

OHIO

29th in beachwater quality (19% of samples exceeded national standards)

Ohio has 53 public beaches lining 7.3 miles of Lake Erie shoreline.¹ These beaches are found in Ashtabula, Lake, Cuyahoga, Lorain, Erie, Lucas, and Ottawa Counties.

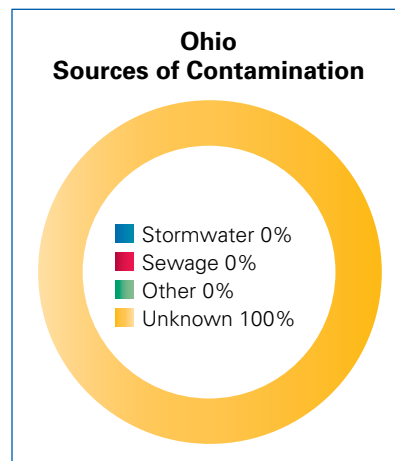
The state's beachwater quality monitoring program is administered by the Ohio Department of Health (ODH). This department, in addition to monitoring some of Lake Erie's beaches, coordinates activities at coastal beaches monitored by the Lake County General Health District, the Cuyahoga County Board of Health, and the Northeast Ohio Regional Sewer District. Ohio is a "home rule" state and the state can only recommend that a municipality post a warning sign when the state standard is exceeded. However, local agencies are complying with these recommendations, and advisories are issued when the standard is exceeded. Some inland beaches are also monitored for water quality in Ohio, but this report includes information about only Lake Erie monitoring activities.

The monitoring season varies depending on the monitoring agency, but generally runs from Memorial Day through Labor Day.²

Partly due to elevated bacteria levels along the Lake Erie shore, the Northeast Ohio Regional Sewer District is making changes to its combined sewer system in order to reduce combined sewer overflows. The Cleveland Department of Public Health develops educational materials for the beachgoing public and participates in various outreach activities held along the Lake Erie shore. In 2009, Erie County is planning on using a rapid analytical method to monitor the water quality at the beaches that fall under its jurisdiction.

Monitoring for harmful algal blooms is not currently conducted in Ohio. A plan to combine harmful algal bloom and beachwater quality information online using the current beachwater quality system is under consideration.¹

Ohio received a \$220,780 federal BEACH Act grant in 2008 and was eligible for a \$224,000 grant in 2009. The BEACH Act grants fully fund Ohio's Lake Erie beach monitoring program.



Standards

Indicator Organism: *E. coli*.

Standards: Ohio uses the *E. coli* single-sample maximum standard of 235 cfu/100 ml for beach closing and advisory decisions. There are no preemptive rainfall standards, but preemptive rainfall advisories can be issued by beach managers if they feel water quality has been compromised by rain.¹ Beach managers may also restrict beach access because of sewage or other pollution spills, or for any other threat to public health.

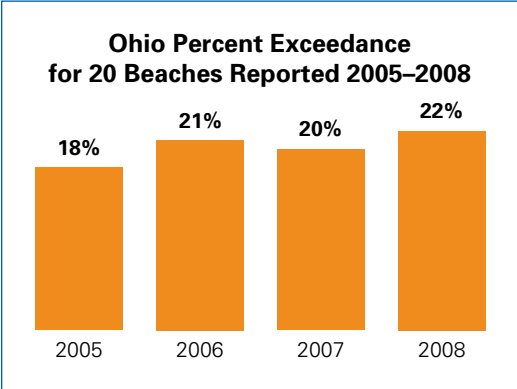
A predictive model called Nowcast uses environmental factors including rainfall, turbidity, and wave height to predict *E. coli* levels. Huntington Beach and Edgewater Beach are placed on advisory status if Nowcast predicts that the probability of *E. coli* concentrations exceeding 235 cfu/100 ml is 30 percent or greater. Bacterial monitoring at Huntington Beach has shown that Nowcast-based notifications are issued in a more protective pattern than if they had been issued based on bacterial monitoring.² In another modeling effort, the Ashtabula Township Park Commission has collaborated with the US Geological Survey (USGS) in continued testing and refining of a model for predicting *E. coli* concentrations at Lakeshore Park. The model was used to examine and compare the association between *E. coli* concentrations and algal density.²

Monitoring

Determination of Monitoring Locations and Frequency: For the most part, monitoring is conducted at the area of the beach used most by the public.

Practice: Monitoring practices depend somewhat on the agency conducting the monitoring.¹ Guidance recommends that samples be taken in water that is three feet deep, one foot below the surface, in an area of the beach generally used for swimming. Sampling results are generally available 18 to 24 hours after samples are delivered to the lab. Sampling occurs every day of the week at Lake County beaches, Monday through Friday or daily at Cuyahoga County beaches, and Monday through Thursday at all other beaches with the exception of two island beaches, which are sampled on Monday.

Results: In 2008, Ohio reported 45 coastal beaches, 6 (13%) of which were monitored daily, 37 (82%) more than once a week, and 2 (4%) once a week. For the fourth consecutive year, NRDC looked at the percent of monitoring samples that exceeded the state’s daily maximum bacterial standards (all reported samples were used to calculate the 2008 percent exceedance values, including duplicate samples and samples taken outside the official beach season, if any). In 2008, 19 percent of all reported beach monitoring samples exceeded the state’s daily maximum bacterial standards. The beaches with the highest percent exceedance rate in 2008 were Lakeshore Park in Ashtabula County (53%), Euclid State Park (47%) and Villa Angela State Park (45%) in Cuyahoga County, Bay View West in Erie County (41%), Edgewater State Park in Cuyahoga County (34%), Lakeview Beach (31%) and Century Beach (30%) in Lorain County, Edison Creek in Erie County (30%), Camp Perry in Ottawa County (28%), and Huron River West in Erie County (27%).



Cuyahoga County had the highest percent exceedance rate in 2008 (35%) followed by Lorain (30%), Ashtabula (21%), Lucas (15%), Lake (15%), Erie (14%), and Ottawa (8%).

Comparing percent exceedance values to previous years, NRDC includes only those beaches monitored and reported each year between 2005 and 2008. For this consistent set of 20 beaches, the percent of samples exceeding the standard increased to 22 percent in 2008, the highest level since 2005 (20 percent, 21 percent, and 18 percent, in 2007, 2006, and 2005 respectively).

2008 Ohio Monitoring Frequency and Results by Beach					
County	Beach	Tier	Monitoring Frequency	Total Samples	Percent Exceedance
Ashtabula	Lakeshore Park	2	4/wk	55	53%
Ashtabula	Geneva State Park	2	4/wk	55	13%
Ashtabula	Conneaut Township Park	2	4/wk	55	11%
Ashtabula	Walnut Beach	2	4/wk	55	7%
Cuyahoga	Euclid State Park	1	Daily	109	47%
Cuyahoga	Villa Angela State Park	1	Daily	109	45%
Cuyahoga	Edgewater State Park	1	Daily	108	34%
Cuyahoga	Huntington Beach	1	Daily	104	12%
Erie	Bay View West	3	3/wk	41	41%
Erie	Edison Creek	3	3/wk	40	30%
Erie	Huron River West	3	3/wk	41	27%
Erie	Vermilion River East	3	3/wk	40	23%
Erie	Sherod Creek	3	3/wk	39	21%
Erie	Showse Park	3	3/wk	40	20%
Erie	Crystal Rock	3	3/wk	40	18%

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County	Beach	Tier	Monitoring Frequency	Total Samples	Percent Exceedance
Erie	Darby Creek	3	3/wk	41	17%
Erie	Sugar Creek	3	3/wk	40	15%
Erie	Vermilion River West	3	3/wk	40	15%
Erie	Pickereel Creek	3	3/wk	41	15%
Erie	Cedar Point Chausee	3	3/wk	41	15%
Erie	Huron River East	3	3/wk	41	15%
Erie	Bay View East	3	3/wk	41	12%
Erie	Old Womans Creek West	3	3/wk	41	12%
Erie	Whites Landing	3	3/wk	41	12%
Erie	Fichtel Creek	3	3/wk	41	10%
Erie	Kiwanis	3	3/wk	41	10%
Erie	Cranberry Creek	3	3/wk	41	5%
Erie	Hoffman Ditch	3	3/wk	39	3%
Erie	Old Womans Creek East	3	3/wk	40	3%
Erie	Lion's Park	3	3/wk	41	2%
Erie	Battery Park	3	3/wk	41	2%
Erie	Sawmill Creek	3	3/wk	40	0%
Erie	Chappel Creek	3	3/wk	0	N/A
Lake	Fairport Harbor	1	Daily	104	22%
Lake	Headlands State Park (E)	1	Daily	208	11%
Lorain	Lakeview Beach	2	4/wk	55	31%
Lorain	Century Beach	2	4/wk	96	30%
Lucas	Maumee Bay State Park (ERIE)	2	4/wk	53	15%
Ottawa	Camp Perry	2	4/wk	53	28%
Ottawa	Port Clinton (Deep\Lakeview))	2	4/wk	53	11%
Ottawa	Lakeside Beach	2	4/wk	53	4%
Ottawa	Catawba Island State Park	2	4/wk	53	2%
Ottawa	East Harbor State Park	2	4/wk	53	0%
Ottawa	South Bass Island State Park	3	1/wk	13	0%
Ottawa	Kelleys Island State Park	3	1/wk	13	0%

Closings and Advisories

Closing and Advisory Issuance: Advisories due to monitoring results are issued at Lake Erie beaches in Ohio by local authorities based on recommendations by the state. Local jurisdictions have the authority to close beaches if they choose. No geometric mean standard is applied when making closing and advisory decisions. In 2008, local jurisdictions notified the public when bacterial exceedances were found.

The public is notified of advisories and closings via a telephone hotline, website, signs, and newspaper articles.² Suggested language for signs posting a beach includes: "Water Quality Advisory - Bacterial levels here currently exceed state standards. Children, the elderly and those in ill health are advised not to swim."³ Advisories are generally issued for whole beaches, not sections of a beach.

Testing the Waters 2009

Reopening Procedures: The monitoring frequency does not generally increase if a beach is placed under advisory. This is because nearly all beaches are already sampled daily or as frequently as laboratory availability will allow.¹ When the sample results are acceptable, beach managers are contacted and advised that signs can be taken down.

Number of Closings and Advisories: Ohio had 312 closing/advisory events in 2008. Total closing/advisory days for 312 events lasting six consecutive weeks or less increased 19% to 783 days in 2008 from 657 days in 2007, 629 days in 2006, and 182 days in 2005. In addition, there were no extended or permanent events in 2008 or 2007. Extended events are those in effect more than 6 consecutive weeks but not more than 13 consecutive weeks; permanent events are in effect for more than 13 consecutive weeks.

Causes of Closings and Advisories: For events lasting six consecutive weeks or less, 94% (733) of closing/advisory days in 2008 were due to monitoring that revealed elevated bacteria levels, and 6% (50) were preemptive (i.e. without waiting for monitoring results) based on the results of computer modeling. All closing and advisory days in 2008 were from unknown sources of contamination.

2008 Ohio Beach Closings and Advisories					
County	Beach	Start Date	End Date	Reason	Source
Ashtabula	Conneaut Township Park	6/13/08	6/19/08	Bacteria	Unknown
Ashtabula	Conneaut Township Park	7/9/08	7/15/08	Bacteria	Unknown
Ashtabula	Conneaut Township Park	7/23/08	7/25/08	Bacteria	Unknown
Ashtabula	Geneva State Park	6/5/08	6/6/08	Bacteria	Unknown
Ashtabula	Geneva State Park	6/13/08	6/17/08	Bacteria	Unknown
Ashtabula	Geneva State Park	7/10/08	7/15/08	Bacteria	Unknown
Ashtabula	Geneva State Park	7/24/08	7/29/08	Bacteria	Unknown
Ashtabula	Geneva State Park	7/31/08	8/1/08	Bacteria	Unknown
Ashtabula	Geneva State Park	8/8/08	8/12/08	Bacteria	Unknown
Ashtabula	Geneva State Park	8/20/08	8/21/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	6/4/08	6/20/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	6/25/08	6/26/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/1/08	7/3/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/4/08	7/9/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/10/08	7/16/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/17/08	7/23/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/24/08	7/29/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	7/30/08	8/5/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	8/7/08	8/12/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	8/19/08	8/21/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	8/26/08	8/27/08	Bacteria	Unknown
Ashtabula	Lakeshore Park	9/5/08	9/6/08	Bacteria	Unknown
Ashtabula	Walnut Beach	6/11/08	6/12/08	Bacteria	Unknown
Ashtabula	Walnut Beach	6/27/08	7/1/08	Bacteria	Unknown
Ashtabula	Walnut Beach	7/10/08	7/15/08	Bacteria	Unknown
Ashtabula	Walnut Beach	7/31/08	8/1/08	Bacteria	Unknown
Cuyahoga	Edgewater State Park	5/20/08	5/22/08	Preempt-model	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Cuyahoga	Edgewater State Park	5/25/08	5/27/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	5/28/08	5/29/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/1/08	6/2/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/4/08	6/7/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/13/08	6/14/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/18/08	6/19/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/22/08	6/23/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/24/08	6/25/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/27/08	6/28/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	6/29/08	6/30/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/4/08	7/5/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/10/08	7/12/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/14/08	7/16/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/18/08	7/19/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/22/08	7/25/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	7/27/08	7/29/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/1/08	8/2/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/6/08	8/10/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/12/08	8/13/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/16/08	8/17/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/20/08	8/21/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	8/30/08	9/1/08	Preempt-model	Unknown
Cuyahoga	Edgewater State Park	9/4/08	9/6/08	Preempt-model	Unknown
Cuyahoga	Euclid State Park	5/20/08	5/21/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	5/28/08	5/29/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/1/08	6/2/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/4/08	6/6/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/11/08	6/12/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/13/08	6/14/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/15/08	6/16/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/17/08	6/19/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/23/08	6/25/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	6/29/08	7/4/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	7/9/08	7/16/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	7/17/08	7/20/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	7/21/08	7/26/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	7/28/08	7/29/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	7/30/08	8/2/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	8/3/08	8/10/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	8/11/08	8/13/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	8/16/08	8/17/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	8/19/08	8/21/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Cuyahoga	Euclid State Park	8/26/08	8/27/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	8/31/08	9/1/08	Bacteria	Unknown
Cuyahoga	Euclid State Park	9/5/08	9/6/08	Bacteria	Unknown
Cuyahoga	Huntington Beach	6/1/08	6/2/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	6/5/08	6/6/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	6/18/08	6/19/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	6/29/08	6/30/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	7/10/08	7/11/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	7/14/08	7/15/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	7/18/08	7/19/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	7/24/08	7/26/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	8/7/08	8/8/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	8/9/08	8/10/08	Preempt-model	Unknown
Cuyahoga	Huntington Beach	8/12/08	8/13/08	Preempt-model	Unknown
Cuyahoga	Villa Angela State Park	5/20/08	5/21/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	5/28/08	5/29/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/1/08	6/2/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/4/08	6/6/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/11/08	6/12/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/14/08	6/16/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/17/08	6/19/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/23/08	6/25/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/27/08	6/28/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	6/29/08	7/4/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/7/08	7/8/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/9/08	7/13/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/14/08	7/16/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/17/08	7/26/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/28/08	7/29/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	7/31/08	8/2/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/3/08	8/4/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/5/08	8/6/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/7/08	8/10/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/11/08	8/13/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/18/08	8/20/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/22/08	8/23/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/26/08	8/27/08	Bacteria	Unknown
Cuyahoga	Villa Angela State Park	8/31/08	9/1/08	Bacteria	Unknown
Erie	Battery Park	7/11/08	7/15/08	Bacteria	Unknown
Erie	Bay View East	5/28/08	5/30/08	Bacteria	Unknown
Erie	Bay View East	6/10/08	6/12/08	Bacteria	Unknown
Erie	Bay View East	7/18/08	7/22/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Erie	Bay View East	7/24/08	7/25/08	Bacteria	Unknown
Erie	Bay View East	8/1/08	8/5/08	Bacteria	Unknown
Erie	Bay View West	5/28/08	5/30/08	Bacteria	Unknown
Erie	Bay View West	6/12/08	6/19/08	Bacteria	Unknown
Erie	Bay View West	6/20/08	6/24/08	Bacteria	Unknown
Erie	Bay View West	6/26/08	6/27/08	Bacteria	Unknown
Erie	Bay View West	7/2/08	7/11/08	Bacteria	Unknown
Erie	Bay View West	7/15/08	7/17/08	Bacteria	Unknown
Erie	Bay View West	7/29/08	7/31/08	Bacteria	Unknown
Erie	Bay View West	8/5/08	8/7/08	Bacteria	Unknown
Erie	Bay View West	8/15/08	8/19/08	Bacteria	Unknown
Erie	Bay View West	8/21/08	9/6/08	Bacteria	Unknown
Erie	Cedar Point Chausee	5/28/08	5/30/08	Bacteria	Unknown
Erie	Cedar Point Chausee	6/5/08	6/6/08	Bacteria	Unknown
Erie	Cedar Point Chausee	7/18/08	7/22/08	Bacteria	Unknown
Erie	Cedar Point Chausee	7/24/08	7/25/08	Bacteria	Unknown
Erie	Cedar Point Chausee	8/7/08	8/8/08	Bacteria	Unknown
Erie	Cedar Point Chausee	8/15/08	8/19/08	Bacteria	Unknown
Erie	Cranberry Creek	7/11/08	7/15/08	Bacteria	Unknown
Erie	Cranberry Creek	7/24/08	7/25/08	Bacteria	Unknown
Erie	Crystal Rock	5/28/08	5/30/08	Bacteria	Unknown
Erie	Crystal Rock	6/10/08	6/12/08	Bacteria	Unknown
Erie	Crystal Rock	7/1/08	7/2/08	Bacteria	Unknown
Erie	Crystal Rock	7/10/08	7/11/08	Bacteria	Unknown
Erie	Crystal Rock	7/24/08	7/25/08	Bacteria	Unknown
Erie	Crystal Rock	8/7/08	8/12/08	Bacteria	Unknown
Erie	Darby Creek	5/28/08	5/30/08	Bacteria	Unknown
Erie	Darby Creek	6/5/08	6/6/08	Bacteria	Unknown
Erie	Darby Creek	7/2/08	7/3/08	Bacteria	Unknown
Erie	Darby Creek	7/10/08	7/11/08	Bacteria	Unknown
Erie	Darby Creek	7/24/08	7/29/08	Bacteria	Unknown
Erie	Darby Creek	8/26/08	8/28/08	Bacteria	Unknown
Erie	Edison Creek	6/5/08	6/6/08	Bacteria	Unknown
Erie	Edison Creek	6/10/08	6/12/08	Bacteria	Unknown
Erie	Edison Creek	6/19/08	6/20/08	Bacteria	Unknown
Erie	Edison Creek	6/24/08	6/26/08	Bacteria	Unknown
Erie	Edison Creek	6/27/08	7/3/08	Bacteria	Unknown
Erie	Edison Creek	7/10/08	7/11/08	Bacteria	Unknown
Erie	Edison Creek	7/18/08	7/25/08	Bacteria	Unknown
Erie	Edison Creek	8/8/08	8/12/08	Bacteria	Unknown
Erie	Edison Creek	8/15/08	8/19/08	Bacteria	Unknown
Erie	Fichtel Creek	6/27/08	7/2/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Erie	Fichtel Creek	7/24/08	7/29/08	Bacteria	Unknown
Erie	Hoffman Ditch	8/8/08	8/12/08	Bacteria	Unknown
Erie	Huron River East	6/5/08	6/6/08	Bacteria	Unknown
Erie	Huron River East	6/12/08	6/13/08	Bacteria	Unknown
Erie	Huron River East	6/27/08	7/1/08	Bacteria	Unknown
Erie	Huron River East	7/10/08	7/11/08	Bacteria	Unknown
Erie	Huron River East	8/8/08	8/12/08	Bacteria	Unknown
Erie	Huron River East	8/15/08	8/19/08	Bacteria	Unknown
Erie	Huron River East	8/26/08	8/28/08	Bacteria	Unknown
Erie	Huron River West	5/28/08	5/30/08	Bacteria	Unknown
Erie	Huron River West	6/20/08	6/24/08	Bacteria	Unknown
Erie	Huron River West	7/1/08	7/3/08	Bacteria	Unknown
Erie	Huron River West	7/11/08	7/15/08	Bacteria	Unknown
Erie	Huron River West	7/24/08	7/25/08	Bacteria	Unknown
Erie	Huron River West	8/8/08	8/12/08	Bacteria	Unknown
Erie	Huron River West	8/15/08	8/19/08	Bacteria	Unknown
Erie	Huron River West	8/21/08	8/26/08	Bacteria	Unknown
Erie	Huron River West	8/28/08	8/29/08	Bacteria	Unknown
Erie	Kiwanis	6/10/08	6/12/08	Bacteria	Unknown
Erie	Kiwanis	7/1/08	7/2/08	Bacteria	Unknown
Erie	Kiwanis	7/24/08	7/25/08	Bacteria	Unknown
Erie	Kiwanis	8/22/08	8/26/08	Bacteria	Unknown
Erie	Lion's Park	7/10/08	7/11/08	Bacteria	Unknown
Erie	Old Womans Creek East	7/24/08	7/25/08	Bacteria	Unknown
Erie	Old Womans Creek West	7/1/08	7/2/08	Bacteria	Unknown
Erie	Old Womans Creek West	7/24/08	7/29/08	Bacteria	Unknown
Erie	Old Womans Creek West	8/7/08	8/12/08	Bacteria	Unknown
Erie	Pickrel Creek	6/5/08	6/6/08	Bacteria	Unknown
Erie	Pickrel Creek	6/27/08	7/1/08	Bacteria	Unknown
Erie	Pickrel Creek	7/8/08	7/11/08	Bacteria	Unknown
Erie	Pickrel Creek	7/24/08	7/25/08	Bacteria	Unknown
Erie	Pickrel Creek	8/26/08	8/28/08	Bacteria	Unknown
Erie	Sherod Creek	7/2/08	7/3/08	Bacteria	Unknown
Erie	Sherod Creek	7/10/08	7/11/08	Bacteria	Unknown
Erie	Sherod Creek	7/18/08	7/29/08	Bacteria	Unknown
Erie	Sherod Creek	7/31/08	8/5/08	Bacteria	Unknown
Erie	Sherod Creek	8/7/08	8/8/08	Bacteria	Unknown
Erie	Showse Park	6/5/08	6/6/08	Bacteria	Unknown
Erie	Showse Park	6/24/08	7/3/08	Bacteria	Unknown
Erie	Showse Park	7/11/08	7/15/08	Bacteria	Unknown
Erie	Showse Park	7/24/08	7/29/08	Bacteria	Unknown
Erie	Sugar Creek	7/1/08	7/2/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Erie	Sugar Creek	7/10/08	7/15/08	Bacteria	Unknown
Erie	Sugar Creek	7/18/08	7/22/08	Bacteria	Unknown
Erie	Sugar Creek	7/24/08	7/25/08	Bacteria	Unknown
Erie	Sugar Creek	8/7/08	8/8/08	Bacteria	Unknown
Erie	Vermilion River East	6/5/08	6/10/08	Bacteria	Unknown
Erie	Vermilion River East	6/13/08	6/17/08	Bacteria	Unknown
Erie	Vermilion River East	6/19/08	6/20/08	Bacteria	Unknown
Erie	Vermilion River East	7/1/08	7/2/08	Bacteria	Unknown
Erie	Vermilion River East	7/3/08	7/17/08	Bacteria	Unknown
Erie	Vermilion River West	6/6/08	6/10/08	Bacteria	Unknown
Erie	Vermilion River West	7/2/08	7/3/08	Bacteria	Unknown
Erie	Vermilion River West	7/10/08	7/11/08	Bacteria	Unknown
Erie	Vermilion River West	7/22/08	7/25/08	Bacteria	Unknown
Erie	Vermilion River West	8/15/08	8/19/08	Bacteria	Unknown
Erie	Whites Landing	6/5/08	6/6/08	Bacteria	Unknown
Erie	Whites Landing	7/10/08	7/11/08	Bacteria	Unknown
Erie	Whites Landing	7/15/08	7/17/08	Bacteria	Unknown
Erie	Whites Landing	7/24/08	7/25/08	Bacteria	Unknown
Erie	Whites Landing	8/29/08	9/6/08	Bacteria	Unknown
Lake	Fairport Harbor	5/28/08	5/29/08	Bacteria	Unknown
Lake	Fairport Harbor	6/1/08	6/2/08	Bacteria	Unknown
Lake	Fairport Harbor	6/5/08	6/6/08	Bacteria	Unknown
Lake	Fairport Harbor	6/11/08	6/12/08	Bacteria	Unknown
Lake	Fairport Harbor	6/13/08	6/14/08	Bacteria	Unknown
Lake	Fairport Harbor	6/19/08	6/20/08	Bacteria	Unknown
Lake	Fairport Harbor	6/25/08	6/26/08	Bacteria	Unknown
Lake	Fairport Harbor	6/30/08	7/2/08	Bacteria	Unknown
Lake	Fairport Harbor	7/10/08	7/11/08	Bacteria	Unknown
Lake	Fairport Harbor	7/12/08	7/13/08	Bacteria	Unknown
Lake	Fairport Harbor	7/21/08	7/22/08	Bacteria	Unknown
Lake	Fairport Harbor	7/23/08	7/25/08	Bacteria	Unknown
Lake	Fairport Harbor	8/1/08	8/2/08	Bacteria	Unknown
Lake	Fairport Harbor	8/3/08	8/4/08	Bacteria	Unknown
Lake	Fairport Harbor	8/7/08	8/8/08	Bacteria	Unknown
Lake	Fairport Harbor	8/9/08	8/10/08	Bacteria	Unknown
Lake	Fairport Harbor	8/16/08	8/18/08	Bacteria	Unknown
Lake	Fairport Harbor	8/20/08	8/21/08	Bacteria	Unknown
Lake	Fairport Harbor	8/30/08	9/1/08	Bacteria	Unknown
Lake	Headlands State Park (E)	5/20/08	5/21/08	Bacteria	Unknown
Lake	Headlands State Park (E)	5/28/08	5/29/08	Bacteria	Unknown
Lake	Headlands State Park (E)	6/1/08	6/2/08	Bacteria	Unknown
Lake	Headlands State Park (E)	6/5/08	6/6/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Lake	Headlands State Park (E)	6/13/08	6/14/08	Bacteria	Unknown
Lake	Headlands State Park (E)	6/29/08	6/30/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/2/08	7/3/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/9/08	7/10/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/10/08	7/11/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/11/08	7/12/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/23/08	7/24/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/24/08	7/25/08	Bacteria	Unknown
Lake	Headlands State Park (E)	7/31/08	8/1/08	Bacteria	Unknown
Lake	Headlands State Park (E)	8/3/08	8/4/08	Bacteria	Unknown
Lake	Headlands State Park (E)	8/30/08	9/1/08	Bacteria	Unknown
Lorain	Century Beach	6/5/08	6/6/08	Bacteria	Unknown
Lorain	Century Beach	6/13/08	6/17/08	Bacteria	Unknown
Lorain	Century Beach	6/17/08	6/18/08	Bacteria	Unknown
Lorain	Century Beach	6/27/08	7/3/08	Bacteria	Unknown
Lorain	Century Beach	7/4/08	7/8/08	Bacteria	Unknown
Lorain	Century Beach	7/10/08	7/15/08	Bacteria	Unknown
Lorain	Century Beach	7/15/08	7/17/08	Bacteria	Unknown
Lorain	Century Beach	7/17/08	7/18/08	Bacteria	Unknown
Lorain	Century Beach	7/18/08	7/22/08	Bacteria	Unknown
Lorain	Century Beach	7/22/08	7/29/08	Bacteria	Unknown
Lorain	Century Beach	7/30/08	7/31/08	Bacteria	Unknown
Lorain	Century Beach	8/1/08	8/5/08	Bacteria	Unknown
Lorain	Century Beach	8/6/08	8/7/08	Bacteria	Unknown
Lorain	Century Beach	8/7/08	8/8/08	Bacteria	Unknown
Lorain	Century Beach	8/8/08	8/12/08	Bacteria	Unknown
Lorain	Century Beach	8/12/08	8/13/08	Bacteria	Unknown
Lorain	Century Beach	8/15/08	8/19/08	Bacteria	Unknown
Lorain	Century Beach	8/20/08	8/21/08	Bacteria	Unknown
Lorain	Century Beach	8/26/08	8/27/08	Bacteria	Unknown
Lorain	Century Beach	9/5/08	9/6/08	Bacteria	Unknown
Lorain	Lakeview Beach	6/6/08	6/10/08	Bacteria	Unknown
Lorain	Lakeview Beach	6/11/08	6/12/08	Bacteria	Unknown
Lorain	Lakeview Beach	6/13/08	6/17/08	Bacteria	Unknown
Lorain	Lakeview Beach	6/18/08	6/19/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/1/08	7/2/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/4/08	7/8/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/9/08	7/10/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/11/08	7/15/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/17/08	7/22/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/23/08	7/29/08	Bacteria	Unknown
Lorain	Lakeview Beach	7/31/08	8/1/08	Bacteria	Unknown

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County	Beach	Start Date	End Date	Reason	Source
Lorain	Lakeview Beach	8/6/08	8/8/08	Bacteria	Unknown
Lorain	Lakeview Beach	8/15/08	8/19/08	Bacteria	Unknown
Lorain	Lakeview Beach	8/20/08	8/21/08	Bacteria	Unknown
Lorain	Lakeview Beach	8/29/08	9/3/08	Bacteria	Unknown
Lorain	Lakeview Beach	9/5/08	9/6/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	6/5/08	6/6/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	6/11/08	6/12/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	6/13/08	6/17/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	7/4/08	7/8/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	7/31/08	8/1/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	8/15/08	8/19/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	8/20/08	8/21/08	Bacteria	Unknown
Lucas	Maumee Bay State Park (Erie)	9/5/08	9/6/08	Bacteria	Unknown
Ottawa	Camp Perry	6/18/08	6/19/08	Bacteria	Unknown
Ottawa	Camp Perry	7/1/08	7/3/08	Bacteria	Unknown
Ottawa	Camp Perry	7/4/08	7/8/08	Bacteria	Unknown
Ottawa	Camp Perry	7/10/08	7/15/08	Bacteria	Unknown
Ottawa	Camp Perry	7/22/08	7/25/08	Bacteria	Unknown
Ottawa	Camp Perry	8/1/08	8/5/08	Bacteria	Unknown
Ottawa	Camp Perry	8/7/08	8/13/08	Bacteria	Unknown
Ottawa	Camp Perry	8/15/08	8/19/08	Bacteria	Unknown
Ottawa	Camp Perry	8/20/08	8/22/08	Bacteria	Unknown
Ottawa	Camp Perry	8/28/08	8/29/08	Bacteria	Unknown
Ottawa	Camp Perry	9/3/08	9/4/08	Bacteria	Unknown
Ottawa	Camp Perry	9/5/08	9/6/08	Bacteria	Unknown
Ottawa	Catawba Island State Park	8/20/08	8/21/08	Bacteria	Unknown
Ottawa	Lakeside Beach	7/1/08	7/2/08	Bacteria	Unknown
Ottawa	Lakeside Beach	7/11/08	7/15/08	Bacteria	Unknown
Ottawa	Port Clinton (Deep/Lakeview))	7/4/08	7/8/08	Bacteria	Unknown
Ottawa	Port Clinton (Deep/Lakeview))	8/20/08	8/22/08	Bacteria	Unknown
Ottawa	Port Clinton (Deep/Lakeview))	8/28/08	8/29/08	Bacteria	Unknown
Ottawa	Port Clinton (Deep/Lakeview))	9/3/08	9/4/08	Bacteria	Unknown
Ottawa	Port Clinton (Deep/Lakeview))	9/5/08	9/6/08	Bacteria	Unknown

Explanation of Frequently Used Terms: *Preempt-model*, Preemptive due to the results of computer models that use easily measurable physical parameters like wind direction and wave height to predict bacterial levels in real time.

Notes

1 Barry Rice, Ohio Department of Health, personal communication, May 2009.

2 Ohio Department of Health. Year 2007 Bathing Beach Monitoring Program Results. Accessed at <http://www.odh.ohio.gov/odhPrograms/eh/bbeach/beachmon.aspx>. Not dated.

3 Ohio Department of Health. Advisory Sign-Beach Posting (website). Accessed at <http://www.odh.ohio.gov/odhPrograms/eh/bbeach/beachmon.aspx>. June 2008.