20.4	54.4	31.7	31.3	5.3	16.3	18.9	16.1	16.1	34.6	18.5	11.6	11.9	9.8	9.1	6.6	17.8
Milwaukee	38.7	30.3	20.0	23.7	22.4	12.7	26.1	19.4	25.1	18.6	24.6	25.3	15.9	19.2	26.1	9.2	16.3	17.8
Ozaukee	28.9	12.9	17.1	27.6	24.0	4.8	22.9	6.4	26.1	14.3	17.2	11.7	5.8	14.4	8.5	2.0	8.8	4.8
Racine	17.6	7.4	6.9	6.7	6.7	6.4	0.7	6.8	8.8	12.4	17.2	8.3	8.2	15.0	9.5	6.0	10.9	8.9
Sheboygan	30.2	24.8	43.9	28.5	18.1	13.6	22.7	8.2	17.1	17.1	14.1	8.6	4.9	5.1	16.1	3.8	3.3	6.8
Coastal Average	22.2	15.7	17.5	17.1	14.4	7.3	12.4	11.8	14.4	11.0	18.1	12.6	10.0	10.3	12.2	5.7	7.8	7.9

Lake Michigan

Seventy-six beaches in nine counties were monitored along Lake Michigan in 2021 compared to seventy-two in 2020. Marinette and Oconto County beaches are identified in Tier 4 with no monitoring and do not receive BEACH Act funding. Maps for all Lake Michigan beaches can be found on the [WDNR beaches webpage](#). There were 405 beach action days in 2021, compared to 288 in 2020. Most of the increase was due to *E. coli* exceedances in Manitowoc County.

Lake Michigan Counties 2012-2021



Brown County

Brown County beach tier placement was re-evaluated in 2019 as part of the annual evaluation. Because of its high use, WDNR in collaboration with Brown County Public Health Department added Bayshore County Park to the list of monitored beaches. This was the third year of monitoring at this beach. There were no *E. coli* exceedances at Bayshore Beach during the 2021 season, but there was a 19-day beach closure due to an algae bloom.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Brown	14	19	0	0	0.0	0.0
Bayshore Park Beach	14	19	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, regularly testing 32 of 54 coastal beaches on the peninsula as well as Washington and Rock Islands throughout the summer. As with past years, the county used a combination of BEACH Act support and local funding to implement their program. Rock Island State Park beach was closed in in 2020 due to the COVID-19 pandemic, but was re-opened and monitored in 2021. Door County beaches had 47 total beach action days, down from 50 in 2020, with 21 monitored beaches having no beach action days during the swimming season.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Door	1071	47	43	11	4.0	1.0
Anclam Park Beach	27	1	1	0	3.7	0.0
Baileys Harbor Ridges Park Beach	52	0	0	0	0.0	0.0
Clay Banks Beach 2	26	0	0	0	0.0	0.0
Egg Harbor Beach	54	3	3	0	5.6	0.0
Ellison Bay Town Park Beach	52	0	0	0	0.0	0.0
Ephraim Beach	55	4	4	1	7.3	1.8
Europe Bay Beach 1	27	0	0	0	0.0	0.0
Europe Bay Beach 3	27	0	0	0	0.0	0.0
Fish Creek Beach	56	15	13	1	23.2	1.8
Gislason Beach	13	0	0	0	0.0	0.0
Haines Park Beach	26	0	0	0	0.0	0.0
Hotz Memorial Park (Europe Bay #2)	27	0	0	0	0.0	0.0
Jackson Harbor Ridges	12	0	0	0	0.0	0.0
Lakeside Park Beach	28	0	0	0	0.0	0.0
Lily Bay Boat Launch Beach	14	0	0	0	0.0	0.0
Murphy Park Beach	53	6	6	1	11.3	1.9
Newport Bay Beach	50	1	1	1	2.0	2.0
Nicolet Beach	55	4	2	2	3.6	3.6
Otumba Park Beach	57	8	8	1	14.0	1.8
Percy Johnson Memorial Park Beach	13	0	0	0	0.0	0.0
Portage Park Beach	26	0	0	0	0.0	0.0
Robert E LaSalle Park	27	1	1	1	3.7	3.7
Rock Island State Park Beach*	14	1	1	1	7.1	7.1
Sand Bay Beach 1	27	0	0	0	0.0	0.0

Sand Dune Beach	12	0	0	0	0.0	0.0
Sandy Bay Town Park Beach	29	0	0	0	0.0	0.0
School House Beach	13	0	0	0	0.0	0.0
Sister Bay Beach	52	0	0	0	0.0	0.0
Sturgeon Bay Ship Canal Nature Preserve	26	0	0	0	0.0	0.0
Sunset Park Beach Sturgeon Bay	55	3	3	2	5.5	3.6
Whitefish Bay Boat Launch Beach	14	0	0	0	0.0	0.0
Whitefish Dunes Beach	52	0	0	0	0.0	0.0

Kenosha County

BEACH Act monitoring for Kenosha County beaches was done through an assistance agreement with the City of Racine. This arrangement enabled the program to provide funding to support summer staff required to do the sample collection. Prairie Shores Beach was converted to a natural area in 2020 and monitoring for that beach ended as a result. The beach is still accessible to the public as a recreational area. Lakeshore Park North remains on the beach list but was unmonitored because continuing high water levels on Lake Michigan limited safe access for both recreation and monitoring. Beach action days were down significantly from 2020.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Kenosha	166	11	11	5	6.6	3.0
Alford Park Beach	27	1	1	0	3.7	0.0
Eichelman Beach	42	3	3	2	7.1	4.8
Lakeshore Park North	NA	NA	NA	NA	NA	NA
Pennoyer Park Beach	28	2	2	1	7.1	3.6
Simmons Island Beach	40	2	2	1	5.0	2.5
Southport Park Beach	29	3	3	1	10.3	3.4

**Lakeshore Park North was inaccessible for 2021 due to high water levels on Lake Michigan.*



Kewaunee County

Kewaunee County monitored 2 of 5 coastal beaches in 2021. Pioneer Park, separated by one city lot from Selner Park, was added to the beach list in 2017. Kewaunee County Public Health Department indicated that more people visit and swim at Selner Park. Considering its proximity, Kewaunee chose to use the monitoring results from Selner Park to post advisories at Pioneer Park Beach. Sampling and analyses are contracted with the University of Wisconsin – Oshkosh and were conducted approximately 4 times per week for both beaches in 2021.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Kewaunee	106	12	12	2	11.3	1.9
Crescent Beach	55	7	7	2	12.7	3.6
Selner Park/Pioneer	51	5	5	0	9.8	0.0

Manitowoc County

Monitoring for Manitowoc County continues to be performed by University of Wisconsin – Oshkosh to monitor 11 of 17 beaches. During the 2021 beach season, Lakefront Park Beach (formerly Warmwater Beach) was added to the Beach List and was monitored weekly during the month of August. The beach at Memorial Drive/Mariner’s Trail at Waldo was closed for the season on June 30 because high water made access unsafe.

Beach action days increased from 18 in 2020 to 129 in 2021. Forty-seven days resulted from *E. coli* exceedences at the Fischer Park and Lakefront Park Beaches, which were not monitored in 2020. Hika Park Bay action days increased from 2 in 2020 to 41 in 2021, resulting from a number of multi-day advisories/closures (average 5.8 days) due to *E. coli* exceedences.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedences (>235)	<i>E. coli</i> Closures (>1000)	% Exceedences	% Closures
Manitowoc	336	129	54	11	17.4	3.5
Blue Rail Marina Beach	52	15	15	5	28.8	9.6
Fischer Park Beaches	26	38	9	3	34.6	11.5
Hika Park Bay	26	41	9	3	34.6	11.5
Lakefront Park Beach	5	12	1	0	20.0	0.0
Memorial Drive Mariners at Waldo	9	0	0	0	0.0	0.0
Memorial Drive Parkway	30	1	1	0	3.3	0.0
Memorial Drive Thiede	29	1	1	0	3.4	0.0
Neshotah Beach	52	6	6	0	11.5	0.0
Point Beach State Forest - Concession Stand Beach	NA	NA	NA	NA	NA	NA
Point Beach State Forest - Lakeshore Picnic Area Beach*	26	2	1	0	3.8	0.0
Point Beach State Forest - Lighthouse Picnic Area Beach*	26	2	1	0	3.8	0.0
Red Arrow Park Beach Manitowoc	55	11	11	0	20.0	0.0

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



“Passing Through” | Lorri Howski

Milwaukee County

Multiple government jurisdictions have responsibility for monitoring and making public health decisions for 13 Milwaukee County Great Lakes beaches. The City of Milwaukee continued its partnership with the University of Wisconsin – Milwaukee (UWM) to monitor Bradford, McKinley, South Shore, and Watercraft beaches. McKinley beach has dealt with rip current issues at the beach and it was closed and not monitored for the 2021 season. The County is working to address recreational safety at that location.

Bradford and South Shore Beaches experienced approximately the same number of advisories, but significantly more beach action days in 2021 than in 2020. Bradford Beach was not closed due to elevated bacteria, but did have a 4-day preemptive closure due to rainfall August 9-13. The 70 beach action days at South Shore Beach included a 12-day contamination advisory at the beginning of the season. South Shore also experienced the same preemptive closure for rainfall as Bradford Beach. The County has continued to evaluate and implement additional options for addressing the number of advisories at South Shore Beach.

Northshore Health Department is responsible for monitoring northern beaches (Atwater, Klode, and Doctor's Park). Bay View, Bender, and Grant Park beaches in the South Milwaukee jurisdiction were monitored through an arrangement with Racine Public Health.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Milwaukee	258	123	46	11	17.8	4.3
Atwater Park Beach	28	4	1	0	3.6	0.0
Bay View Park Beach	15	0	0	0	0.0	0.0
Bender Beach	31	5	4	2	12.9	6.5
Bradford Beach	41	13	4	0	9.8	0.0
Grant Park Beach	32	7	4	1	12.5	3.1
Klode Park Beach	29	12	4	0	13.8	0.0
McKinley Beach	NA	NA	NA	NA	NA	NA
South Shore Beach	40	70	27	7	67.5	17.5
Tietjen Beach/ Doctor's Park	27	5	1	0	3.7	0.0
Watercraft Beach	15	7	1	1	6.7	6.7



Ozaukee County

The Ozaukee-Washington Health Department (OWHD) monitors the 5 beaches listed in the table below. Upper Lake Park beach remained closed during the 2021 season because high water levels made access to and sampling of the beach unsafe, but the beach at Concordia University reopened. There was a significant decrease in the number of exceedances in 2021 compared to 2020, with most of this decrease associated with the drop in exceedances at Harrington State Park North beach.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ozaukee	166	20	8	2	4.8	1.2
Concordia University	27	0	0	0	0.0	0.0
Harrington State Park - North	56	9	4	1	7.1	1.8
Harrington State Park - South	56	8	3	1	5.4	1.8
South Beach	27	3	1	0	3.7	0.0
Upper Lake Park (aka North Beach)	NA	NA	NA	NA	NA	NA

* Upper Lake Park beach was inaccessible and unmonitored because of high Lake Michigan water levels.

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. Four action days at both North and Zoo beaches were closures due to dangerous currents and nearshore conditions forecast by the National Weather Service. Sam Myers Park off-

shore swimming area was opened in 2018, and advisory information was posted for the fourth year at this location.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Racine	179	24	16	4	8.9	2.2
Myers Park Beach	16	2	2	1	12.5	6.3
North Beach	66	11	6	1	9.1	1.5
Parkway Beach	17	3	3	0	17.6	0.0
Wind Point Lighthouse Beach	16	2	2	1	12.5	6.3
Zoo Beach	64	6	3	1	4.7	1.6

Sheboygan County

Sheboygan County monitors 7 of 14 coastal beaches including two at Kohler-Andrae State Park. The park implemented a redesign plan to address erosion and stormwater from the parking lot at the North Picnic beach. Shoreline dunes have been re-established and vegetation was planted in the raingarden. Storms that occurred during the construction period demonstrated that the raingarden functions as designed. There was no change in the number of beach actions from 2020 to 2021.



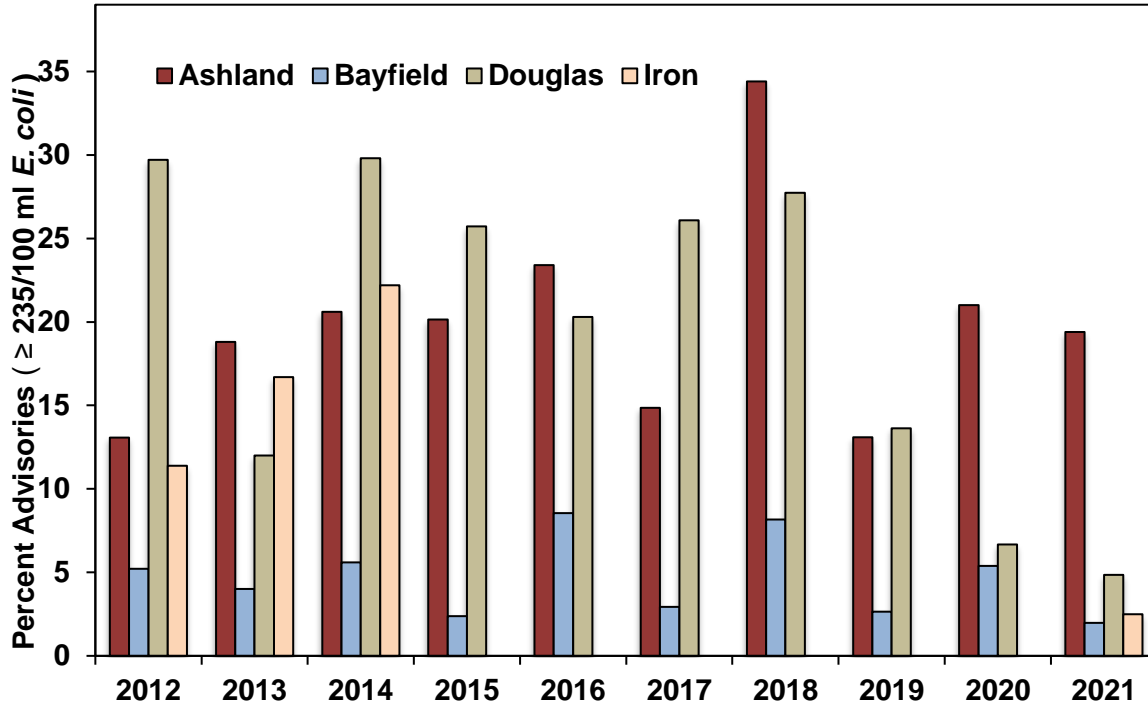
County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Sheboygan	207	20	14	2	6.8	1.0
Amsterdam Beach	15	2	1	0	6.7	0.0
Blue Harbor Beach	30	1	1	0	3.3	0.0
Deland Park Beach	34	13	8	1	23.5	2.9
General King Park Beach	28	1	1	0	3.6	0.0
Kite Surfing Area - Clara Ave	17	1	1	1	5.9	5.9
Kohler Andrae State Park North/Nature Center Beach	43	2	2	0	4.7	0.0
Kohler Andrae State Park Picnic Beach North and South	40	0	0	0	0.0	0.0



Lake Superior

While storms continue to be an issue in Lake Superior, Iron County beach repairs were completed in 2020 and beaches were open and monitored during the 2021 season. Overall, beaches on the Lake Superior coast saw a decrease in the number of beach action days when compared with 2020. Maps for all Lake Superior beaches can be found on the [WDNR beaches webpage](#).

Lake Superior Counties 2012-2021



Ashland County

Monitoring for 4 of 8 coastal beaches in Ashland County is contracted with Northland College. The Ashland Parks director is an active participant in the Wisconsin Coastal Beach Working Group and has worked to develop effective public messaging for their beaches. The number of exceedances and closures was roughly the same as in 2020, and the number of beach action days decreased somewhat.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ashland	134	92	26	14	19.4	10.4
6th Ave W Beach	29	0	0	0	0.0	0.0
Bayview Park Beach	24	13	2	0	8.3	0.0
Kreher Park Beach	29	58	17	11	58.6	37.9
Maslowski Beaches	44	21	7	3	13.5	5.8

Bayfield County

Bayfield County received BEACH Act funding for 11 of 16 BEACH Act beaches. Although there was one more closure in 2021 than in 2020, the number of exceedances and total beach action days all decreased for Bayfield County in 2021. There was a large decrease in beach action days at Herbster Beach, which had 15 in the 2020 beach season, but none in 2021.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Bayfield	254	13	5	3	2.0	1.2
Broad Street Beach	15	2	1	0	6.7	0.0
Herbster Beach	27	0	0	0	0.0	0.0
Little Sand Bay Beach	14	0	0	0	0.0	0.0
Port Wing Beach East	14	0	0	0	0.0	0.0
Port Wing Beach West	14	0	0	0	0.0	0.0
Sioux River Beach North	27	0	0	0	0.0	0.0
Sioux River Beach South	27	0	0	0	0.0	0.0
Siskiwit Bay Beach East	44	3	2	2	4.5	4.5
Siskiwit Bay Beach West	27	0	0	0	0.0	0.0
Thompson West End Park	28	8	2	1	7.1	3.6
Washington Avenue	14	0	0	0	0.0	0.0



Douglas County

In 2019, work was completed along Wisconsin Point to consolidate shoreline access areas and redesign the Lot 1 parking area to provide better stormwater infiltration of stormwater. Since then, beaches on the Point have seen a significant decrease in beach action days, from 33 in 2019 to 5 in 2021. Due to budget constraints and similar water quality conditions at the two locations, Shafer Beach advisories were based on Wisconsin Point 3 (Dutchman Creek) water quality measurements, with the same advisory status at both locations.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Douglas	103	5	5	0	4.9	0.0
Barker's Island Inner Beach	28	0	0	0	0.0	0.0
Wisconsin Point Dutchman Creek (#3)	14	0	0	0	0.0	0.0
Wisconsin Point Lighthouse (# 5)	14	0	0	0	0.0	0.0
Wisconsin Point Lot 1 (#1)	17	3	3	0	17.6	0.0
Wisconsin Point Lot 9 (formerly Lot 12)	16	2	2	0	12.5	0.0
Wisconsin Point SE of Breakwater (#4)	14	0	0	0	0.0	0.0
Wisconsin Point Shafer Beach (#2)*	0	0	NA	NA	NA	NA

*Shafer Beach advisories are based on Dutchman Creek samples. Beach action days for this location are included in the table and Douglas County totals, but exceedances and closures are not.

Iron County

Beaches in Iron County were rebuilt following storm damage in 2016, and re-opened during the 2019 beach season. In this second full year post-restoration, there was only one exceedance and no closures.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Iron	40	1	1	0	2.5	0.0
Oronto Bay Beach	13	0	0	0	0.0	0.0
Saxon Harbor Beach East	14	1	1	0	7.1	0.0
Saxon Harbor Beach West	13	0	0	0	0.0	0.0

Wisconsin Beach Workgroup

During 2021, the Wisconsin Coastal Beaches Workgroup (WCBW) steering committee continued to meet in a virtual only format because of the COVID-19 pandemic. However, leadership in the working group was able to facilitate a successful webinar on connections between coastal wetlands and beach water quality. Recordings of the webinars can be found on the Wisconsin Coastal Beaches Workgroup [website](#). Members of the working group also pulled together a proposal to improve the Virtual Beach training materials for Wisconsin during 2021.



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. The highest priority for funding was given to upgrading and maintaining the Wisconsin Beach Health website (wibeaches.us), a central tool for notifying the public about beach conditions and to manage data reported to USEPA as required by the grant. State funds and grant funds were used to fund the new website and database development. Long-term, BEACH Act funding will be used to maintain the new database and website. State funds supplement the BEACH Act funding to cover operational costs and provide access to the site for inland counties who participate voluntarily.

Contracts for implementing the program bundled monitoring dollars somewhat regionally to optimize available resources. Many counties supplement the funding available through the grant to increase the number of beaches monitored or sample beyond the minimum frequency specified by contract.

Table 5. Allocation of Beach Act Funds for the 2021 Season

Participating Locations/Counties	Contracted \$
Ashland County (Northland College)	\$6,500
Bayfield County	\$8,000
Brown County	\$1,000
Door County	\$60,000
UW – LSRI (Douglas County)*	\$13,000
UW – Oshkosh (Iron, Kewaunee, and Manitowoc Counties)	\$18,000
Milwaukee, City of	\$10,500
Northshore/Shorewood (Milwaukee County)	\$4,000
Ozaukee County	\$15,000
City of Racine, (Racine, Kenosha and South Milwaukee)	\$28,000
Sheboygan County	\$12,500
Total	\$176,500

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 can make coordination challenging. This 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 beach program provides a uniform mechanism to evaluate water quality and report data. Should funding be withdrawn entirely, counties have little incentive to report their data to EPA. Our inland communities and county public health departments provide a real-world example of the implications of voluntary participation in a monitoring and notification program. Some communities have robust beach monitoring programs; however, may not use the Beach Health website as part of their notification process. Existing funding is stretched extremely thin, with most grant dollars distributed through contracts for local implementation. Many communities have limited resources to supplement program activities.

The supplemental funding that supported Nowcasting and local skills development ended in 2017. This has significant implications for the future of this effort in Wisconsin. Although a few communities have developed expertise to calibrate models, many do not have the resources needed to maintain their models. As an example, Sheboygan County has implemented two tiered models effectively; however, their beach monitoring is contracted with an environmental consulting firm that would need to build capacity to perform model recalibration work and the community would be charged on a per hour basis. Without support for maintaining existing models, this county may need to abandon the models when they are no longer reliability predict beach conditions. In considering the feasibility of contracting with a skilled public health organization for model development and recalibration, cost estimates ranged between \$1500 and \$2000. If EPA provided this expertise or allocated funding to this purpose, this cost-effective tool would be more

sustainable. Additionally, USGS decommissioned the EnDDaT system in 2019. In previous years, EPA and state funding were used to develop this system and integrate it into Nowcast models. Without support for this system, many of the nowcast models were unable to function properly in 2019 and those that were, needed significant work to recalibrate and redevelop models with alternate data. This represents a significant step backward for Nowcasting in Wisconsin's beach program, and greatly impacts the ability of local beach managers to forecast conditions for the protection of public health.

Awareness of dangerous currents along the Great Lakes is increasing. Communities are interested in addressing this issue and beach managers are particularly interested in how the public notifications and communications dovetail with those issued for recreational water quality. There is a strong need to provide coordinated messaging, so the public understands what conditions are at the beach and manages personal risk effectively.



“Waving Goodbye to Summer” | Nathan Schleuder