[Note: blue text is the URL for the bolded text in previous paragraph and is not written out on the web site.]

[Note: green highlighted text is referencing a table or picture found in a separate file and should not be written out on the website.]

**Cuyahoga River**

[SLIDE 1]

The Cuyahoga River at Jaite (Brecksville, Oh) is in the **Cuyahoga Valley National Park**.

<http://www.nps.gov/cuva/>

This is a test of the nowcast for the Cuyahoga River. The nowcast issues advisories and predicts the concentrations of *E. coli* once a day at the posted time only. The predicted concentrations are for a specific site along the river and are for information only. Storms are likely to result in a quick change in water quality. Please be aware that there are no formal boat/canoe put-in locations at this river site.

Cuyahoga Valley National Park is presently developing strategies to protect and enhance river values, including adequate and safe approaches for recreational river use.

While use of the river is not prohibited, there are several concerns that should be taken into consideration:

* Canoeing and kayaking the river can be dangerous and the park does not maintain the river for paddling.
* There are no developed access points or launch facilities for paddlers in CVNP.
* Paddle at your own risk –you are responsible for your own safety. Always be aware of your surroundings, weather and water level. Know your equipment, limits and skills. Don't paddle alone, and let someone know your plans and when you expect to return.
* For further information, visit [**http://www.nps.gov/cuva/planyourvisit/canoeing.htm**](http://www.nps.gov/cuva/planyourvisit/canoeing.htm)

For further information, contact Meg Plona, National park Service ([meg\_plona@nps.gov](mailto:meg_plona@nps.gov)).

In previous years, water-quality standards set the single-sample maximum at 298 *E. coli* per 100 milliliters. Current water quality standards (Ohio EPA, 2016) do not specify a not-to-exceed numeric criterion in a single sample for primary-contact recreation. However, a “beach action value” of 235 *E. coli* per 100 milliliters, which is more protective in regards to public health, is specified in the Administrative Code. Therefore, for the purposes of determining recreational water-quality conditions in the Cuyahoga River, the beach action value will be used as a benchmark to evaluate water quality.

**Variables used in the Cuyahoga River nowcast models**

For the Cuyahoga River at Jaite, a model based on turbidity as measured by the in situ turbidity sensor and radar-indicated rainfall as observed near the Akron-Fulton International Airport will be used for the nowcast in 2016. On days when the predicted *E. coli* concentrations in the river are below 235 *E. coli* per 100 milliliters, the water quality will be considered “good”.

Edgewater Park

[Slide 2; when possible, connect to the Edgewater Webcam]

Edgewater is part of Lakefront Reservation, operated by **Cleveland Metroparks.**  The nowcast has been used at Edgewater since 2008.

<http://www.clemetparks.com/>

The information on this page is updated by the [**Northeast Ohio Regional Sewer District**](http://www.neorsd.org/) by 11:30 AM (EDT) every day during the swimming season and is intended to inform the public of water quality advisories based on the bacteria levels in the bathing waters. This nowcast issues advisories and predicts the probability once a day at the posted time only. There are other factors such as waves, currents, algae or other dangers that would prompt a Beach Manager to issue a No Swim Advisory.  Storms are likely to result in a quick change in water quality. Please click on this **here** to view the current swimming status.

<http://www.neorsd.org/>

[www.clevelandmetroparks.com/swimming](http://www.clevelandmetroparks.com/swimming)

Beach water quality information at Edgewater and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

**Variables used in the Edgewater nowcast model**

Results from a rapid analytical method for *E. coli*—quantitative polymerase chain reaction (qPCR)—are used to provide water-quality advisory information at Edgewater.   A standard curve is created by analyzing known quantities of *E. coli* by culture and qPCR; daily sample values are then extrapolated from the standard curve.  **If results indicate inhibition of qPCR or results for qPCR are not available for any other reason, a backup model is used.**

The variables below will be used in a backup model to predict the probability of exceeding beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (36%), the beach is posted with a water-quality warning.

|  |  |
| --- | --- |
| Edgewater nowcast backup model―2016 | |
| **Model information** | **Explanatory variables** |
| Data used to develop the model (years): 2005-15  Threshold probability = 36% | * Wave height * Turbidity * pH * Water temperature * Rainfall in the past 48 hours, Hopkins International Airport * Day of the year |

Fairport Harbor

[SLIDE 3]

Fairport Harbor is operated by **Lake Metroparks** and monitored by **the Lake County General Health District**. The nowcast has been used at Fairport Harbor since 2014.

<http://www.lakemetroparks.com/select-park/fairport.shtml>

<http://www.lcghd.org/>

The information on this page is updated by **the Lake County General Health District** by 10:30 AM (EDT) every day during the swimming season. This nowcast issues advisories and predicts the probability once a day at the posted time only. Storms are likely to result in a quick change in water quality.

Beach water quality information at Fairport Harbor and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

For further information, contact Dan Lark, [dlark@lcghd.org](mailto:dlark@lcghd.org)

**Variables used in the Fairport Harbor nowcast model**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold, the beach is posted with a swimming advisory.

During 2016, there are one full-season model for Fairport Harbor and one backup model if local weather data are not available for the nowcast.

[table - Fairport]

The USGS operates a **weather station at Mentor Headlands** to measure wind speed, wind direction, barometric pressure, air temperature, net solar radiation, incident light, and rainfall.

<http://waterdata.usgs.gov/oh/nwis/uv?site_no=414514081174400>

**Huntington Reservation**

[Slide 4]

Huntington Reservation (Bay Village, Oh) is operated by **Cleveland Metroparks**, The nowcast has been used at Huntington since 2006.

<http://www.clemetparks.com/>

The information on this page is updated by the [**Cuyahoga County Board of Health**](http://www.ccbh.net/ccbh/opencms/CCBH/index.html) by 9:30 AM (EDT) every day during the swimming season. This nowcast issues advisories and predicts the probability once a day at the posted time only. There are other factors such as waves, currents, algae or other dangers that would prompt a Beach Manager to issue a No Swim Advisory.  Storms are likely to result in a quick change in water quality. Please click on this **here** to view the current swimming status.

<http://www.ccbh.net/>

[www.clevelandmetroparks.com/swimming](http://www.clevelandmetroparks.com/swimming)

Beach water quality information at Huntington Reservation and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

**Variables used in the Huntington nowcast models**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (22%), the beach is posted with a swimming advisory.

During 2016, there are one full-season model for Huntington.

|  |  |
| --- | --- |
| Huntington nowcast model―2016 | |
| **Model information** | **Explanatory variables** |
| Data used to develop the model (years): 2008-15  Threshold probability = 26% | * Turbidity * Water temperature * Rainfall in the past 48 hours, weighted (Cleveland Hopkins International Airport) * Wave height * Lake level, change in 24 hours (Cleveland station 9063063) |

Maumee Bay State Park—Lake Erie Beach

[Slide 5]

Maumee Bay State Park is operated by **Ohio Department of Natural Resources**. The nowcast has been used at the Lake Erie beach since 2011.

http://parks.ohiodnr.gov/maumeebay

The nowcast is for the Lake Erie beach only. For water-quality information on the inland beach at Maumee Bay State Park and other beaches around Ohio, refer to **Beach Guard,** operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

The information on this page is updated by the [**University**](http://www.neorsd.org/) **of Toledo, Lake Erie Center** by 9:30 AM (EDT) 5 days/week during the swimming season. This nowcast issues advisories and predicts the probability of exceeding the *E. coli* beach action value once a day at the posted time only. Storms are likely to result in a quick change in water quality.

https://www.utoledo.edu/nsm/lec/

For information on advisories from harmful algal blooms (HABs), which are different than Ohio Nowcast advisories based on *E. coli* concentrations, refer to the Ohio EPA HAB map.

http://wwwapp.epa.ohio.gov/gis/mapportal/hab.html

For further information, contact Pam Struffolino, University of Toledo (Pamela.struffolino@utoledo.edu, 419-530-8380).

**Variables used in the Maumee Bay State Park nowcast model**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (29%), the beach is posted with a swimming advisory.

|  |  |
| --- | --- |
| Maumee Bay State Park nowcast model―2016 | |
| **Model information** | **Explanatory variables** |
| Data used to develop the model (years): 2008-15  Threshold probability = 29% | * Turbidity * Solar radiation, previous day total (OARDC North Central Station) * Wind code summed each hour for the 4-hour period prior to sampling (Toledo Executive Airport) * Rainfall, in the past 48 hours (Toledo Executive Airport) * Lake level (NOAA Toledo station 9063085) |
| a wind code (2 categories) is based on wind direction —N to E winds are coded as “1” and all other wind directions and no wind are coded as “0.1”. | |

Mentor Headlands—Mentor, Ohio

[SLIDE 6]

Mentor Headlands is operated by **Ohio Department of Natural Resources** and monitored by **the Lake County General Health District**. The nowcast has been used at Mentor Headlands since 2014.

<http://parks.ohiodnr.gov/> <http://www.lcghd.org/>

The information on this page is updated by **the Lake County General Health District** by 10:30 AM (EDT) every day during the swimming season. This nowcast issues advisories and predicts the probability once a day at the posted time only. Storms are likely to result in a quick change in water quality

Beach water quality information at Mentor Headlands and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

For further information, contact Dan Lark, [dlark@lcghd.org](mailto:dlark@lcghd.org)

**Variables used in the Mentor Headlands nowcast model**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold, the beach is posted with a swimming advisory.

During 2016, there are one full-season model for Mentor Headlands and one backup model if local weather data are not available for the nowcast.

[table - Mentor]

The USGS operates a **weather station at Mentor Headlands** to measure wind speed, wind direction, barometric pressure, air temperature, net solar radiation, incident light, and rainfall.

<http://waterdata.usgs.gov/oh/nwis/uv?site_no=414514081174400>

Nickel Plate—Huron, Ohio

[Slide 7]

Nickel Plate is operated by the **City of Huron** and monitored by the **Erie County Health Department**. The nowcast has been used at Nickel Plate since 2014.

<http://www.cityofhuron.org/huron/>

<http://eriecohealthohio.org/>

The information on this page is updated by Erie County Health Department by noon (EDT) Monday‒Thursday during the swimming season. This nowcast issues advisories and predicts the probability once a day at the posted time only. Storms are likely to result in a quick change in water quality

Beach water quality information at Nickel Plate and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

For further information, contact Craig Ward, [cward@eriecohealthohio.org](mailto:cward@eriecohealthohio.org)

**Variables used in the Nickel Plate nowcast model**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (32%), the beach is posted with a swimming advisory.

|  |  |
| --- | --- |
| Nickel Plate nowcast model―2016 | |
| **Model information** | **Explanatory variables** |
| Data used to develop the model (years): 2010-15  Threshold probability = 32% | * Turbidity * Water temperature * Day of the year * Wave height * Rainfall in the past 48 hours, weighted, at Lorain County Regional Airport * Barometric pressure change in the past 24 hours, Lorain County Regional Airport |

Vermilion Main Street Beach

[Slide 8]

Vermilion’s Main Street Beach is operated by **the City of Vermilion** and monitored by the **Erie County Health Department**. The nowcast has been used at Vermilion since 2014.

<http://www.vermilion.net/> <http://eriecohealthohio.org/>

The information on this page is updated by Erie County Health Department by noon (EDT) Monday –Thursday during the swimming season. This nowcast issues advisories and predicts the probability once a day at the posted time only. Storms are likely to result in a quick change in water quality

<http://eriecohealthohio.org/>

Beach water quality information at Vermilion and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

For further information, contact Craig Ward, [cward@eriecohealthohio.org](mailto:cward@eriecohealthohio.org)

**Variables used in the Vermilion nowcast model**

The variables below will be used in a model to predict the probability of exceeding the *E. coli* bathing-water standard of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (40%), the beach is posted with a swimming advisory.

[table - Vermilion]

**Villa Angela and Euclid**

[SLIDE 9]

Villa Angela and Euclid are part of Lakefront Reservation, operated by **Cleveland Metroparks.**  <http://www.clemetparks.com/>

The information on this page is updated by the [**Northeast Ohio Regional Sewer District**](http://www.neorsd.org/) by 11:30 AM (EDT) every day during the swimming season and is intended to inform the public of water quality advisories based on the bacteria levels in the bathing waters. This nowcast issues advisories and predicts the probability once a day at the posted time only. There are other factors such as waves, currents, algae or other dangers that would prompt a Beach Manager to issue a No Swim Advisory.  Storms are likely to result in a quick change in water quality. Please click on this **here** to view the current swimming status.

[*http://www.neorsd.org/*](http://www.neorsd.org/)

[www.clevelandmetroparks.com/swimming](http://www.clevelandmetroparks.com/swimming)

Beach water quality information at Villa Angela and Euclid and other beaches around Ohio is also available through **BeachGuard**, operated by Ohio Department of Health.

http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx

**Variables used in the Villa Angela/Euclid nowcast model**

Results from a rapid analytical method for *E. coli*—quantitative polymerase chain reaction (qPCR)—are used to provide water-quality advisory information at Villa Angela and Euclid.   A standard curve is created by analyzing known quantities of *E. coli* by culture and qPCR; daily sample values are then extrapolated from the standard curve.  **If results indicate inhibition of qPCR or results for qPCR are not available for any other reason, a backup model is used.**

The variables below will be used in a backup model to predict the probability of exceeding beach action value of 235 most-probable number/100 mL (MPN/100 mL). If the probability exceeds the established threshold (37%), the beach is posted with a water-quality warning.

|  |  |
| --- | --- |
| Villa Angela and Euclid backup model―2016 | |
| **Model information** | **Explanatory variables** |
| Data used to develop the model (years): 2012-15  Threshold probability = 37% | * Air temperature, field, degrees Celsius * Water pH, field * Wave height, ft * Turbidity, field * Rainfall in the past 24 hours, Hopkins International Airport * Rainfall in the past 48 hours, weighted, Hopkins International Airport * Day of the year |