



# Wisconsin's Great Lakes Beach Monitoring & Notification Program

## 2014 Beach Season Summary



A Walk on the Beach  
Kohler-Andrae State Park - Lake Michigan  
Photo by Brook Burling



Superior Kites  
Lake Superior  
Photo by Frank Koshere

**Office of the Great Lakes  
Wisconsin Department of Natural Resources  
May 16, 2015**

## **Acknowledgements**

Wisconsin's Great Lakes Beach Monitoring & Notification Program could not operate without its partnerships with local participants and the work done by passionate researchers at University of Wisconsin – Oshkosh and Julie Kinzelman at the City of Racine. Dr. Kinzelman developed watershed plans for the Root – Pike and Windpoint watersheds. The plans are useful for local decision-makers to identify priorities for actions to reduce bacteria in the watershed. EPA approved these plans as 9 Key Element Plans, making it possible for communities to access grant funding to control non-point sources of bacteria. Research done by Dr. Sandra McLellan's laboratory at the University Milwaukee School of Freshwater Science informed the monitoring plan and source identification strategies at Harrington Beach State Park and on Wisconsin Point. Dr. McLellan's focused research of South Shore beach in Milwaukee provided important insights into options to address water quality issues. The Alliance for the Great Lakes and UW – Sea Grant partnered to do community outreach and education about both causes of and solutions for the number of advisories at that beach. Jane Harrison at UW – Sea Grant also conducted an economic valuation study, demonstrating the local economy effect that restoring the beach could have. The Wisconsin Coastal Program has provided important financial support for developing and testing two tiered Nowcasts in Ozaukee and Sheboygan Counties, the sanitary survey at Harrington Beach and for beach restoration projects along the coast. The Fund for Lake Michigan has also been an important partner, funding many projects to improve water quality at southeastern Wisconsin beaches.

A number of counties increased their monitoring frequencies beyond the minimum funded by the Beach Act grant. Iron County monitored and reported data voluntarily without benefit of BEACH Act grant funds. We appreciate their commitment to making beach health information available to the public at whatever level is feasible in their community.

Without the combined efforts of DNR, UW – Sea Grant, Department of Health Services, and the Wisconsin Coastal Management Program, Adam Mednick's (project lead for GLRI grant to implement Nowcasts) work to make Nowcasting sustainable could not occur, a . USGS has been an important partner in the effort, developing models, supporting critical updates to Virtual Beach, as well as maintaining the Environmental Data Discovery and Transformation Tool (EnDDaT) and the Beach Health database and website. Without these collective efforts, we would not have the user-friendly tools that are available today.

Once again, sincere thanks go to Julie Kinzelman (City of Racine), Greg Kleinheinz and Kimberly Busse (University of Wisconsin – Oshkosh), Randy Lehr (Northland College) and Adam Mednick (WDNR). Their efforts to work with stakeholders, identify alternative funding, and implement the beach program in this transition period, the level of monitoring and nowcasting done during 2013 and 2014 beach seasons would not have been possible. We also recognize the significant effort by Rhonda Kohlberg at Door County Public Health to reach out to communities and stakeholders in the county, making the case for beach funding locally. The City of Milwaukee partnered with the University of Wisconsin – Milwaukee (Schools of Public Health and Freshwater Science) Water Institute to assure continued operations in our largest metropolitan area. Randy Lehr's work (Northland College) work with Ashland and the Chequamegon Bay Area Partnership to implement priority monitoring and assessment work in Lake Superior watersheds is provides critical local attention and support for addressing bacterial contamination issues at Ashland beaches. The combined efforts of these groups to find solutions to water quality issues at our beaches and work with local communities to implement those solutions is making a difference along our coasts.

**Thank you to everyone who makes Wisconsin's Great Lakes Beach Monitoring & Notification Program a success!**

**County participants include:**

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

**Additional assistance provided by:**

University of Wisconsin, Oshkosh – Environmental Research and Innovation Center  
    Sampling and Analytical Support for Door, Kewaunee, and Manitowoc Counties and Iron  
    Counties  
Racine Public Health Department  
    Sampling and Analytical Support for Kenosha and Racine Counties and South Milwaukee  
    Health Departments  
Northland College – Sigurd Olson Environmental Institute  
    Sampling and Analytical Support for Ashland and Douglas Counties  
United States Environmental Protection Agency – Region 5  
United States Geological Survey – Middleton, Wisconsin  
University of Wisconsin – Sea Grant  
University of Wisconsin, Milwaukee – School of Freshwater Science  
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Wisconsin Dept. of Administration – WI Coastal Management Program

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## Summary

Summer 2014 was the twelfth season of the Wisconsin's Great Lakes Beach Monitoring & Notification Program. The beach program operated similarly to 2013, with a reduced number of beaches covered, a lower required frequency of monitoring, and added emphasis on nowcast with adjustments to decision criteria based on its operation.

In fiscal year 2013, the United States Environmental Protection Agency (USEPA) awarded the Wisconsin Department of Natural Resources (WDNR) \$212,000 to implement the federal Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000. WDNR allocated these funds over two seasons in an effort to bring more predictability to the program. This was the second year of that transition which means that subsequent grants will be spent in the year following the award, bringing Wisconsin's grant schedule in line with other BEACH Act grant states. Existing partners continued their efforts to seek alternate funding, to identify existing projects with compatible objectives that could also support beach monitoring, and to increase collaboration between public health organizations to implement monitoring in the most cost-effective manner possible. Local public health organizations had the option to increase the frequency of monitoring at their own expense and to do voluntary monitoring at beaches that were not identified for grant funding.

A total of 94 beaches were monitored in 2014, a reduction from the 110 monitored 2013, with fewer locations monitored voluntarily. Local jurisdictions implemented nowcasting at 21 beaches, with some health departments using it as the primary tool for posting public notifications and others using it in conjunction with other decision tools. A total of 3,049 samples were reported (compared to 3,145 in 2013 and 4,936 in 2012). The total number of samples includes BEACH Act funded monitoring, locally intensified monitoring, and voluntary monitoring efforts reported to the Wisconsin Beach Health website.

Given the number of adjustments made to the monitoring frequencies and decision tools, straight comparisons of 2013 and 2014 sample exceedance rates by county with data from previous years can be misleading and is not recommended. *It should be noted that the overall sampling plan is biased toward locations with higher numbers of exceedances because risk to swimmers weighed heavily in the BEACH Act funding decisions.* In addition, beaches that used a two-tiered nowcast system increased the number of days that public notifications of water quality were posted (water quality notifications on days when no samples were collected). The calculated sample exceedance rate at those beaches does not reflect the actual number of advisories issued at those locations. This annual report continues what was begun in 2013, presenting data summaries by county and for individual beaches to demonstrate how the program adjustments affected the overall assessment of beach conditions.

## **Lessons Learned**

BEACH Act funding is a cornerstone for Wisconsin's Great Lakes Beach Program and provides the impetus for performing sanitary surveys and beginning restoration efforts. Funding for monitoring is often more difficult to secure both at a community level and within the Great Lakes region than for restoration. Given the costs of restorations, more intensive post-restoration monitoring is often not included in the restoration budget. Without this intensified post-restoration monitoring, it is difficult to document the improvements in water quality. For beaches that operated nowcasts, the construction and restoration may affect the reliability of the model.

The reduction in the number of beaches monitored and the limited number of sample collected voluntarily demonstrates the importance of sustained funding. With limited funding available, some locations requested to stop monitoring lesser used beaches with poor water quality (and

listed on the 303(d) impaired waters list). A base level of monitoring was maintained at these beaches and these locations will be re-evaluated in 2015. We also noted skewing of the exceedance rate for counties that performed limited monitoring (e.g., Iron and Douglas Counties).

Nowcasting provided communities with an important tool to optimize their monitoring programs and control costs. DNR's efforts to continue local implementation of Nowcasting were limited in 2014 (the grant funding these activities expired) and as a result, no new beaches had operational Nowcasts and one location discontinued Nowcasting. Counties with Nowcasts that relied on daily field-collected data struggled to maintain these operations. Others used existing (2013) models without recalibration with mixed results. At a time when more local communities are interested in implementing a Nowcast system, federal resources for this initiative seems to be waning. The need for supporting infrastructure was highlighted during early June, when counties could not use their nowcast models because the on-line data systems were not operating reliably and key data could not be retrieved through EnDDaT. In addition, important updates to Virtual Beach necessary to make the software more user-friendly to local decision-makers took considerable time and effort to implement. Refer to the discussion of Nowcast in the 2014 program highlights for more information.

As indicated in the 2013 report, with a shifting balance between culture-based monitoring methods and real-time methods like qPCR and Nowcast modeling, our traditional methods for assessing the overall water quality impairments needs to be re-evaluated. Traditionally, only the culture-based sample results were considered; however, the shift in emphasis may affect the robustness of the data set for assessing impairment status. During the transition period between methods and advisory procedures, the local cooperators need additional technical support and in some cases, require additional monitoring dollars. Sanitary surveys and the beach-specific physical data are increasingly important for implementing the models as well as identifying and mitigating contaminant sources. We cannot count on critical sanitary survey data to be available at all of our medium and high priority beaches without explicitly incorporating it into monitoring agreements. Flexibility in using BEACH Act funds will be important to incorporating key observational measurements into the monitoring program and providing an opportunity for more communities to implement Nowcasting.

Considerable effort was invested in quality assuring the beach attribute data in BEACON. The data anomalies with number of tier 1 beaches and monitoring season information became apparent in the 2013 and 2014 data because of the significant changes in number of beaches funded by the BEACH Act. As a result, we re-evaluated our reporting conventions and have standardized the number of beach days to align with our beach season. Previously, the date of the first sample was used as the beginning date, which in some cases did not match the number of days the beach was open. Monitoring frequency can be challenging to verify because the funded monitoring frequency and the frequency implemented locally often do not match. Our conventions for recording advisories also made it more challenging to verify advisory days. We plan to update our procedures for assigning ending dates and times to the advisories. Although a significant number of beaches have had sanitary surveys to identify primary sources of bacterial contaminants, this information is not always recorded in our database. For locations with multiple sources of contamination, it may be speculative to report the cause for each exceedance without DNA source tracking data or an exceptional event (e.g., major storm).

### **General Program Overview**

The definition of a "beach" for the purpose of the Wisconsin Great Lakes Beach Monitoring & Notification Program implementation is:

*“A publicly owned shoreline or land area, not contained in a man-made structure, located on the shore of Lake Michigan or Lake Superior, that is used for swimming, recreational bathing or other water contact recreational activity.”*

In 2014, Wisconsin listed 190 coastal beaches along Lake Michigan and Lake Superior. Coastal beaches were geo-located using global positioning system (GPS) equipment and software and geographic information system (GIS) technologies were used to store the data and to create maps for each county that identify the location of each beach. As a result of sanitary surveys performed in previous years, beach lengths were updated and posted for public comment on Wisconsin DNR’s beach website. Each year, the program works with the local programs to identify changes to beach usage or other factors that affect the assigned priority.

Beach priority, the existence of an operational nowcast, and impairment status were major considerations in determining the frequency for monitoring and thus in determining funding allocations. Coastal processes have changed beach dimensions over time, individual beaches may be improved or restored and beach usage patterns also change, so local beach managers are given an opportunity to re-evaluate their priority classification and update their information annually. 2013 reflects a year of historic low lake levels and 2014 saw lake levels rise to what might be considered high-normal levels.

In an effort to standardize as much of the statewide program as possible, standard field collection procedures, analytical protocols, reporting, and public notification practices including using consistent advisory signs for beach posting have been formalized in a quality assurance project plan as well as contracts and assistance agreements issued for performing BEACH Act compliance work. The assistance agreements and contracts covering the 2013 and 2014 seasons recognize implementation of Nowcast modeling as a program activity and provide an opportunity for jurisdictions with capability to do qPCR to demonstrate their performance at specific beaches and implement more real-time monitoring. At least two local partners experienced furloughs during the summer so regular staff were not available to perform monitoring functions during that time. In one case, that meant laboratory analyses were conducted at a non-certified facility. The data were used to inform advisory decisions, however results were considered unofficial and not reported.

BEACH Act funding supports the Wisconsin Beach Health Website (<http://www.wibeaches.us>), that is maintained by staff at USGS in partnership with the local health department staff and cooperators who use the site to report beach status and bacteria data. Beach managers also use this site for reporting sanitary survey data associated with their beaches and operate nowcast models. Through a combination of Great Lakes Restoration Initiative (GLRI) and Wisconsin Coastal Management grants, staff leveraged this centralized data system to capture sanitary survey data, vital data for understanding beach conditions and developing nowcasts. USGS also serves as the primary data manager and oversees all data integration needs with USEPA to support the national information exchange goals of the BEACH Act.

## **Beach Season - 2014 Program Highlights**

The strategy for allocating funding (implemented in 2013 for the 2013 and 2014 beach seasons), placed a priority on support for Wisconsin’s Beach Health web application operated by USGS because it both manages the data and provides public notification of beach conditions. 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. This meant that low priority (Tier 3) beaches were unfunded unless the beaches were listed as impaired or monitoring was funded locally. Likewise, travel costs

associated with monitoring beaches on islands were too costly to be funded. With few exceptions, these beaches are in Tier 3.

Budget constraint drove our decision to once again reduce the minimum required sampling frequency at high priority beaches (Tier 1) to twice per week, recognizing that Nowcasts in place at 20 beaches supported public notifications and partners have the latitude to voluntarily increase monitoring at any beaches based on local needs and funding. Medium priority beaches (Tier 2) with Nowcasts received funding for sampling twice per week and beaches listed as impaired on the 303(d) list were prioritized for sampling once per week. Federal restrictions on how grant funds could be used affected local partners' capacity to collecting samples for the explicit purpose of identification and control of pollution sources leading to elevated bacteria levels. Any efforts to do so were done independent of the BEACH Act funding.

Based on the funding strategy, fewer counties and health departments were supported with BEACH Act funding in 2013 than in past years. Brown and Iron Counties received no BEACH Act funding for 2013 (and 2014) because their beaches were all ranked as low priority (Tier 3) and none were listed on the impaired waters list. Lake Michigan beaches received analytical support for a fourteen week sampling season while Lake Superior beaches (Ashland, Bayfield, Douglas, and Iron counties) operated during a twelve to thirteen week sampling season, attributable to late ice out (mid-May) in Lake Superior. In southeast Wisconsin (from South Milwaukee to the state line), Racine Public Health Department coordinated monitoring with the local health departments, making it possible to leverage funding and staff resources.

Beach monitoring continued voluntarily at some beaches and was reported using Wisconsin's Beach Health public notification website. WDNR provided alternate funding for two beaches in Douglas County that are listed as impaired waters.

## **Nowcasting**

The 2014 beach season marked the second consecutive year in which Wisconsin had 20 coastal beaches with operation Nowcast models informing decisions on whether to issue (or lift) swim advisories and beach closures, as well as whether or not to sample and test on a given day. Ten of these beaches employed "two-tiered" Nowcast systems, using EPA's Virtual Beach modeling software and USGS' Environmental Data Discovery and Transformation (EnDDaT) online data portal. Tier I models are operated on sampling days, using a combination of routine sanitary measurements and online data accessed via EnDDaT. Tier II models are operated on non-sampled days, using only EnDDaT data. An additional beach used a Tier II model for sampled as well as non-sampled days. For beaches where sampling frequency could be reduced on account of the added public-health coverage of a Tier II model, Nowcasting proved not only more timely, but more *cost-effective* than traditional monitoring.

In 2014, WDNR's Science Services Bureau concluded its three-year, GLRI-funded project to expand the use of Nowcast models in Wisconsin and other Great Lakes states. In addition to 21 operational Nowcasts, this effort increased local awareness and capacity to use Virtual Beach – through the training of 34 local beach managers, monitoring personnel, and researchers in Wisconsin, plus 47 in other Great Lakes and maritime states and Ontario – as well as the successful integration of Virtual Beach (version 3) and EnDDaT, which has enabled cost-effective, two-tiered Nowcasts (Mednick & Watermolen 2014).

Because funding for WDNR's Nowcast project ended in early 2014, WDNR did not actively work to expand Nowcast implementation in the lead-up to the 2014 beach season. Partially as a result, no new Nowcasts were implemented. To address this lack of progress, and to help ensure that Nowcast modeling is sustainable at the local level, WDNR and the Wisconsin Coastal

Management Program provided funding to support outreach and education activities conducted by the University of Wisconsin Sea Grant Institute, including the development of online training, supporting materials, and a Virtual Beach Users Group ([www.seagrant.wisc.edu/virtualbeach](http://www.seagrant.wisc.edu/virtualbeach)). This effort is a direct response to the findings of WDNR's Nowcast project and its resulting recommendations:

*In order to ensure continued expansion and long-term sustainability of [N]owcast modeling, we recommend strategic investments in three areas: (1) improving the operational capacity of the EnDDaT system, (2) maintaining basic support for periodic updates and bug fixes to Virtual Beach, and (3) supporting nowcast training, technical support, and guidance (Mednick and Watermolen 2014: executive summary).*

With respect to the first recommendation, Sea Grant is working with the USGS Center for Integrated Data Analytics, Great Lakes Commission, and Great Lakes Observing System to improve the speed and reliability of EnDDaT and its related web data services. The second recommendation – maintaining basic support for Virtual Beach – is an area of significant concern. EPA presently has no plans to actively maintain Virtual Beach. This presents a significant risk, as intermittent changes to related but external systems have been shown to effect the operation of Virtual Beach. For example, recent changes in Web mapping API's like Google Map necessitated minor recoding, however such changes will be difficult to make in the absence of administrative support from EPA, in the form of a designated task for maintaining Virtual Beach within one of EPA's Strategic Research Action Plans for FY 2016-2019.

Similar to past years, beach *advisories* and/or *closures* were posted using signs placed on the beach property in addition to information being provided on an Internet Web Site (<http://www.wibeaches.us>). Decisions to post an advisory were generally triggered by the amount of *E. coli* present as compared to 235 colonies/100 mL threshold recommended by USEPA, results of rapid lab methods (qPCR) or statistical "Nowcast" models. Beaches with operational Nowcast models were encouraged to use the model as the primary means for issuing water quality advice rather than switching between the model and the traditional monitoring data. Those locations with two tiered Nowcasts expanded the number of days that water quality status was posted at their beaches with no increase in number of samples collected. Beach closure decisions were generally based on *E. coli* results of 1000 colonies/100 mL. In some cases, advisories or closures were prompted by rainfall, known or suspected sewage bypasses, or other factors that have been linked to high *E. coli* counts in the past.

## **Time Schedule**

The activities described in this report took place during Federal Fiscal Year (FFY) 2013 (October 1, 2013 through December 30, 2014). FFY 2013 funding encompassed the entire 2013 and 2014 beach seasons, which is defined for Wisconsin coastal beaches as Memorial Day Weekend through Labor Day Weekend. In Lake Superior, water recreational activities are heavily influenced by spring weather, with storms, water temperatures and the number of warm days affecting beach visitation.

## **Budget – BEACH Act Grant only**

Given that grant funding stretched over two beach seasons, the budget for 2014 presented in the 2013 beach season report. The same table is presented below. The highest priority for funding was given to maintaining the USGS website, a central tool for notifying the public about beach conditions and to manage data reported to USEPA as required by the grant. For budgeting purposes, allocations were broken out by county or local entity and operationally monitoring

dollars were bundled somewhat regionally to optimize available resources and leverage multiple funding sources.

As with 2013, low priority beaches were ineligible for funding unless the beach was identified as an impaired water for bacteria on the 303(d) list. Monitoring for beaches on islands could only be funded by the grant if transportation costs were covered by another means. At the recommendation of our Nowcast developers at DNR and USGS, locations with operational models retained a base level monitoring program with sampling twice per week.

**Table 1.** Allocation of Beach Act Funds for the 2013 and 2014 Seasons

<b>Participating Locations/Counties</b>	<b>2012 Grant</b>	<b>2013 Grant</b>	<b>2014 Allocation</b>
Ashland County		\$6000	\$6000
Bayfield County		\$2000	\$2000
Brown County		\$0	\$0
Door	\$8000	\$32,000	\$40,000
Douglas		\$0*	\$0*
Iron		\$0	\$0
Kenosha		+	+
Kewaunee County++		\$3000	\$3000
Manitowoc County++		\$6000	\$6000
Milwaukee, City of	\$1335		\$10,365
Northshore/Shorewood Combined Health Department,		\$2450	\$2450
Ozaukee County		\$16,000	*
Racine, City of	\$6800	\$4,735	\$22,000
Sheboygan County		\$*	\$10,000
Kohler-Andrae State Park ++		\$2000	\$2000
South Milwaukee, City of		+	+
<b>Total</b>	<b>\$16,135</b>	<b>\$74,185</b>	<b>\$103,815</b>

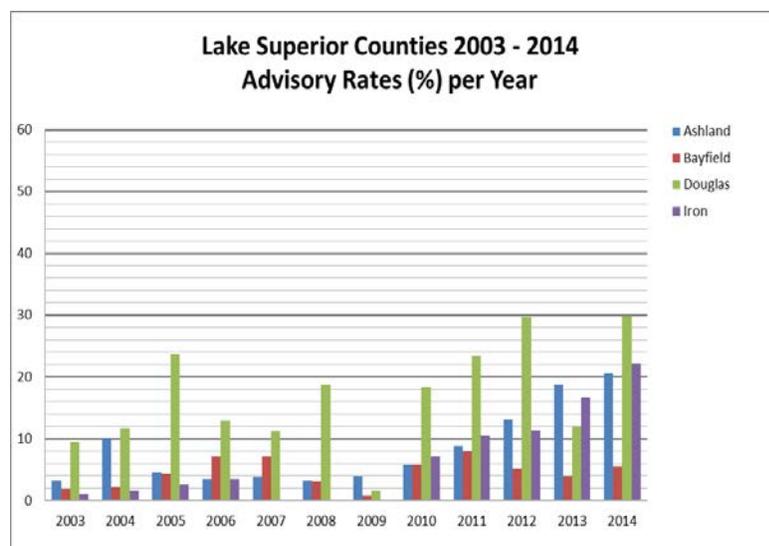
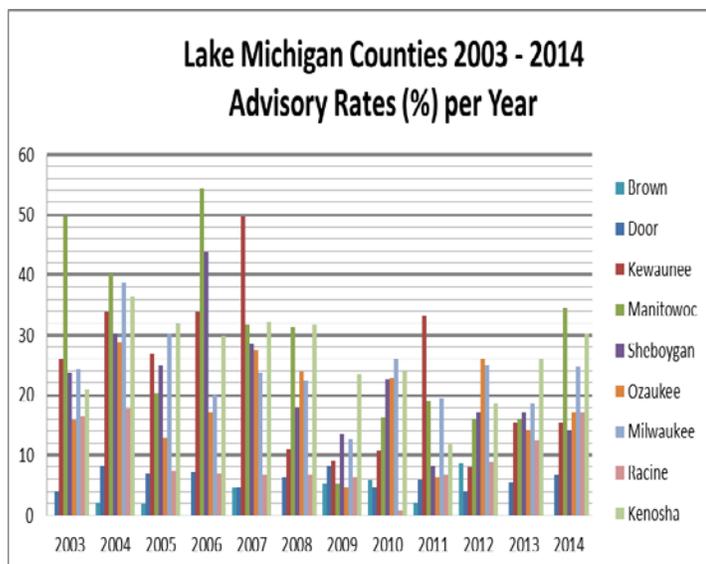
\*Alternate funding used for monitoring  
 +Funded through City of Racine allocation  
 ++Funded through agreement with UW-Oshkosh

### **Monitoring Summary Results**

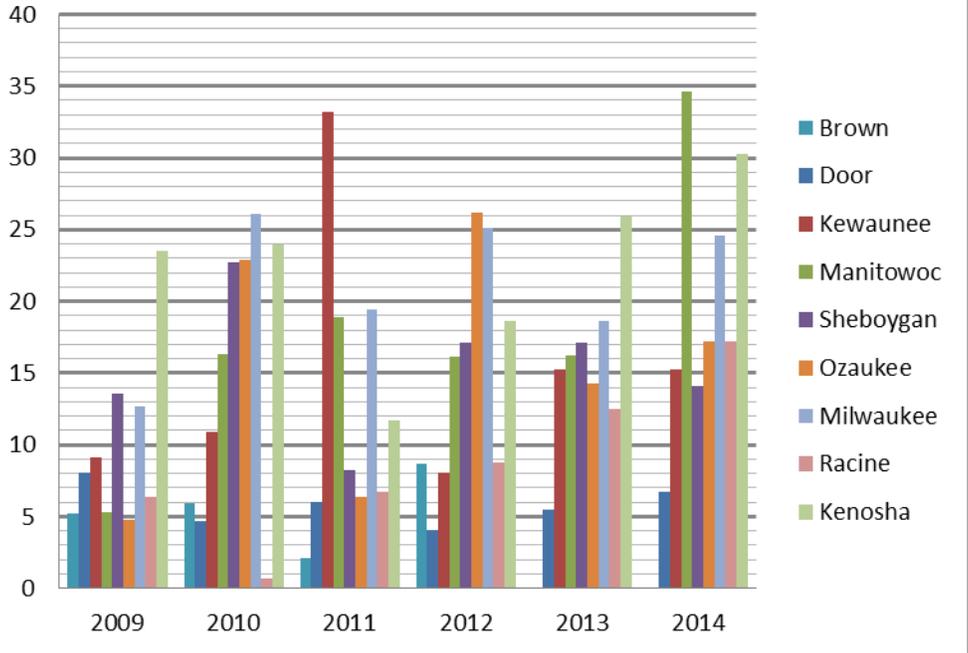
In 2014, monitoring occurred at a total of 94 beaches, of which 24 locations monitored voluntarily or entirely with alternate funding. Local jurisdictions implemented Nowcasting at 21 beaches, with some health departments using it as the primary tool for posting public notifications and others using it in conjunction with other decision tools. A total of 3049 samples were collected (compared to 3145 in 2013 and 4,936 samples in 2012) that were reported on the Beach Health Website (<http://www.wibeaches.us>). At some locations, results reported were composite of multiple locations so the total sample numbers have been adjusted to avoid double counting. Of the samples collected 18.1% exceeded the water quality advisory threshold of 235 CFU/100mL (Table 2). Of those exceedances, 4.9% of all samples collected exceeded the 1,000 CFU/100mL threshold for beach closure. It is important to note that decisions about which beaches to sample considered the status on the impaired waters list and are inherently biased toward locations with higher risk of exceeding the water quality standard. The summary statistics should not be considered as representative of overall water quality at Wisconsin's Great Lakes beaches.

**Table 2.** Annual Sample Percentages that exceed the advisory level of 235 CFU/100mL

County	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ashland	3.2	10.2	4.6	3.5	3.8	3.3	4	5.8	8.8	13.1	18.8	20.6
Bayfield	1.9	2.2	4.3	7.1	7.1	3.1	0.8	5.8	8.0	5.2	4.1	5.6
Brown	0	2	1.8	0	4.5	0	5.2	5.9	2.1	8.7	NA	NA
Door	4.1	8.2	6.9	7.3	4.8	6.3	8.1	4.7	6.0	4.1	5.5	6.7
Douglas	9.5	11.8	23.7	12.9	11.3	18.8	1.5	18.4	23.3	29.7	12.0	29.8
Iron	1.1	1.5	2.7	3.5	0	0	0	7.1	10.5	11.4	16.7	22.2
Kenosha	21	36.3	31.9	29.9	32.2	31.7	23.5	24	11.7	18.6	25.9	30.3
Kewaunee	26	33.9	26.9	33.9	49.7	11.1	9.1	10.9	33.2	8.1	15.3	15.3
Manitowoc	49.6	40.1	20.4	54.4	31.7	31.3	5.3	16.3	18.9	16.1	16.1	34.6
Milwaukee	24.3	38.7	30.3	20	23.7	22.4	12.7	26.1	19.4	25.1	18.8	24.6
Ozaukee	15.9	28.9	12.9	17.1	27.6	24	4.8	22.9	6.4	26.1	14.3	17.2
Racine	16.5	17.6	7.4	6.9	6.7	6.7	6.4	0.7	6.8	8.8	12.5	17.2
Sheboygan	23.8	30.2	24.8	43.9	28.5	18.1	13.6	22.7	8.2	17.1	17.1	14.1
Percent of all samples	14.6	22.2	15.7	17.5	17.1	14.4	7.3	12.4	11.8	14.4	12.3	18.1

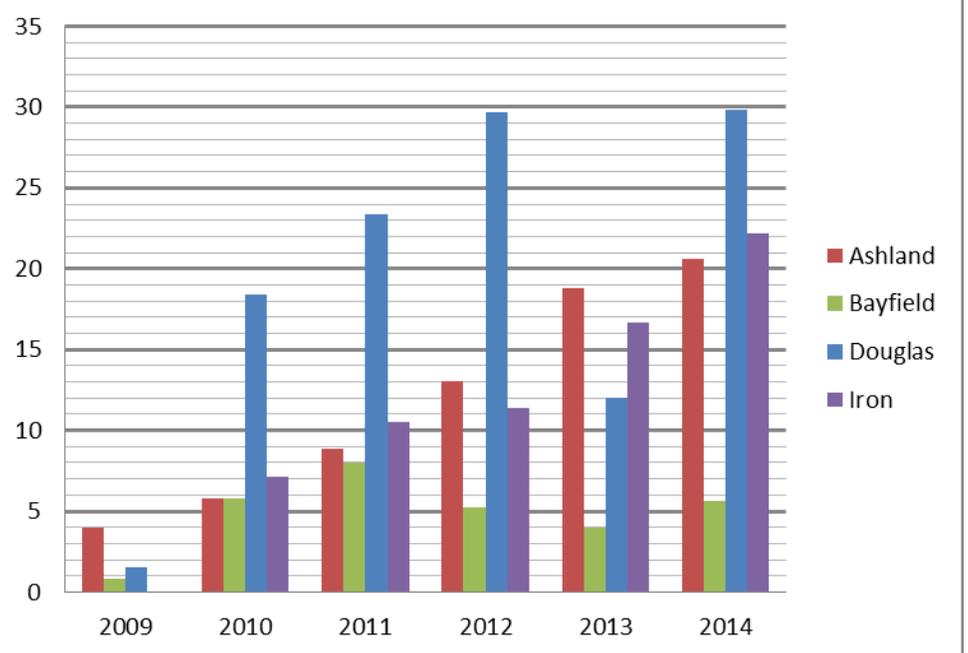


### Lake Michigan Counties 2009 - 2014 Advisory Rates (%) per Year



Note: Brown County did not monitor in 2013 and 2014

### Lake Superior Counties 2009 - 2014 Advisory Rates (%) per Year



Note: Iron County statistics skewed - only 9 samples collected

## Local Program Status

The partners involved in Wisconsin's Great Lakes Beach Monitoring & Notification Program continue to collaborate to increase public awareness about the problems associated with waterborne pathogens along nearshore waters – especially public beaches. In addition to the funding provided by the federal BEACH Act, other local, state, and federal resources have been used to help address some of these problems and increase the use of our public beaches.

Summary data is reported for each monitored beach within a county. The tables provide summary information with encoded status information

- N - Nowcast,
- V - Voluntary,
- A - Alternate funding

followed by the contracted frequency, total number of samples collected, the number and percentage of samples that exceed the *E. coli* advisory threshold of 235 colonies/100 mL and the number and percentage of samples that exceed the closure threshold of 1000 colonies/100 mL. Summary statistics for the *E. coli* monitoring results were derived from the Wisconsin's Beach Health database. Note that the highlighted line for each county provides summary information for the county, with the first entry identifying the number of monitored beaches rather than the contracted frequency.

### Lake Superior

#### ***Ashland County***

Ashland County continued monitoring four of the seven coastal beaches, with nowcasting at Kreher Park and Maslowski beaches. A similar number of samples were collected during the season for public health notification. As part of their work at the beach and in the Fish Creek watershed, Northland College took samples to identify potential sources of bacterial contamination and began work with Ashland to implement BMPs and begin a beach restoration. Ashland identified a boat launch adjacent to Kreher Park that is used frequently and requested that it be added to the program. This beach is proposed for addition to the Wisconsin beach list in 2015.



Evening Calm on Basswood  
Apostle Islands  
Photo by Ann Runyard

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
2	Bayview Park Beach	39	3	7.7%	0	0.0%
2	Big Bay State Park Beach	11	0	0.0%	0	0.0%
2N	Kreher Park Beach	41	11	26.8%	3	7.3%
2N	Maslowski Beaches	40	13	32.5%	2	5.0%
4	<b>Ashland County Total</b>	<b>131</b>	<b>27</b>	<b>20.6%</b>	<b>5</b>	<b>3.8%</b>

## **Bayfield County**

As with 2013, Bayfield County received BEACH Act funding for two beaches. The number of beaches monitored voluntarily was reduced to 5 (compared to 15 in 2013). This resulted in a significant reduction in the total number of samples collected (71 in 2014 compared to 244 in 2013). Bayfield county public health department continued implementation of Nowcasting at Thompson West End Park. Based on feedback from county staff about the effort necessary to collect the field data, USGS developed a nowcast that operated entirely with remotely sensed data. The health department used this model exclusively throughout 2014 with great success. about the level of effort required to in the county. Contracts began for a beach restoration at Thompson West End with work to be completed in early 2015. The county opened a new beach in Cornucopia adjacent to Siskiwit and following placement of sand off-shore of the existing Siskiwit beach (Army Corps of Engineers beneficial reuse project), swimmers were directed to the new beach area. Monitoring continued in the swim area. The new beach will be added to the list in 2015.

2014 Contract Frequency	Beach	Total Samples	Exceedances	% Exceedances	Closures	% Closures
V	Broad Street Beach	7	0	0.0%	0	0.0%
V	Herbster Beach	5	0	0.0%	0	0.0%
V	Port Wing East	6	0	0.0%	0	0.0%
V	Sioux River Beach North	5	0	0.0%	0	0.0%
V	Thompson West End Park Beach	28	1	3.6%	1	3.6%
2N	Washington Avenue Beach	6	0	0.0%	0	0.0%
V	Siskiwit	14	3	21.4%	1	7.1%
7	<b>Bayfield County Total</b>	<b>71</b>	<b>4</b>	<b>5.6%</b>	<b>2</b>	<b>0</b>

## **Douglas County**

Six of the twelve beaches in Douglas County are within the St. Louis Estuary Area of Concern (AOC) and four of those beaches are listed on the 303(d) impaired waters list. (Wisconsin Point 1 and 3 were added between the 2013 and 2014 season.) In consideration of the limited availability of BEACH Act funds, alternate funding was used to monitor those four beaches. With the added beaches, approximately twice the number of samples were collected in 2014. None of the 104 samples were funded by the BEACH Act, however results were reported to Wisconsin's beach health website. The Superior Parks department reported implementing procedures to discourage nuisance geese on the Barkers Island beach.

To better understand the source of the bacterial contaminants, samples that exceeded the water quality standard as well as additional investigative samples were sent to Dr. Sandra McLellan's laboratory at the University of Wisconsin - School of Freshwater Science for DNA analyses. A large number of birds frequent the area around Wisconsin Point 2 and the source sampling will help determine whether other sources for the bacterial exceedances exist. Although Wisconsin Point 2 has been identified as Moccasin Mike, its coordinates coincide with Schaefer Beach, which is being managed as piping plover habitat. Access to this beach and Wisconsin Point 1 (Dutchman Creek) is restricted during the nesting season (until about July 15) with provisions to close the beach until about August 15 if a nest is detected. As part of the AOC habitat plan, design work has begun to enhance this habitat area and additional dune nourishment is planned along Wisconsin Point.

2014 Contract Frequency	Beach	Total Samples	Exceedances	% Exceedances	Closures	% Closures
A-2	Barker's Island Inner Beach	27	10	37.0%	0	0.0%
A-2	Wisconsin Point Beach 1	24	4	16.7%	0	0.0%
A-2	Wisconsin Point Beach 2	27	11	40.7%	2	7.4%
A-2	Wisconsin Point Beach 3	26	6	23.1%	1	3.8%
4	<b>Douglas County Totals</b>	<b>104</b>	<b>31</b>	<b>29.8%</b>	<b>1</b>	<b>1.0%</b>

### **Iron County**

Beach monitoring in Iron County continued as an entirely voluntary program in 2014. Only one of the Saxon Harbor beaches was monitored regularly and the total number of samples dropped from 42 in 2013 to 9 in 2014. Conversations with local residents indicate that Saxon Harbor is a popular water recreation destination which can be seen when visiting the area. The priority for monitoring at this beach will be reassessed in 2015.

2014 Contract Frequency	Beach	Total Samples	Exceedances	% Exceedances	Closures	% Closures
V	Saxon Harbor East	1	0	0.0%	0	0.0%
V	Saxon Harbor West	8	0	0.0%	0	0.0%
2	<b>Iron County Total</b>	<b>9</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0.0%</b>

### **Lake Michigan Counties**

#### **Brown County**

Brown County beaches were all identified as low priority and did not receive BEACH Act funding. No county beaches were monitored. Local discussions are occurring about restoring Bay Beach as a swimming area but this location does not have access to the water currently.

#### **Door County**

Phragmites along the West Shore of Green Bay  
DNR Photo

Door County 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, testing 32 public beaches on the peninsula as well as Washington and Rock Islands throughout the summer. Lily Bay boat launch was added to the monitoring in 2014. Slightly more samples were collected in 2014 (1091 versus 1056 in 2013). The county used a combination of BEACH Act support and local funding to implement their program. This is particularly notable given the transportation costs associated with monitoring the island beaches. The county's partnership with the University of Wisconsin – Oshkosh enables their program to function cost-effectively. The county continues to implement redesigns and best management practices at their beaches to reduce the overall advisory rate to the lowest in the state.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
1	Anclam Park Beach	34	9	26.5%	1	2.9%
2	Baileys Harbor Ridges Park Beach	56	11	19.6%	5	8.9%
V	Clay Banks Beach 2	28	3	10.7%	0	0.0%
2	Egg Harbor	55	1	1.8%	0	0.0%
2	Ellison Bay Town Park Beach	55	0	0.0%	0	0.0%
2	Ephraim	56	4	7.1%	1	1.8%
1	Europe Bay #1	27	1	3.7%	0	0.0%
1	Europe Bay #2	27	0	0.0%	0	0.0%
1	Europe Bay #3	27	1	3.7%	0	0.0%
2	Fish Creek	57	7	12.3%	2	3.5%
V	Gislason Beach	14	0	0.0%	0	0.0%
1	Haines Park	29	1	3.4%	0	0.0%
V	Jackson Harbor Ridges	14	0	0.0%	0	0.0%
1	Lakeside Park	27	1	3.7%	0	0.0%
V	Lily Bay Boat Launch	15	2	13.3%	0	0.0%
2	Murphy Park	55	3	5.5%	2	3.6%
2	Newport Bay	55	0	0.0%	0	0.0%
2	Nicolet	55	1	1.8%	0	0.0%
2	Otumba Park	55	9	16.4%	1	1.8%
V	Percy Johnson Memorial Park	14	0	0.0%	0	0.0%
1	Portage Park	27	1	3.7%	0	0.0%
V	Rock Island State Park	14	0	0.0%	0	0.0%
1	Sand Bay #1	29	2	6.9%	1	3.4%
V	Sand Dune	15	1	6.7%	0	0.0%
1	Sandy Bay Town Park	28	1	3.6%	0	0.0%
V	School House	15	1	6.7%	0	0.0%
2	Sister Bay	55	0	0.0%	0	0.0%
1	Sturgeon Bay Canal Recreation Area	28	1	3.6%	0	0.0%
2	Sunset Park Sturgeon Bay	56	8	14.3%	1	1.8%
V	Whitefish Bay Boat Launch	14	0	0.0%	0	0.0%
2	Whitefish Dunes	55	4	7.3%	2	3.6%
32	<b>Door County Totals</b>	<b>1091</b>	<b>73</b>	<b>6.7%</b>	<b>16</b>	<b>1.5%</b>

### ***Kenosha County***

As in 2013, BEACH Act monitoring for Kenosha County beaches was done through an assistance agreement with Racine County. This arrangement enabled the program to leverage other grants and funding sources as well as providing sufficient funding to support summer staff necessary to do the sample collection. Kenosha County has 2 medium priority beaches and 2 low priority beaches both of which are considered as impaired waters, elevating their priority for BEACH Act funds. Two of the beaches had Nowcast models which were not operational but showed good promise for future use in routine decision-making. Monitoring at Alford Park and Southport Park

dropped to the contracted frequency of once per week so fewer samples were collected this year (122 vs 162 in 2013). Kenosha began the first phase of beach restoration work with plans to continue into 2015.

*\* Nowcast models developed but not operational*

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
1	Alford Park Beach	15	2	13.3%	1	6.7%
2N	Eichelman Beach	40	20	50.0%	4	10.0%
1	Pennoyer Park Beach	18	5	27.8%	1	5.6%
2N	Simmons Island Beach	35	9	25.7%	2	5.7%
1	Southport Park	14	1	7.1%	0	0.0%
5	<b>Kenosha County Total</b>	<b>122</b>	<b>37</b>	<b>30.3%</b>	<b>8</b>	<b>6.6%</b>

### ***Kewaunee County***

Kewaunee County beaches were monitored through an assistance agreement with the University of Wisconsin – Oshkosh. The sampling frequency in 2014 was the same as 2013 with the same number of samples collected. Community members in Algoma expressed concerns about the adequacy of the advisory signage, particularly given the length of the beach. Additionally, there were concerns that the bilingual sign explaining the water quality notices (used to supplement the English language signs) did not have an English translation. As a result of these concerns, DNR agreed to redesign the sign to include three languages, English, Spanish and Hmong. Local decision-makers are still evaluating where the Crescent Beach restoration project fits within the community priorities and budget.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
2	City Of Kewaunee Beach	14	3	21.4%	3	21.4%
2	Crescent Beach	45	6	13.3%	3	6.7%
2	<b>Kewaunee County Total</b>	<b>59</b>	<b>9</b>	<b>15.3%</b>	<b>6</b>	<b>10.2%</b>

### ***Manitowoc County***

Manitowoc County partners with University of Wisconsin – Oshkosh (UW-O) for beach monitoring. Several beaches within the county are identified as impaired on the 303(d) list so all but Warm Water Beach were given priority for funding. Considering usage patterns, the county decided not to monitor Fischer Park beach. Maritime Drive boat launch was redesigned to accommodate a swimming beach and is now known as Blue Rail Marina Beach. USGS developed Nowcast models for 4 beaches in Manitowoc county which were operational in 2013. UW-O worked with Manitowoc to assess upstream sources of bacteria through a grant with Coastal Management. Multiple beaches in the county received redesign plans through the GLRI grant to UW-O.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
2	Blue Rail Marina Beach	60	19	31.7%	5	8.3%
1	Fischer Park Beaches	25	12	48.0%	4	16.0%

2N	Hika Park Bay	19	7	36.8%	3	15.8%
2	Memorial Drive Wayside Beach North	33	6	18.2%	3	9.1%
2	Memorial Drive Wayside Beach South	36	14	38.9%	5	13.9%
2N	Neshotah Beach	60	26	43.3%	3	5.0%
2N	Point Beach State Forest - Concession Stand Beach	66	19	28.8%	4	6.1%
*	Point Beach State Forest - Lakeshore Picnic Area Beach	Comp				
*	Point Beach State Forest - Lighthouse Picnic Area Beach	Comp				
2N	Red Arrow Park Beach Manitowoc	62	21	33.9%	11	17.7%
2	YMCA Beach	39	20	51.3%	11	28.2%
<b>11</b>	<b>Manitowoc County Totals</b>	<b>520</b>	<b>180</b>	<b>34.6%</b>	<b>57</b>	<b>11.0%</b>

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

## Milwaukee County

Multiple government jurisdictions have responsibility for monitoring and making public health decisions for 12 Milwaukee County Great Lakes beaches. The same number of beaches were



Urban Oasis  
Bradford Beach, Milwaukee  
Photo by Karen Gersonde

monitored in 2014 as 2013, however more samples were collected at the city of Milwaukee beaches. The city of Milwaukee continued its partnership with the University of Wisconsin – Milwaukee (UW- M) to monitor Bradford, McKinley and South Shore beach. During furloughs, UW-M laboratory results were used to inform advisory postings, however the results were considered unofficial and not posted to the website. The northern county beaches are monitored through Northshore Health Department. Atwater Park has an active Friends group to assist with beach management issues. South Milwaukee beaches were

monitored through an arrangement with Racine Public Health. Grant Park received a redesign plan and following consultation with Dr. Kinzelman, Milwaukee County Parks installed a rain garden to address localized run-off issues. At South Shore beach, Milwaukee County Parks continued its efforts to develop a redesign plan for the park. The process included regular meetings with stakeholders for input on design proposals. The Coastal Management grant funding the effort is focused on clean marina issues so its primary focus is addressing the parking area at the South Shore Yacht Club. A significant issue for the area is safe access to multiple user groups including vehicles with large trailered boats, a major bike trail, and pedestrian traffic. UW-Sea Grant supported the process by doing an economic study that showed significant value associated with improving the beach with an increase in average day visit expenditure between \$4 and \$11 in Milwaukee County. The study estimated 153,000 Milwaukee residents do not visit Lake Michigan beaches because of water quality concerns (source: Jane Harrison, UW-Sea Grant presentation). The county is seeking funding to implement design plans and Miller-Coors will be providing funding over 5 years to cover some of the work. The city of Milwaukee beaches are in an Area of Concern (AOC) with a beach closure beneficial use impairment (BUI) so portions of the project may be included in the AOC's remedial action plan.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
2	Atwater Park Beach	28	5	17.9%	1	3.6%
1	Bay View Park Beach	19	4	21.1%	3	15.8%
2N	Bender Beach	31	5	16.1%	1	3.2%
2	Bradford Beach	83	13	15.7%	3	3.6%
2N	Grant Park Beach	33	5	15.2%	0	0.0%
2	Klode Park Beach	30	7	23.3%	5	16.7%
2	McKinley Beach	83	15	18.1%	3	3.6%
2	South Shore Beach	83	43	51.8%	7	8.4%
2	Tietjen Beach / Doctor's Park	28	6	21.4%	1	3.6%
<b>9</b>	<b>Milwaukee County Total</b>	<b>418</b>	<b>103</b>	<b>24.6%</b>	<b>24</b>	<b>5.7%</b>

### **Ozaukee County**

Ozaukee County continued into the second year of their Wisconsin Coastal Management grant to pilot a two tiered nowcast primarily at Upper Lake Park and to perform sanitary surveys at the four beaches at Harrington Beach. Funding from this grant stretched the county dollars allocated from the BEACH Act grant into two seasons and provided additional vigilance at the beaches by operating the models on days when the beach is not monitored. Fewer routine samples were collected at the beaches as resources were balanced towards sanitary survey efforts. Nowcasts for Harrington Beach State Park beaches have not performed as reliably as desired so a primary goal of the sanitary survey was to better identify sources contributing bacterial contamination and improve the models' predictive capability. As part of the sanitary survey process, state park staff identified a need to align the beach listings with how they are actually managed, recognizing that there is only one natural landmark distinguishing the north and south beach areas. The Lion's Den natural area was not monitored in 2014.

County Public Health and Land and Water Conservation Departments staff worked closely with DNR to develop a sampling plan for the sanitary survey that optimized the number of samples within the budget. Considering the potential sources for bacterial contaminants, the sampling plan included some DNA source analyses to identify host species. Preliminary results indicated mixed sources including human, ruminant and gull markers. The gull contribution is notable in that these birds were not observed on the beach. The County Land and Water Conservation department is doing additional investigation upstream of the outfalls to identify sources more specifically. During the 2014 season, the county highway department cleaned out a roadside ditch which contributed additional sediment to the discharge. Design plans to address the runoff from the ditches are being re-evaluated in light of the sanitary survey information. The county has consulted DNR beach and parks staff throughout the process and these discussions will continue to find a mutually agreeable solution to address the sources of bacterial contamination at Harrington Beach. The sanitary survey report will be used to inform decision-making.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
2N	Cedar Beach Rd Beach	36	7	19.4%	4	11.1%
2	Concordia University	18	1	5.6%	0	0.0%
2N	County Road D Boat Launch Beach	36	9	25.0%	2	5.6%

2N	Harrington State Park Beach North	36	4	11.1%	2	5.6%
2N	Harrington State Park Beach South	36	8	22.2%	4	11.1%
2N	Upper Lake Park Beach	30	4	13.3%	1	3.3%
	<b>Ozaukee County Total</b>	<b>192</b>	<b>33</b>	<b>17.2%</b>	<b>13</b>	<b>6.8%</b>

### Racine County

The City of Racine places a high priority on monitoring its beaches and uses rapid methods and uses multiple tools to determine water quality conditions. Of the remaining five beaches, the two high priority beaches each have multiple monitoring stations, four at North Beach and three at Zoo Beach. Through Dr. Julie Kinzelman's work to develop same-day qPCR methods applicable to *E. coli*, City of Racine Health Department has approval and has implemented these alternate



Shoop Park waterfront  
Photo by Julie Kinzelman

methods for determining beach advisory status. In addition, Racine developed Nowcasts using qPCR for both North and Zoo beaches and continues to use a weight of evidence approach to determining whether water quality conditions warranted declaring an advisory. The remaining 4 beaches are identified as low priority and were not funded by BEACH Act funds although the results were reported to the beach health website. The village of Wind Point identified a concern with access to the beach at Shoop Park as well as safety concerns associated with in-water structures. They requested that this location be

removed from the beach list. This request will be evaluated as part of the 2015 revisions to the beach list.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
3N	North Beach	65	11	16.9%	3	4.6%
3N	Zoo Beach	62	18	29.0%	7	11.3%
V – A	Parkway Beach	14	0	0.0%	0	0.0%
V – A	Shoop Park Beach	14	0	0.0%	0	0.0%
A – A	Wind Point Lighthouse Beach	14	0	0.0%	0	0.0%
5	<b>Racine County Total</b>	<b>169</b>	<b>29</b>	<b>17.2%</b>	<b>10</b>	<b>5.9%</b>

### Sheboygan County

Sheboygan County received both BEACH Act and Wisconsin Coastal Management funding to provide monitoring for 2013 and 2014. The county continued its pilot of the two tiered Nowcast system at three of its beaches with great success. They worked with Blue Harbor resort to provide current beach conditions for their guests, tailoring the message to their nowcast system. The beaches at Kohler-Andrae State Park were monitored through an agreement with University of Wisconsin – Oshkosh.



Malibu of the Midwest - Sheboygan, Wisconsin  
Photo by Carol Toepke

The redesign plan to address erosion and stormwater from the parking lot at the North Picnic beach was completed. The DNR beach and state park staff worked to identify funding sources for this maintenance and the Friends of Kohler-Andrae State Park stepped forward to lead the effort. The project was short-listed for funding and we are awaiting a final decision on the award. This donation effort will be presented to DNR’s Natural Resource Board for approval in the near future.

2014 Contract Frequency	Beach	Total Samples	Exceedances >235	% Exceedances	Closures >1000	% Closures
1	Amsterdam Beach	16	5	31.3%	2	12.5%
2N	Blue Harbor Beach	27	2	7.4%	1	3.7%
2N	Deland Park Beach	27	5	18.5%	1	3.7%
2N	General King Park Beach	27	2	7.4%	1	3.7%
3	Kohler Andrae State Park Nature Center Beach	41	6	14.6%	2	4.9%
*	Kohler Andrae State Park North Beach	Comp				
3	Kohler Andrae State Park North Picnic Beach	41	8	19.5%	2	4.9%
*	Kohler Andrae State Park South Picnic Beach	Comp				
	<b>Sheboygan County Total</b>	<b>163</b>	<b>23</b>	<b>14.1%</b>	<b>7</b>	<b>4.3%</b>

\* The sampling plan reverted to composite samples as the beaches are managed as 2 locations rather than 4.

## **Improvement Opportunities - Program Deficiencies**

Similar to past years, there are several changes that would be helpful to Wisconsin’s efforts to implement a more comprehensive and effective Great Lake Beach Monitoring Program. A number of counties reported changes in coastline access or management of beach areas that involve removing beaches from the list or consolidating beach listings. Non-participating counties have expressed an interest in participating in the program at a time when supplemental funds were necessary to operate a reduced monitoring program. This suggests the need to re-visit the statewide beach list and the associated priorities for monitoring. Few coastal beaches have lifeguards routinely so local beach managers rely on subjective assessments to inform assignment to tiers. State parks staff expressed concern that our beach list does not match their list of swimming beaches which may have implications for property management. At times there are questions about why a particular location is listed. In response to these concerns, we intend to evaluate Wisconsin’s beach listings in 2015 to add new locations, determine whether listings continue to be appropriate and to adjust the names and listing to more closely align with how locations are managed and known locally.

Wisconsin DNR has placed a priority on using BEACH Act grant resources for on the ground monitoring and notification system activities. As such, staffing and program administration costs have been covered by other sources. The result is that timeliness of the administrative processes (e.g. contracts and grant reporting) and attention to program needs suffer as the program coordinator balances these responsibilities with other job duties. It’s unclear how long this situation can continue given increasing workload and current fiscal realities. EPA responded favorably to public comments related to grant guidance and incorporated additional flexibility in covered activities. At the same time the guidance placed additional emphasis on prioritizing more real-time notification systems like qPCR and predictive models, funding to implement these activities was reduced. State coordinators were notified to anticipate further reductions with the possibility of eliminating BEACH Act grants entirely in 2017. Should that occur, DNR anticipates

limited capacity to sustain the Wisconsin Beach Health website and the associated data reporting functions.

Although many locations do routine sanitary survey data collection, this practice needs to be extended beyond the current beaches. By making it a routine practice at all BEACH Act funded locations, additional communities can evaluate whether nowcasting is feasible and where it is, the Virtual Beach tool can be made available. We welcome the inclusion of sanitary surveys into the beach grant guidance and plan to incorporate this into the program systematically in 2015. To that end, we plan to include those data elements in the routine web reporting form so cooperating organizations have a convenient mechanism to record the information.

Based on our experience this past year, several updates to our IT infrastructure are necessary. We are working with USGS to enhance the data system and internal reports to streamline the process for quality assuring the beach attributes and advisory data. As indicated earlier in this report, we intend to revise some of our reporting procedures to make the quality assurance process less time consuming. Perhaps most important is the need to stabilize the architecture of EnDDaT and the GLOS systems that serve the data so they are reliable and data are regularly available in near real-time during the beach season. Adam Mednick has been collaborating with USGS, NOAA, the Great Lakes Commission and EPA to address these identified issues, however it's unclear whether the efforts will be funded. This situation highlights the need to provide on-going maintenance for systems that are developed if the funders and developers intend for those tools to be useful in the long-term.

As indicated in the Kewaunee county narrative, the signs posted at the beaches need re-evaluation with a focus on multi-lingual messaging. Conversations with stakeholders indicate that signs are often ignored and simple messaging is often more effective. As part of the 2015 program implementation, the program intends to make the bilingual sign trilingual and update the messaging. If possible, the sign will incorporate a QR code that links to Wisconsin's beach health website. The website needs some redesign to make it more mobile-friendly.

### **Secure Funding Needed for Program Implementation**

Local partners have emphasized the need to have secure beach monitoring funding for program implementation on a cycle that aligns with city and county budget planning. Funding through the BEACH Act has provided critical impetus for implementing beach management practices and restorations to improve water quality. In locations that have seen an economic benefit from improved beach conditions, securing funding for monitoring may be somewhat easier but it can be a tough case to make, particularly in communities with limited tax base or other resources. Program partners expend exceptional effort to leverage funding from existing sources and optimize presence of Wisconsin's coastal beaches. Grant funders are more receptive to projects with defined issues and concrete solutions.

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. DNR does not have excess capacity to pick up the monitoring efforts and will need to prioritize efforts to reassess attainment status for the recreational water use designation. The program has minimal resources to keep beach measurements up-to-date in response to changes in the landscape such as changes in lake levels, presence of invasive species like phragmites, restoration activities and shoreline erosion. Additional resources are necessary to support expansion of Nowcasting, maintenance and enhancement of information technology tools to support more real-time notification systems, and at beaches that have implemented restoration or other mitigation efforts, enhanced monitoring to re-establish relationships between water quality and predictive conditions. Current efforts include forming a Virtual Beach users group to develop expertise and make the nowcasting a more sustainable effort. Various stakeholders have

identified the need to re-establish a regular stakeholders group to address on-going beach program and coastal health issues (e.g., incorporating dangerous currents advisories and messaging into beach management practices), however program resources are already stretched to capacity.

## **Conclusion**

Wisconsin's Great Lakes Beach Monitoring & Notification Program continues to evolve and provide useful monitoring information for health departments and the public, facing the challenges of a limited budget and an uncertain future for the federal BEACH Act. Wisconsin DNR absorbs administrative costs of program operation, placing a priority on supporting local monitoring and the infrastructure necessary to notify the public of beach conditions. Minimum monitoring frequencies were adjusted to assure maximal coverage across the state and assure that beaches identified on the impaired waters list continue to be monitored. Significant efforts were made to stabilize funding and optimize program operation through nowcasting where operational models exist. In the short term, the program worked to optimize and leverage existing resources to cover beach monitoring, however these added funds are not expected to be available beyond 2014. Communities and the University system continue effective partnerships arrangements to leverage multiple grant sources and stretch available resources, however funding cuts occurring at all levels of government make it increasingly difficult to find funding for the monitoring, management practices and mitigation activities needed to reduce water quality exceedances that indicate poor swimming conditions. Wisconsin DNR pursued other funding to support Nowcast model development and continue opportunities to balance monitoring effort and meaningful public health notifications. Wisconsin Department of Health provided funding to link data from Wisconsin's beach health website to mobile applications. Beyond providing dollars for collecting *E. coli* samples, the BEACH Act grant is critical for maintaining efficient, centralized information technology resources for reporting data, posting advisories, providing a focal point for public information on the status of our beaches, and transmitting the necessary data reporting to EPA.

**2014 Beach List – Note color coded information identified below**

Impaired	Nowcast	2013 adjustment	Alternate Funding	Comment, priority adjustment, special consideration
<b>2014 Monitoring Frequency</b>				
Ashland Beaches	EPA_Bch_ID	Monitoring Frequency	Priority	Status Comments - Impaired, redesign phase, nowcasting, etc.
Bayview Park Ashland	WI883392	2/week	Medium	Nowcast
Big Bay State Park	WI937015	1/week	Medium	
Big Bay Town Park	WI985506	None	Low	
Casper Rd	WI415576	None	Low	
Kreher Park	WI664128	2 +/-week	Medium	Nowcast
La Pointe Memorial	WI492046	None	Low	
Maslowski	WI134911	2 +/-week	Medium	Nowcast
Bayfield Beaches	EPA_Bch_ID	Monitored	Priority	
Bark Bay	WI612731	1/week voluntary	Low	
Bono Creek Boat Launch	WI863673	1/week voluntary	Low	
Broad St	WI092383	2/week voluntary	Low	Some Local interest
Herbster	WI104571	1/week voluntary	Low	
Highway 13 Wayside	WI226688	None	Low	
Little Sand Bay	WI665352	1/week voluntary	Low	
Memorial Bayfield	WI627331	1/week voluntary	Low	
Memorial Park Washburn	WI928596	1/week voluntary	Low	
Port Wing East	WI159171	1/week voluntary	Low	
Port Wing West	WI347339	1/week voluntary	Low	
River Loop Rd	WI887162	None	Low	
Sioux River North	WI728716	1/week voluntary	Low	Second Highest usage in area
Sioux River South	WI666189	1/week voluntary	Low	Potentially composited
Siskiwit	WI197157	1/week voluntary	Low	Beach nourishment (USACE)
Thompson West End Park	WI275933	3/week 1/week	Medium	Nowcast, restoration 2013-14
Washburn Marina	WI981381	1/week voluntary	Low	
Washburn Walking Trail (aka BAB)	WI437149	1/week voluntary	Low	
Washington Ave	WI984993	1/week voluntary	Low	
Wikdal Memorial Boat Launch	WI151032	No	Low	
Brown Beaches	EPA_Bch_ID	Monitored	Priority	Monitoring for beach development, not in Beach Health public site
Bay Beach	WI851239	Special 1/week	NA	
Bayshore Park	WI740597	voluntary	Low	

Communiversity Park	WI403290	None	Low
Joliet Park	WI488049	None	Low
Long Tail Point (North and South)	WI477262	< 1/week voluntary	Low
Riverside Dr	WI744516	None	Low
Town of Scott Park	WI268522	None	Low
Van Lanen	WI405669	None	Low
Volks Landing Boat Launch	WI851821	None	Low

Frequency supplemented with other funds - voluntary designation if no BEACH Act funds for location

<b>Door Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Anclam Park	WI501955	2/week	Medium	Redesign
Arrowhead Ln	WI648903	None	Low	
Bailey Harbor Ridges Park	WI914897	3 +/week	High	Restoration
Bittersweet Ln	WI454590	None	Low	
Braunsdorf	WI982339	None	Low	
Chippewa Dr	WI822170	None	Low	
Clay Banks #1	WI722618	None	Low	
		2/week		
Clay Banks #2	WI198915	voluntary	Low	
Cliff View Dr	WI571574	None	Low	
County Rd TT	WI509669	None	Low	
Deer Path Ln	WI690474	None	Low	
Egg Harbor	WI421809	4/week	High	Nowcast potential - restoration
Ellison Bay Town Park	WI797561	4/week	High	Nowcast potential - redesign
Ephraim	WI062070	4/week	High	
Europe Bay #1	WI890519	2/week	Medium	
Europe Bay #2	WI186833	1/week	Medium	
Europe Bay #3	WI902641	2/week	Medium	
Fish Creek	WI805969	4/week	High	Redesign
Garrett Bay Boat Launch	WI641392	None	Low	
		1/week		
Gislason Beach	WI218684	voluntary	Low	
Goldenrod Ln	WI239741	None	Low	
Haines Park	WI826309	2/week	Medium	
Hemlock Ln	WI458895	None	Low	
Isle View Rd	WI201331	None	Low	
		1/week		
Jackson Harbor Ridges	WI171560	voluntary	Low	
Kickapoo Dr	WI868378	None	Low	
Lakeshore Dr Door	WI279186	None	Low	
Lakeside Park	WI160438	2/week	Medium	Redesign
Lily Bay Boat Launch	WI898745	None	Low	
Murphy Park	WI641986	4/week	High	Redesign
Newport Bay	WI997969	4/week	High	
Nicolet	WI512106	4/week	High	Restoration
Otumba Park	WI873897	4/week	High	
Pebble Beach Rd Door	WI309537	None	Low	
Percy Johnson Memorial Park	WI160996	1/week voluntary	Low	
Portage Park	WI757225	2/week	Medium	
Potawatomi State Park #1	WI527029	None	Low	

Potawatomi State Park #2	WI111056	None	Low	
		1/week		
Rock Island State Park	WI338621	voluntary	Low	
Sand Bay #1	WI176829	2/week	Medium	
		1/week		
Sand Bay #2	WI607192	voluntary	Low	
Sand Cove	WI155253	None	Low	
		1/week		
Sand Dune	WI247871	voluntary	Low	
Sandy Bay Town Park	WI282701	2/week	Medium	
		1/week		
School House	WI584728	voluntary	Low	
Sister Bay	WI847906	4/week	High	
Sturgeon Bay Canal				
Recreation Area	WI313701	2/week	Medium	
Sunset	WI845995	4/week	High	Redesign
Sunset Park Sturgeon Bay	WI500512	4/week	High	
White Pine Ln	WI320073	None	Low	
		1/week		
Whitefish Bay Boat Launch	WI587021	voluntary	Low	
Whitefish Dunes	WI872074	4/week	High	Nowcast potential
Winnebago Dr	WI201701	None	Low	
<b>Douglas Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Allouez Bay #1	WI349391	None	Low	
Allouez Bay #2	WI294067	None	Low	
Allouez Bay #3	WI578209	None	Low	
Amnicon River	WI545475	None	Low	
Barker Island Inner	WI887548	2/week alternate \$	Medium	Impaired, nowcast developed
Barker Island Outer	WI915457	None	Low	
Brule River State Forest #1	WI137478	None	Low	
Brule River State Forest #2	WI750300	None	Low	
Brule River State Forest #3	WI983384	None	Low	
Connors Point	WI952236	None	Low	
Middle River	WI741058	None	Low	
Wisconsin Point #1 (monument)	WI888427	None	Medium	Impaired 2014 - 2/wk in 2014 alt \$
Wisconsin Point #2 (Mocassin Mike)	WI669980	2/week alternate \$	Low	Impaired, nowcast developed
Wisconsin Point #3 (Dutchman Creek)	WI573145	None	Low	Impaired 2014 - 2/wk in 2014 alt \$
Wisconsin Point #4 (south- east of breakwater)	WI831163	None	Low	
Wisconsin Point #5 (lighthouse)	WI956099	None	Low	
<b>Iron Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Oronto Bay #1	WI895483	<1/week voluntary	Low	
Oronto Bay #2	WI938425	<1/week voluntary	Low	
Oronto Bay #3	WI502001	<1/week voluntary	Low	
Saxon Harbor East	WI157254	1/week voluntary	Low	

Saxon Harbor West	WI960543	1/week voluntary	Low
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**Kenosha Beaches**

	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Alford Park	WI371142	2/week	Low	
Eichelman Park	WI197731	3/week	Medium	Developing Nowcast - redesign
Lakeshore Dr Kenosha	WI277295	None	Low	
Marina (aka Melissa)	WI572765	None	Low	
Pennoyer Park	WI130707	2/week	Low	
Simmon Island Park	WI892494	2/week	Medium	Developing Nowcast - redesign
Southport Park	WI400905	1/week	Low	

**Kewaunee Beaches**

	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
9th Ave Wayside	WI241184	None	Low	
City of Kewanee	WI620050	1/week	Low	Impaired
Crescent	WI608310	3/week	Medium	Impaired - Redesign
Lighthouse Vista	WI901066	None	Low	
Red River Park	WI633041	None	Low	redesign

**Manitowoc Beaches**

	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Fischer Creek Park	WI125039	None	Low	Impaired -
Hika Park	WI932022	2/week	Low	Impaired - Nowcast - redesign
Lincoln Highschool	WI705121	None	Low	
Maritime Dr Boat Launch	WI792119	None	Low	
Memorial Dr Wayside Middle	WI232578	None	Low	
Memorial Dr Wayside North	WI136397	2/week	Medium	Impaired -redesign
Memorial Dr Wayside South	WI422085	2/week	Medium	Impaired - Redesign
Neshotah Park	WI821179	4/week?	Medium	Impaired - Nowcast - redesign
Point State Park Concession Stand	WI997982	4/week	Medium	Composite - Redesign plan
Point State Park Lakeshore Picnic Area	WI538951	4/week	Medium	Composite - Redesign plan
Point State Park Lighthouse Picnic Area	WI510658	4/week	Medium	Composite - Redesign plan
Red Arrow Manitowoc	WI012139	4/week	Medium	Impaired - Nowcast, redesign
Silver Creek	WI465036	None	Low	redesign
Two Creek Boat Launch	WI350293	None	Low	
University	WI564320	None	Low	
Warm Water	WI747314	None	Low	Impaired, needs \$
YMCA	WI279226	2/week	Low	Impaired

**Marinette Beaches**

	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	<b>Interested in monitoring</b>
Michaelis Park	WI218531	None	Low	
Peshtigo Harbor Boat Launch	WI819664	None	Low	
Red Arrow Marinette #1	WI936169	None	Low	Restoration
Red Arrow Marinette #2	WI111115	None	Low	
Red Arrow Marinette #3	WI997460	None	Low	
Seagull Bar Wildlife Area	WI113808	None	Low	

**Milwaukee Beaches**

	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Atwater Park	WI607583	2/week	Medium	
Bayview Park Milwaukee	WI628125	1/week	Low	Impaired
Bender Park	WI977064	2/week	Medium	

Big Bay Park	WI247909	None	Low	
Bradford Beach	WI312597	4/week	High	Impaired - Nowcast, restoration Impaired - Nowcast, redesign plan
Grant Park	WI429764	3/week	Medium	
Klode Park	WI291459	2/week	Medium	
McKinley	WI234408	4/week	Low	Impaired
Sheridan Park	WI265434	None	Low	
South Shore	WI333813	4/week	Low	Impaired
South Shore Rocky	WI545512	None	Low	
Tietjen Doctors Park	WI746946	2/week	Medium	
Watercraft Beach (McKinley Jetski Launch)	WI987935	None	Low	
<b>Oconto Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Oconto City Park	WI455048	None	Low	redesign
<b>Ozaukee Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Cedar Beach Rd	WI679515	4/week	High	Impaired - Nowcast
County Rd D Boat Launch	WI467224	4/week	High	Impaired - Nowcast
Harrington State Park North	WI407836	4/week	High	Impaired - Nowcast
Harrington State Park South	WI564539	4/week	High	Impaired - Nowcast
Jay Rd	WI926427	None	Low	
Lions Den Gorge Nature Preserve	WI750163	2/week	Low	
Pebble Beach Rd Ozaukee	WI727293	None	Low	
Sandy Beach Rd	WI944539	None	Low	
Silver Rd	WI922794	None	Low	
Upper Lake Park	WI652173	4/week	High	Nowcast
Concordia University	WI624360	2/week	Medium	
<b>Racine Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
Michigan Blvd	WI878333	NA	NA	
Sam Myers Park	WI919997	NA - Yes	NA	Racine coverage - Restoration to off-shore beach
North	WI721390	5/week	High	Nowcast - past restoration, BMPs
Parkway	WI889003	None	Low	Racine coverage
Shoop Park	WI714418	None	Low	Racine coverage
Wind Point Lighthouse	WI718147	None	Low	Racine coverage
Zoo	WI988510	5/week	High	Nowcast - past restoration, BMPs
<b>Sheboygan Beaches</b>	<b>EPA_Bch_ID</b>	<b>Monitored</b>	<b>Priority</b>	
3rd St	WI986407	None	Low	
Amsterdam	WI410541	None	Low	Delisted impairment - evaluate
Blue Harbor	WI252842	2/week	High	Nowcast - redesign
Deland Park	WI949936	2/week	High	Nowcast - redesign
Foster Rd	WI365989	None	Low	
General King Park	WI217913	2/week	High	Nowcast - redesign
KK Rd	WI902958	No	Low	Delisted impairment - evaluate
Kohler-Andrae State Park Nature Center	WI526839	2/week	High	Developing Nowcast
Kohler-Andrae State Park	WI313632	2/week	High	Developing Nowcast

North					
Kohler-Andrae State Park North Picnic Area	WI406325	2/week	High	Developing Nowcast, parking lot redesign	
Kohler-Andrae State Park South Picnic Area	WI626591	2/week	High	Developing Nowcast redesign	
Lakeview Park	WI394243	None	Low		
Van Ess Rd	WI518118	None	Low	Delisted impairment - evaluate	
Vollrath Park	WI975330	None	Low		
Whitcomb Ave	WI858481	None	Low		
Wilson Lima (aka Whites)	WI634281	None		Low	