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**An Overview of Water Quality in Ohio**



## Clean water is important to Ohio's economy and standard of living.

Ohio is an economically important and diverse state with strong agriculture, manufacturing and service industries. Ohio is also a water-rich state bounded by Lake Erie on the north, the Ohio River on the south and more than 25,000 miles of named and designated streams and rivers within its borders. The suitability of these waters to support society's needs is critical to sustaining Ohio's economy and the standard of living of its citizens. Surface waters such as rivers, streams and lakes provide most of the water used for public drinking, for recreation such as swimming, boating and fishing, and for industrial uses including manufacturing, power generation, irrigation and mining.

## Ohio EPA monitors water quality in Ohio and reports its findings.



Monitoring the quality of Ohio's valuable water resources is an important function of the Ohio Environmental Protection Agency (Ohio EPA). Since the early 1970s, Ohio EPA has measured the quality of Ohio's water resources and worked with industries, local governments and citizens to restore the quality of substandard waters. This report, updated every two years, is required by the federal Clean Water Act to fulfill two purposes: 1) to provide a summary of the status of the State's surface waters; and 2) to develop a list of waters that do not meet established goals—the impaired waters.

Under the Clean Water Act, once impaired waters are identified, the state must act to improve them. Typically, the actions include developing restoration plans [total maximum daily loads (TMDLs)]; water quality-based permits; and nonpoint source pollution control measures. As such, this report is an important document that provides information and direction to much of the State's work in water quality planning, monitoring, financial/technical assistance, permitting and nonpoint source programs.

For nearly 40 years, Ohio EPA has developed innovative monitoring methods that directly measure progress toward the goals of the Clean Water Act. Generally recognized as a leader in water quality monitoring, Ohio uses the fish and aquatic insects that live in streams to assess the health of Ohio's flowing waters. Aquatic animals are generally the most sensitive indicators of pollution because they inhabit the water all the time. A healthy stream community is also associated with high quality recreational opportunities (for example, fishing and boating). Stream assessments are based on the experience gained through the collection of more than 28,000 fish population samples and nearly 14,500 aquatic insect community samples.

In addition to biological data, Ohio EPA collects information on the chemical quality of the water (nearly 250,000 water chemistry samples), sediment and wastewater discharges; data on the contaminants in fish flesh; and physical habitat information about streams. Taken together, this information identifies the factors that limit the health of aquatic life and that constitute threats to human health.

## Results show water quality is impaired but continues to improve, especially in the smaller watersheds.

Ohio EPA developed methods to determine how well Ohio's waters support four specific water uses: 1) human health impacts related to fish tissue contamination; 2) recreation; 3) human health impacts related to drinking water; and 4) aquatic life (fish and aquatic insects). Available data are compared with established water quality goals and the results of the comparison indicate which waters are meeting goals and which are not. The results for each use are discussed in the next few pages.

To assess the **human health impacts related to fish tissue contamination**, Ohio EPA uses the same data that are used to generate Ohio's sport fish consumption advisory. Although the data are the same, the analyses are different. Ohio EPA urges Ohio's anglers to consult the sport fish consumption advisory regarding which and how much fish to eat. A link to the fish consumption advisory website is available at the end of this section.

For analysis in this report, approximately half of Ohio's 1,538 watershed assessment units (WAUs) and two-thirds of the 93 publicly owned lakes assessed have some fish tissue data available. Of those, about 4 percent of the WAUs and 38 percent of the lakes do not have enough data to determine the impairment status. About one-third of the monitored WAUs are unimpaired for the contaminants, while just under two-thirds of the WAUs are impaired. For lakes, 11 percent are impaired while approximately 51 percent are not impaired by the six fish tissue contaminants [mercury, polychlorinated biphenyls (PCBs), chlordane, mirex, hexachlorobenzene and dichlorodiphenyltrichloroethane (DDT)].

The most common contaminant is PCBs, followed by mercury. A few waters contain fish whose flesh is contaminated by dichlorodiphenyltrichloroethane (DDT), mirex or hexachlorobenzene; data show no streams or lakes with fish contaminated by lead. PCB contamination is widespread, usually because of historical sources. Areas with traceable contamination and areas of special concern are being addressed through programs such as the Great Lakes Legacy Act, Superfund or the Resource Conservation and Recovery Act.

Mercury contamination is ubiquitous because of aerial deposition from local, regional and global sources. Thus, solving the problem of mercury contamination requires solutions on a broader scale than at a watershed level. For example, Ohio targeted mercury from consumer products such as switches and thermometers through legislation banning the sale of such products. Ultimately, increases in renewable energy sources and clean coal technology usage will lessen Ohio's mercury burden.

Fish populations contaminated by hexachlorobenzene, DDT or mirex are already in the process of being restored through various initiatives in state and federal waste remediation programs.

### **Are fish safe to eat?**

While most Ohio sport fish are safe to eat, low levels of chemicals like PCBs and mercury have been found in some fish from certain waters.

To help protect the health of Ohioans, Ohio EPA in conjunction with the Ohio Department of Health offers an advisory for how often these fish can be safely eaten. An advisory is advice and should not be viewed as law or regulation. It is intended to help anglers and their families make educated choices about where to fish, what types of fish to eat, how to determine the amount and frequency of fish consumed and how to prepare fish for cooking.

By following these advisories, citizens can gain the health benefits of eating fish while reducing their exposure to unwanted contaminants.



Park, Lakeview, Maumee Bay State Park (Erie), Sherod, Sims, Veteran's, Villa Angela State Park and White's Landing beaches.

Considerable variation in the frequency of advisories was observed between beaches and from season-to-season at many beaches. However, several beaches stand out as consistently good performers over the past several recreation seasons, including Battery Park, Bay Park, Catawba Island, Conneaut, East Harbor State Park, Kelleys Island, Lakeside and South Bass Island State Park, which all had a cumulative exceedance frequency of less than 10 percent on a seasonal basis. These beaches infrequently exceeded 10 days per season under advisement.

There were also several beaches that performed consistently poor with three beaches, including Bay View West, Edson Creek and Whites Landing beach, under advisement more than 50 percent of the time during the past five recreation seasons.

For inland streams, of the 170 assessment units having sufficient data available to determine the RU assessment status in 2018, 8 percent fully supported the use while 92 percent did not support the use. These results are comparable to the results from previous cycles that consistently show only a relatively small proportion of the state's watersheds demonstrate full support of the recreation use. Only 15 percent of the individual stream locations sampled by Ohio EPA in 2015 and 2016 were found to attain the applicable recreation criteria.

All six of the large river units evaluated in this cycle failed to support the recreation use. However, two of the lower Tuscarawas River segments came close to supporting, with one scoring a 94 and another having an index score of 82. Also, the Huron River mainstem, although not a large river assessment unit, was also documented to fully support the recreation use.

As for inland lakes, the frequency of exceedances during the five-year reporting period was 13.8 percent, slightly higher than the 12.4 percent rate reported in the 2011-2015 cycle. There were 28 inland lake beaches where the aggregated exceedance frequency was more than 10 percent with the highest being 66 percent at the Brooks Park beach at Buckeye Lake and followed closely by Buckeye Lake's Crystal Beach at 60 percent.

Much of the **recreation** analysis focuses on the amount of bacteria in the water. For Lake Erie public beaches, the frequency with which individual beaches were recommended for a swimming advisory based on elevated bacteria levels above the state water quality standards for the entire five-year reporting period (2013-2017) ranged from near zero at Battery Park, East Harbor State Park, Lakeside and South Bass Island State Park to nearly 40 percent or more at Bay View West, Edson Creek, Euclid State Park, Lakeshore

### ***Is it safe to swim or wade?***

For the most part, water in Ohio is safe for swimming or wading. Water activities are more dangerous after heavy rains due to the obvious physical dangers of being swept into the faster flows, but also because chemicals and bacteria wash into the streams along with the water that runs over the land. In some communities, sewage systems cannot handle the extra volume of water and release untreated sewage during and after heavy rains.

There are some areas where the waters and/or sediments have high levels of contaminants, including PCBs and polyaromatic hydrocarbons (PAHs), so swimming or wading in these areas is not recommended.

The western basin of Lake Erie has also been assessed for recreation use impacted by significant algae biomass present during the recreation season. As a result, Ohio is listing the shorelines and open water in the western basin as impaired for recreation use.

**Human health impacts related to drinking water** focus on nitrate, pesticides and cyanotoxins (due to certain algae). In Ohio, 110 public water systems use surface water (excluding Ohio River intakes) in 119 separate AUs.

Sufficient data were available to complete nitrate evaluations for half of the AUs of which 6 percent were identified as impaired and 45 percent were in full support. There are two new WAUs listed as impaired due to nitrates. Of the large rivers, three Maumee River and one Sandusky River AU remain impaired and there is a new impairment on one Scioto River AU. Most of the 31 waters placed on the nitrate watch list are in northwestern Ohio

Pesticides were evaluated for 32 AUs. Five of the AUs were impaired while the remaining 27 were in full support. There were no new assessment units identified as impaired due to pesticides. A total of 21 AUs were placed on the pesticide watch list because of elevated atrazine. These areas of elevated atrazine coincide with the predominantly agricultural land use in western and northwestern Ohio.

The monitoring of microcystins and cyanobacteria by Ohio public water systems greatly increased the data available to assess the algae indicator. Sufficient data were available to list 31 percent of the AUs as impaired due to algae, including 17 new AUs identified as impaired this reporting cycle. The impairment listing includes all AUs in Lake Erie with drinking water intakes. In addition, 28 WAUs and three LRAUs are now assessed as impaired. An additional 17 AUs were also placed on the algae watch list. WAUs that are impaired or on the watch list for cyanotoxins were found distributed across Ohio virtually in every geographic region.

The bulk of the new data evaluated for the **aquatic life use** is in areas Ohio EPA sampled during 2015 and 2016. Watersheds intensively monitored during 2015 and 2016 included the St. Mary's River basin, selected Lake Erie Central Basin tributaries, selected direct tributaries to the Maumee River, selected Southeast Ohio River tributaries, selected Southwest Ohio River tributaries, the Conotton Creek basin, the Raccoon Creek basin and the Symmes Creek basin. The only large rivers comprehensively reassessed were the Whitewater River, Cuyahoga River and Raccoon Creek but updates for specific segments of the Auglaize River, Maumee River, Great Miami River, Little Miami River, Muskingum River, Tuscarawas River, Walhonding River and Scioto River were also completed with a lesser

### ***Is water safe to drink?***

Ohio EPA and public water systems around the state work hard to ensure that drinking water meets safe drinking water standards and that users have important information available about the sources and quality of the water. However, drinking water advisories do occur from time to time due to treatment plant malfunctions, water line breaks, and the rare case when source water contaminant levels exceed the plant's capacity to remove them.

It is important to remember that only a relatively small number of water systems have situations that warrant advisories. In 2010, 99 percent of all public water systems met all chemical standards. To get information about your local drinking water you can read the Consumer Confidence Report (CCR) provided annually by your community water system.

In this report, several waters are identified as impaired due to elevated nitrate or pesticides. Water systems in these areas and others with source water contaminants will issue public notice advisories or use additional treatment and water management strategies to ensure that safe water is delivered to their customers.



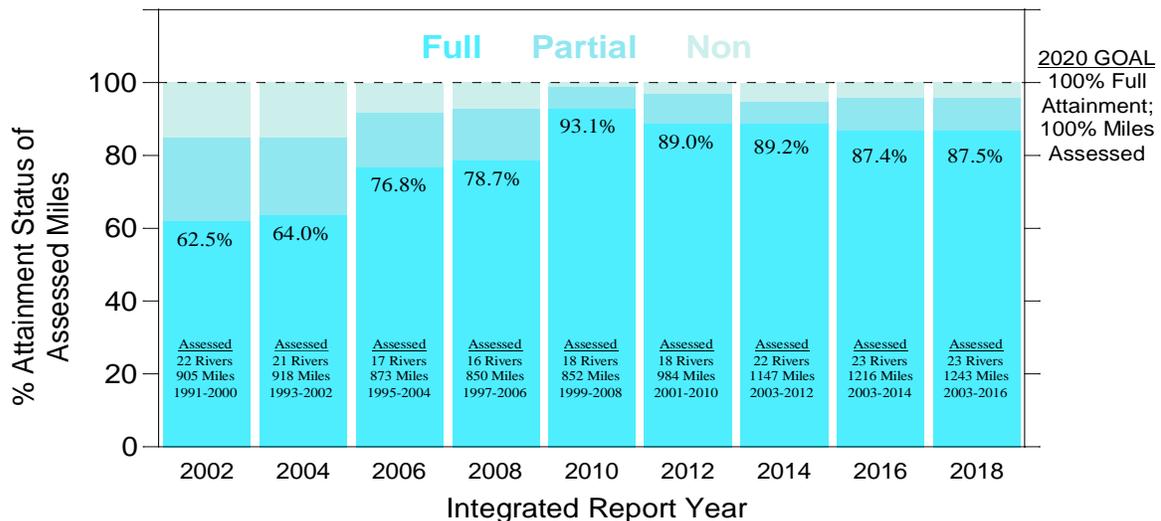
number of sites. Detailed watershed survey reports for many of the basins mentioned above are or will be available from Ohio EPA’s Division of Surface Water (see Biological and Water Quality Report Index, [epa.ohio.gov/dsw/document\\_index/psdindx.aspx](http://epa.ohio.gov/dsw/document_index/psdindx.aspx)).

## Large rivers are making progress toward the 100 percent attainment by 2020 aquatic life goal.

Ohio’s large rivers (the 23 rivers that drain more than 500 square miles) remained essentially unchanged in percent of monitored miles in full attainment compared to the same statistic reported in the 2016 IR. Based on monitoring through 2016, the full attainment statistic now stands at 87.5 percent (1,089 of 1,243 assessed LRAU miles), up 0.1 percent from the 2016 IR. Significant large rivers assessed for the 2018 IR included the Whitewater River (2013 external data), Cuyahoga River (2016 external data) and Raccoon Creek (2016). Attainment statistics for these three rivers (three LRAUs) are as follows.

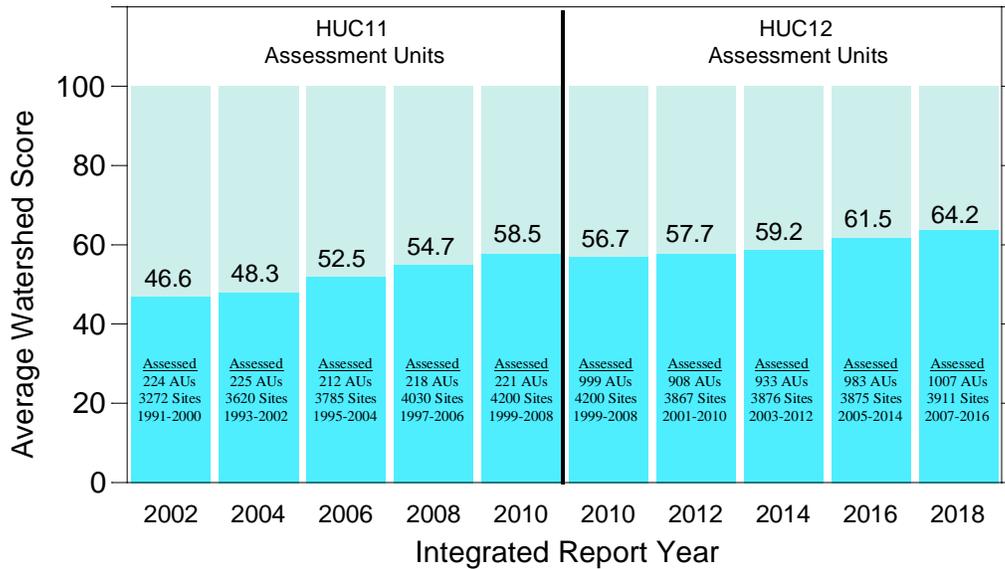
- Whitewater River: 100 percent full EWH attainment over 8.3 miles
- Cuyahoga River: 61.3 percent full WWH attainment over 24.2 miles
- Raccoon Creek: 100 percent full WWH attainment over 37.6 miles

Progress toward the 100 percent by 2020 aquatic life use goal for Ohio’s large rivers is depicted in below figure. Between the 2002 and 2018 reporting cycles, the percentage of large river miles in full attainment has increased from 62.5 percent to 87.5 percent and, nearly 100 percent of total miles have been assessed. Continued success in approaching the 100 percent full attainment threshold for 100 percent of large river miles by 2020 will depend on sustained resources allocated to monitoring LRAUs with an emphasis on those which were last sampled prior to 2009 and whose data will exceed 10 years in age in 2018 (the last year of data to be included in the 2020 goal assessment). Eleven large rivers (15 AUs), representing nearly 490 large river miles, currently meet this constraint and none have been sampled or are scheduled for sampling.



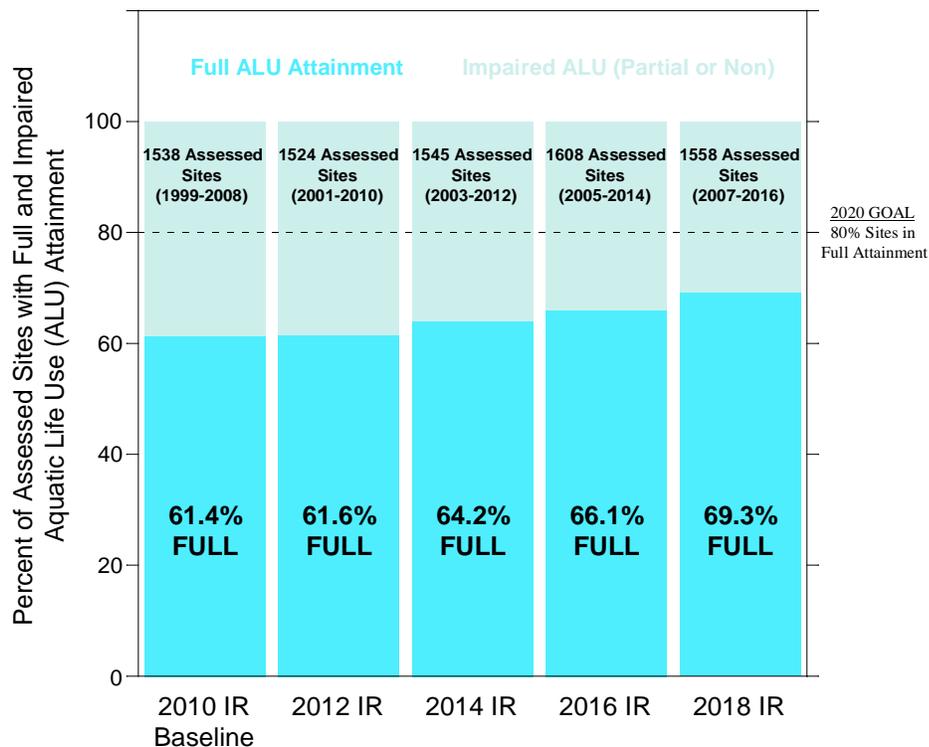
For Ohio’s 1,538 12-digit HUCs, the score reflected a positive increase from the corresponding score reported in the 2016 IR. Based on monitoring through 2016, the average HUC12 WAU score stands at 64.2, a 2.7-point increase from the 2016 IR and a 5.0-point increase from the 2014 IR. The WAU score is roughly equivalent to the percentage of monitored sites with full aquatic life use attainment in WAUs assessed for this IR cycle. This trend and trajectory is typical of what has been observed over the last several cycles (a pattern of steady increases of 1-3 points). The following figure depicts the corresponding average score

based on the old HUC11 WAUs, which were tracked from 2002 through 2010 and were used to gauge the progress of the 80 percent by 2010 aquatic life use goal as reported in the 2010 IR.



Note: Data compiled over the last nine IR cycles with the current 2018 cycle including data collected primarily from 2007-2016.

Progress toward the 80 percent by 2020 aquatic life use goal for Ohio’s wading and principal stream and river sites (those monitored sites draining watersheds between 20 and 500 square miles) is depicted below. Contrasted with the 2010 IR statistic, when the 2020 goal benchmark was established, the percentage of qualifying sites in full attainment has increased nearly eight percentage points with an increase from 61.4 percent to 69.3 percent.



The collection of more biological data along the shore of Lake Erie through the Great Lakes Restoration Initiative allows a more current analysis of shoreline conditions. The aquatic life use of the Lake Erie shoreline is impaired due primarily to tributary loadings of nutrients and sediment, aggravated by the proliferation of exotic species, algal blooms and shoreline habitat modifications.

**Most aquatic life impairment is caused by land disturbances related to agriculture activities and urban development.**

Taking a closer look at the attainment status of individual sites grouped by the amount of land area drained by the stream at that point reveals that unhealthy fish and aquatic insect populations are more common on smaller streams. In other words, the larger the drainage area (and usually the larger the stream), the more likely the stream is to be healthy. This phenomenon correlates well with the most widespread causes associated with the aquatic life impairment in these watersheds.

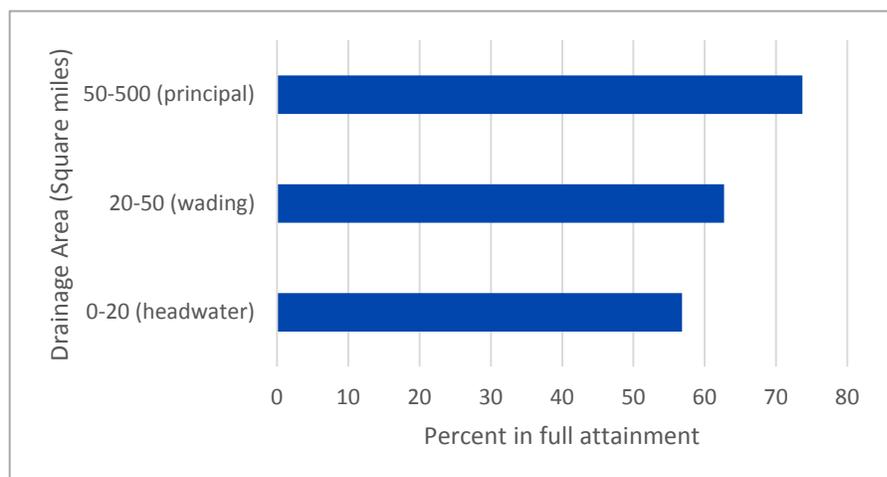
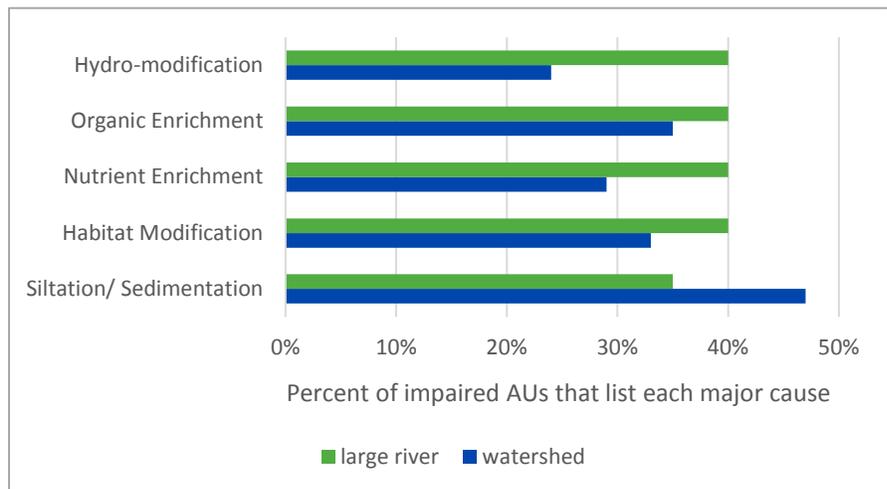
The top five aquatic life impairment causes for the period 2003 through 2016 are:

- siltation/sedimentation
- organic enrichment
- habitat modification
- nutrient enrichment
- hydromodification

For watersheds, most impairment is related to modification of the landscape. These types of impairments have the most impact on smaller streams. Most of the impaired watershed units with current data had at least one of these causes contributing to impairment and many had two or more of the top five causes listed.

Of note is the prevalence of watersheds and large rivers that are impaired by the generic organic enrichment cause category; 35 percent of impaired watersheds show sewage-related impairments such as high

biochemical oxygen demand, elevated ammonia concentrations and/or in-stream sewage solids deposition. This suggests that adequate treatment and disposal of human and animal wastes via wastewater treatment plants, home sewage treatment systems and land applications of septage and animal manure continue to be critical water quality issues in many Ohio watersheds.



The major causes and sources of water quality problems are described below.



**Organic enrichment** is the addition of carbon-based materials from living organisms beyond natural rates and amounts. Natural decomposition of these materials can deplete oxygen supplies in surface waters. Dissolved oxygen is vital to fish and other aquatic life and for the prevention of odors associated with the decomposition process.

**Siltation/sedimentation** describes the deposition of fine soil particles on the bottom of stream and river channels. Deposition typically follows high-flow events that erode and pick up soil particles from the land. Soil particles also transport other pollutants. As the flow decreases, the soil particles fall to the stream bottom. This reduces the diversity of stream habitat available to aquatic organisms.



**Habitat modification** is the straightening, widening or deepening of a stream's natural channel. Habitat modification can also include the degrading or complete removal of vegetation from stream banks; such vegetation is essential to a healthy stream.

These activities can effectively transform a stream from a functioning ecosystem to a simple drainage conveyance. Some aquatic life will not be protected from predators and stressful flows and temperatures. The stream also often loses its ability to naturally process water pollutants.

**Hydromodification, or flow alteration**, describes any disruption to the natural hydrology of a stream system. Flow alteration includes stream impoundment, increased peak flows associated with the urbanization of watersheds and water-table regulation through sub-surface drainage. Such changes can cause extended periods without stream flow, more extreme or frequent floods and loss of fast current habitat in dam pool areas.



**Contamination by pathogens** occurs when human or animal waste reaches the stream. Pathogenic organisms include bacteria, viruses and protozoa.

Contamination by pathogens is a human health issue, as skin contact or accidental ingestion can lead to various conditions such as skin irritation, gastroenteritis or other more serious illnesses.

**Nutrient enrichment** describes the excess contribution of materials such as nitrogen and phosphorus used for plant growth. Excess nutrients are not toxic to aquatic life but can have an indirect effect because algae flourish where excess nutrients exist. The algae die, and their decay uses up the dissolved oxygen that other organisms need to live. The aquatic community is stressed on both a daily basis and over the long term.



The same nutrients that cause impairment of the aquatic life beneficial use also are a major contributing factor to the recent extensive HABs that have been observed in Lake Erie, the Ohio River and many inland Ohio water bodies. Grand Lake St. Marys in western Ohio has been particularly affected. HABs, a visually identified concentration of cyanobacteria, can occur almost anywhere there is water: lakes, ponds, storm water retention basins, rivers, streams or reservoirs.

Many HAB-forming organisms are native to Ohio, but only cause problems when environmental conditions favor them. HABs can cause taste and odor problems in drinking waters; pollute beaches with scums; reduce oxygen levels for fish and other animals; cause processing problems for public water supplies; and may generate toxic chemicals. Knowing what triggers HABs is key to reducing their occurrence and impacts. HABs may be minimized, and some completely avoided, by reducing the nutrients and pollutants added to the water.

## Understanding how various land uses impact water quality can lead to more effective prevention and restoration.

Ohio has embraced a wide variety of economic enterprises over the past 150 years, so it is not surprising that there is a large variety of causes and sources of impairment some of which are described below.

**Row crop cultivation** is a common land use in Ohio. Frequently, cultivated cropland involves tile drainage. The challenge is to carry out actions that improve water quality while maintaining adequate drainage for profitable agriculture. The land application of manure, especially during winter months, is often a large source of both bacteria and nutrients entering streams and subsurface drainage tiles. Many cropland practices involve the channelization of streams, which creates deeply incised and straight ditches or streams.



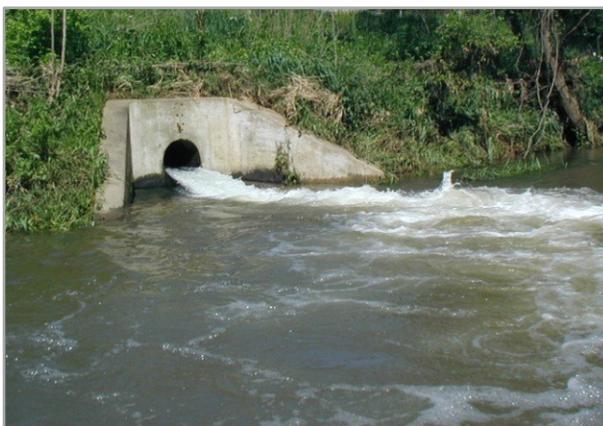
This disconnects waterways from floodplains, which has damaging impacts on the quality of the system. The regularity of the stream channel and lack of in-stream cover reduces biological diversity.



**Land development** is the conversion of natural areas or agriculture to residential, industrial or commercial uses. Numerous scientific studies show that increasing impervious cover (for example, hard surfaces such as roads, parking lots, and rooftops) harms water quality. More water runs off the hard surfaces and more quickly. The rate of erosion increases, and streams become unstable. The resulting channel is less able to assimilate nutrients and other pollution. Higher runoff volume increases the amount of pollutants (for example, nutrients, metals, sediment, salts and pesticides).

Another problem is that stream temperatures can be raised when water runs over hot pavement and rooftops or sits in detention basins. When this heated water enters a stream, the higher temperatures reduce dissolved oxygen concentrations that aquatic life need to survive. With proper planning of development, many of these problems can be mitigated or avoided entirely.

**Agricultural livestock operations** can vary widely in how they are managed. Pasture land and animal feeding operations can be sources of nutrients and pathogens. Frequently livestock are permitted direct access to streams. Direct access not only allows the input of nutrients and pathogens, but also erodes the stream bank, causing excess sediments to enter the stream and habitat degradation. The most critical aspect of minimizing water quality impacts from any size animal feeding operation is the proper management of manure in terms of application and storage.



**Industrial and municipal point sources** include wastewater treatment plants and factories. Wastewater treatment plants can contribute to bacteria, nutrient enrichment, siltation and flow alteration problems. Industrial point sources, such as factories, sometimes discharge water that is excessively warm or cold, changing the temperature of the stream. Point sources may contain other pollutants such as chemicals, metals and solids.

**Acid mine drainage** impacts streams with high levels of acidity (low pH); high metal concentrations; elevated sulfate levels; and/or excessive dissolved and suspended solids and/or siltation. Acid mine drainage often has toxic effects on stream organisms and degrades habitat quality when deposited metals form a crust on the stream bed and susceptible soils erode from areas disturbed from mining. Ultimately it reduces biological diversity, eliminates sensitive aquatic life, and lowers ecosystem productivity.



## **Solving Ohio's water quality problems will require collaboration and creativity.**

Most of Ohio's water quality problems will not be solved by issuing a permit or building a new wastewater treatment system to treat point sources of pollution. Improving Ohio's surface water quality will require effectively managing land use changes to ensure that polluted runoff is either captured and treated or allowed to infiltrate through the soil before running off into a stream.

Restoring and protecting natural stream functions so that pollutants may be more effectively assimilated by streams is also critical. These actions will require various programs and people working collaboratively

on local water quality issues and concerns. Local educational efforts and enhanced water quality monitoring will also play important roles if we are to see significant water quality improvements throughout Ohio.

Many areas of the state are benefitting by the participation of individuals and organizations in local watershed organizations. Some of these organizations have been active for quite some time and are successfully influencing local land use decision making and implementing projects designed to improve water quality in their watershed. In recent years, the emphasis for section 319(h) grant funding has shifted from hiring local watershed coordinators and developing plans to implementing water quality improvement projects such as stream restoration, dam removals, agricultural best management practices and others. Ohio EPA is measuring improvements resulting from these projects; however, there remain challenges associated with changing land use decisions and finding cooperative partners.

Ohio EPA is also actively working with ODNR and the Ohio Department of Health (ODH) to protect people from toxins produced by cyanobacteria that may be in recreational waters at concentrations that can affect human health. The state strategy outlines thresholds for identified algal toxins, establishes monitoring protocols and identifies the process for posting and removing recreation use advisories. Furthermore, a website was established to provide background information about HABs; tips for staying safe when visiting public lakes; links to sampling information and current advisories; and contact information for reporting suspected HABs. A link to this website is at the end of this section.

### **The report provides more detail, including Ohio’s Section 303(d) list of impaired waters, as required by the Clean Water Act.**

This overview is intended to provide a summary of water quality conditions, progress and challenges in Ohio; it is only the first section of the much larger and more detailed 2018 Integrated Report.

The opening sections of the report describe the universe of water quality in Ohio—the size and scope of Ohio’s water resources, programs that are used to evaluate and improve water quality and funding sources for water quality improvement.

The middle sections are more technical and explain the beneficial uses assigned to Ohio’s waters; the assessment methodologies used for the analyses of those uses; the data used to determine whether those uses are being supported; and the conclusions drawn about water quality conditions in each AU.

The closing sections describe how waters found to be impaired will be scheduled for further study. A collection of maps that illustrate current conditions follow the text. The report concludes with summary tables of various types. The 303(d) list is contained in Section L4. Summaries of the condition of each AU are available through the Interactive Maps link at [epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx](http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx).

## For more information, please consult these web sites:

Many water quality reports on specific watersheds are mentioned in this overview. Find these reports at [epa.ohio.gov/dsw/document\\_index/psdindx.aspx](http://epa.ohio.gov/dsw/document_index/psdindx.aspx)

- Watershed restoration reports (TMDLs) — [epa.ohio.gov/dsw/tmdl/index.aspx](http://epa.ohio.gov/dsw/tmdl/index.aspx)
- Integrated Water Quality Monitoring and Assessment Report — [epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx](http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx)
- Ohio EPA Division of Surface Water — [epa.ohio.gov/dsw/SurfaceWater.aspx](http://epa.ohio.gov/dsw/SurfaceWater.aspx)
- Ohio EPA Division of Drinking and Ground Waters — [epa.ohio.gov/ddagw/DrinkingandGroundWaters.aspx](http://epa.ohio.gov/ddagw/DrinkingandGroundWaters.aspx)
- Ohio EPA district office contact info — [epa.ohio.gov/directions.aspx](http://epa.ohio.gov/directions.aspx)
- Fish consumption advisory — [epa.ohio.gov/dsw/fishadvisory/index.aspx](http://epa.ohio.gov/dsw/fishadvisory/index.aspx)
- Harmful algal blooms — [ohioalgaeinfo.com](http://ohioalgaeinfo.com)
- Ohio Department of Health Beachguard (bacteria and algae) — [publicapps.odh.ohio.gov/beachguardpublic/](http://publicapps.odh.ohio.gov/beachguardpublic/)
- List of Ohio watershed groups — [ohiowatersheds.osu.edu/watershed-groups](http://ohiowatersheds.osu.edu/watershed-groups)
- Ohio Department of Agriculture, Soil and Water Conservation — [agri.ohio.gov/divs/SWC/SWC.aspx](http://agri.ohio.gov/divs/SWC/SWC.aspx)
- U.S. Environmental Protection Agency water program — [water.epa.gov/](http://water.epa.gov/)