Introduction

Water!

It is essential for all life. Vast, yet not limitless, sources of water are found throughout Ohio. Surface water resources include more than 3,300 named rivers and streams extending 44,000 miles in length. Numerous other unnamed tributaries also contribute to Ohio's water resources. More than 60,000 lakes, ponds and reservoirs are located within state boundaries. Ohio is bordered by water on three sides, with 440 miles of the Ohio River on the east and south and 262 miles of Lake Erie shoreline on the north.

Some rivers in Ohio are especially valued for their wild, scenic or recreational attributes. Portions of ten such rivers totaling 629 miles are included in Ohio's Scenic Rivers Program administered by the Ohio Department of Natural Resources.

In addition to this wealth of surface waters, ground water resources in Ohio are also abundant. They consist primarily of 28 major aquifers, located in every region of the state.

The Iroquois called the present day Ohio River "Oheo," meaning "beautiful," or "Ohion-hi jo," meaning "beautiful river." Early French explorers adapted the word "Ohio" from several Native American languages.

The natural distribution of water is governed by climate and the physical characteristics of the land (Figure 1, page 2). Distribution and quality of this precious resource, however, are often altered by human activity and use. Ohio's daily use of water is shown in Figure 2, page 4.

One of the challenges of The Ohio Environmental Protection Agency (Ohio EPA), in cooperation with other agencies and organizations, is to protect this vital and remarkable resource and to assure its availability and its quality for today and the future. The water quality standards administered by Ohio EPA are designed to protect and maintain the quality of surface waters. These standards are important keys to ensuring that Ohio's surface waters retain qualities or are restored to the quality that inspired the naming of this state.

History

Concern for the quality of Ohio's water has not always been a priority. Natural resources such as land and water were once thought to be inexhaustible. Uncontrolled development and subsequent water contamination were rampant in the 19th century. The turn of this century brought greater conservation awareness. Water quality, however, continued to deteriorate.

After World War II, the nation's water resources were impacted by increased population and expanded development. Use of chemicals became widespread. Cities, industries and private citizens continued to use rivers as dumping grounds.

By the 1960s, it became clear that Ohio's waterways were in trouble. Portions of the Cuyahoga River, covered with a thick sheen of oil, caught fire. Portions of most major rivers in the state were contaminated. Some beaches along Lake Erie were closed due to water pollution. Not only were the aquatic systems and associated recreation impacted by pollution, but the drinking water supplies were affected as well. The federal government declared that a large percentage of Ohio's public drinking water resources were unfit for consumption because they failed to meet safe drinking water standards. In response to the deterioration of these resources, numerous initiatives were undertaken in the 1970s.

The decade of the '70s saw the start of an environmental awareness movement with much private, civic and government action. Citizen action such as the first Earth Day (April 22, 1970) and numerous legislative actions ushered in a new environmental era, especially for water quality.

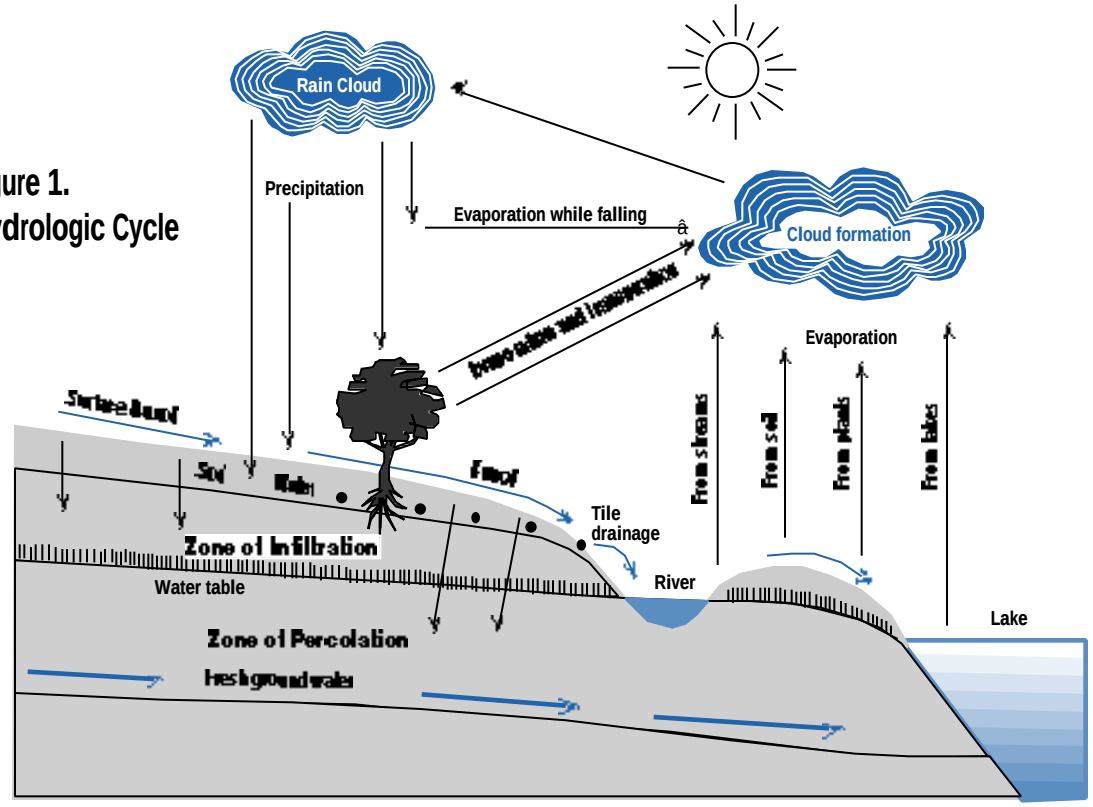
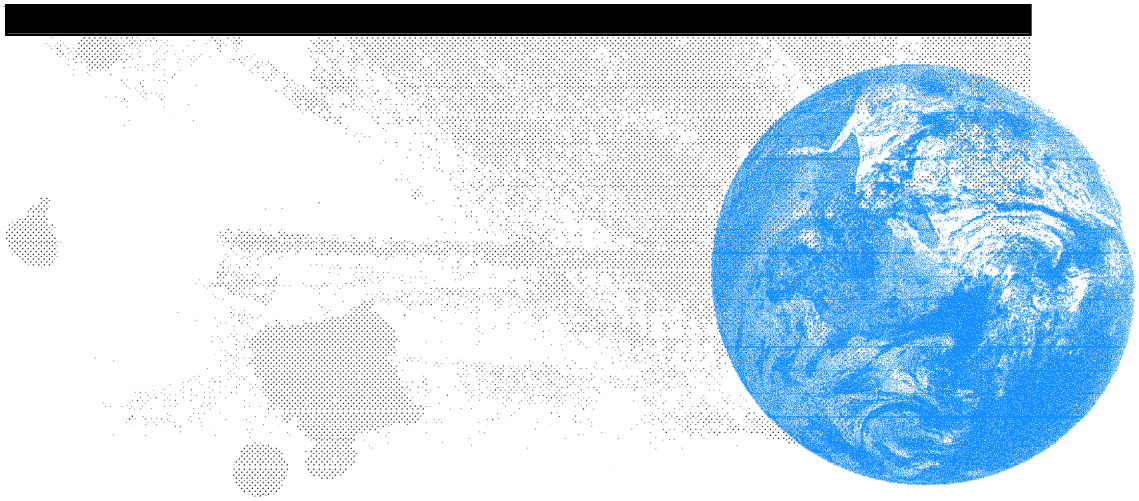


Figure 1.
Hydrologic Cycle



Legislation for Cleaner Water

Since the 1970s, much attention has been focused on water quality issues, but this attention was a long time in coming. The basic Federal Water Pollution Control Act that is still being amended was enacted in 1948. However, when it came to regulating water pollution, this act only allowed the federal government to encourage states to adopt model water quality standards. Regulation of water pollution was left entirely to the states until the Federal Water Pollution Control Act Amendments of 1956. These amendments authorized the federal government to hold enforcement conferences for interstate waters, such as the Ohio River and Lake Erie, that flow between or border two or more states. The public considered these enforcement conferences to be a slow and ineffective means of regulating water pollution. Increasing demands were made for stronger federal laws.

In 1965, amendments to the basic 1948 act required states to enact water quality standards for interstate waters. Then, amendments in 1966 gave the states additional grants for the construction of public water pollution control works if the states contributed to those grants and adopted water quality standards for waters entirely within their borders.

Much attention began to be focused on water quality issues in 1970 with the formation of the United States Environmental Protection Agency (U.S. EPA). Two years later the Ohio Environmental Protection Agency (Ohio EPA) was formed with the passage of Ohio Senate Bill 397. The formation of these agencies established the much needed mechanism to address a long history of environmental abuses.

The Clean Water Act of 1972, which governs much of our water regulations today, is actually an amendment to that first monumental law of 1948. The Clean Water Act of 1972 requires that point source discharges obtain a permit that specifies allowable amounts of pollutants in effluents. The 1987 and 1990 amendments to the Clean Water Act established additional requirements for permit and standards programs.

Water Quality Standards

A principal goal of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of surface waters in the United States. To meet this goal, states are required to establish surface water quality standards.

These water quality standards only apply to surface waters in defined channels such as streams and rivers. Water quality standards do not apply to ground water or other water flowing over the surface of the earth before it enters defined channels or water bodies. Although water quality standards take into account that some water bodies are sources of drinking water, water quality standards are clearly different from drinking water standards established under the Safe Drinking Water Act.

To comply with national requirements established by the U.S. EPA, Ohio EPA develops and implements water quality standards for all surface bodies of water within Ohio. These standards must be reviewed every three years and approved by the U.S. EPA. Water quality standards provide water quality goals for water bodies. To reach these goals, Ohio EPA limits the discharge of pollutants into water bodies.

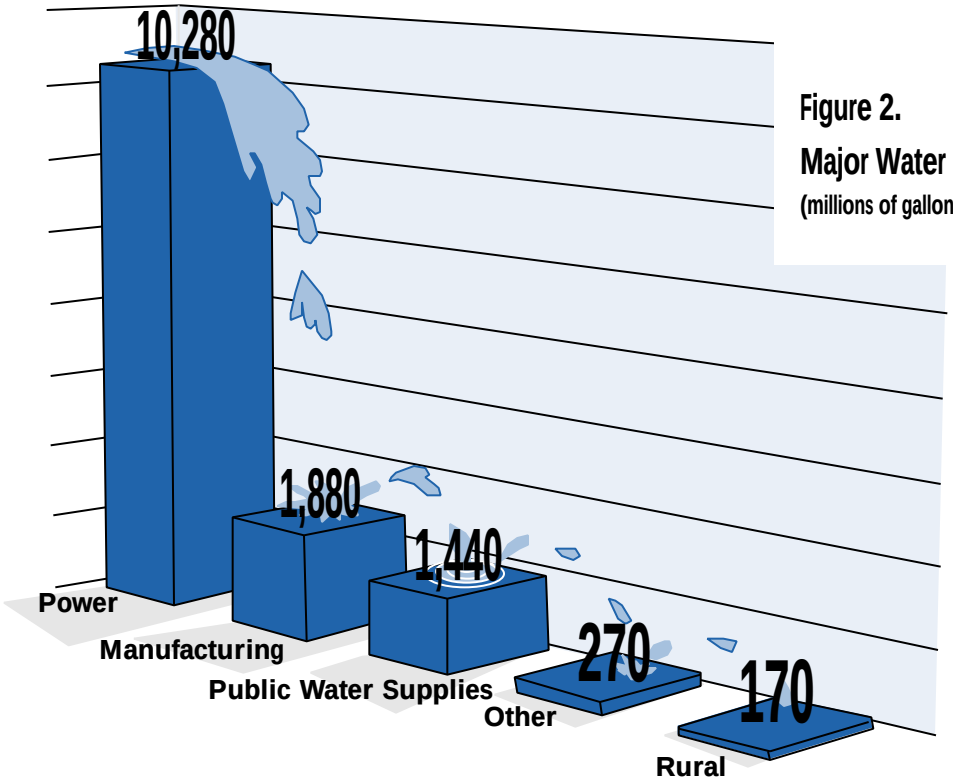


Figure 2.
Major Water Use in Ohio
(millions of gallons per day)

Source: Water Quality Standards Handbook, U.S. EPA, Office of Water Regulations and Standards, Washington, D.C., 1983.

Components of Water Quality Standards

There are three main components of water quality standards: (1) use designations; (2) water quality criteria; and (3)antidegradation policy.

Use designations identify the uses, such as aquatic life habitats, water supply or recreation, that are to be protected in water bodies or portions of water bodies. The water quality criteria associated with each designated use help Ohio EPA assign limits to wastewater dischargers.

Ohio EPA issues permits to point sources of discharge such as treated sewage outlet pipes, that empty into state waters and that potentially may impact water quality. National Pollutant Discharge Elimination System permits identify and limit the allowable quantities of pollutants in a discharge.

In addition to limiting specific chemicals, water quality criteria are used to measure the overall quality of a water body, including its toxicity and ability to support aquatic life.

Water quality standards also must ensure protection of high quality water bodies. Overall existing surface water quality may not be degraded without public notice and input. This anti-degradation policy requires the maintenance of water quality for: (1) “existing instream water uses;” (2) “water quality that exceeds existing criteria;” and (3) “state resource waters” (surface waters that are in some type of conservation reserve or that have exceptional recreational or ecological significance).

Ohio EPA has primary responsibility to formulate and implement water quality standards. This requires research, the establishment of regulations and the enforcement of standards. The overall goal of water quality standards is to ensure continued protection of Ohio’s waterways.

Why Compliance with Water Quality Standards Is Important

Clean, usable water is vital to our survival. Agriculture, manufacturing and recreation, as well as all other facets of our daily life, are water-dependent (see Table 1). Our environmental, economic and aesthetic well-being are closely tied to water. Without standards for water quality throughout the state, the water resources of Ohio would be further threatened.

Compliance with water quality standards is the desired outcome; incentives, as well as penalties, are used to achieve these standards. For example, the 1987 amendments to the Clean Water Act authorized loans to municipal water pollution control facilities. Grants authorized by these amendments were given to each state to establish water pollution control revolving funds. Each state also was required to contribute to its fund. The fund of each state is used to: (1) construct publicly-owned water treatment facilities; (2) implement management programs to control non-point source pollution within navigable waters; and (3) develop and implement conservation and management plans for estuaries.

Although penalties are not the preferred method for seeking compliance, they are levied against those who knowingly or through negligence pollute a water treatment system or a body of water. Penalties are also levied for violating permit conditions.

Table 1. Categories of Water Use in Ohio[1]

Category of Use	Surface Water[2]		Ground Water	
	Percent of Use Supplied by Surface Water	Percent of Total Surface Water Use[2]	Percent of Use Supplied by Ground Water	Percent of Total Ground Water Use[3]
Public	71	8	27	52
Rural				
Domestic	10	0.1	90	12
Livestock	40	0.1	60	3
Industrial	98	92	2	32
Irrigation	64	<0.1	36	0.3

[1]Abstracted from reports by the U.S. Geological Survey published in 1984 and 1985.
[2]Offstream use only.
[3]Percentages may not add up to 100 percent because of independent rounding errors.

Source: Surface and Ground Water Terminology, AEX–460, Ohio State University Extension, The Ohio State University.

Citizen Input

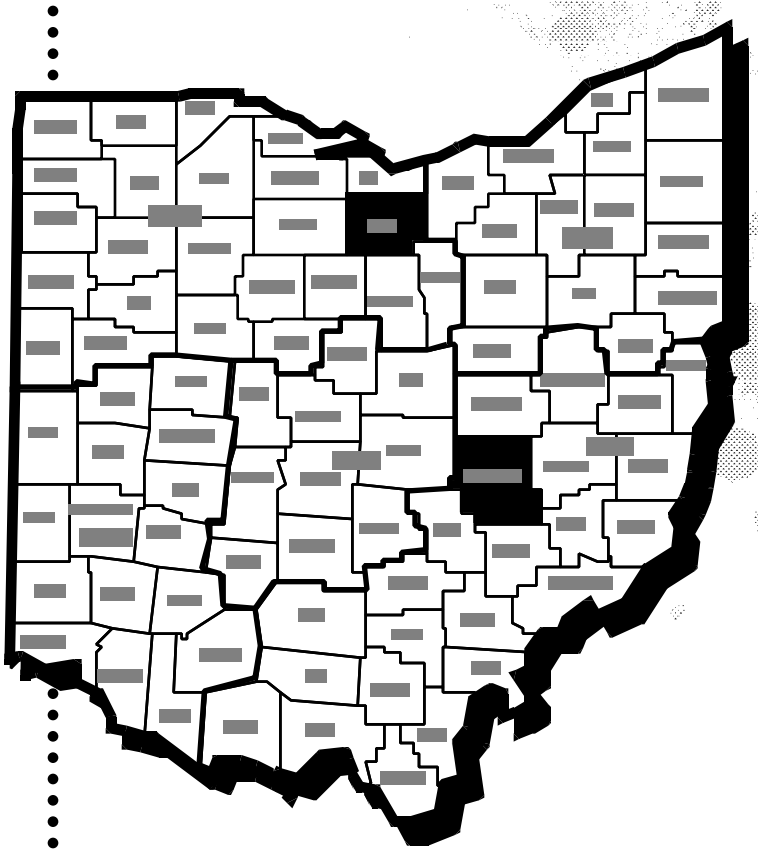
In the formation of water quality standards, citizen input is vital. There are various ways to become involved in the process of developing surface water quality standards. Public hearings are used to encourage input from concerned citizens. Individual contact with your Ohio EPA district or central office is encouraged.

People who have questions or concerns about environmental issues are encouraged to call the toll-free numbers listed on page 8. Routine inquiries about regulations should be directed to the business numbers listed on page 8.

Conclusion

To realize our goals of water quality, we must view Ohio's water, air and land resources as an integrated whole. It is imperative to focus on long-term planning for the use and protection of our state's resources. Ohio EPA's goal is to obtain more and better information from improved monitoring so it can better carry out its mission. By researching and developing methods that more accurately measure the quality of our water, the goal of high quality waters will be obtained. The Ohio Environmental Protection Agency is committed to research, maintenance and regulation related to water quality standards for our citizens of today and tomorrow.

Ohio EPA District Offices



Central District Office (CDO)
P.O. Box 2198
2305 Westbrooke Drive
Building C
Columbus, Ohio
43266-2198
(614) 771-7505
1 (800) 686-2330

Northeast District Office (NEDO)
2110 E. Aurora Road
Twinsburg, Ohio 44087
(216) 963-1200
1 (800) 686-6330

Northwest District Office (NWDO)
347 N. Dunbridge Road
P.O. Box 466
Bowling Green, Ohio 43402
(419) 352-8461
1 (800) 686-6930

Southeast District Office (SEDO)
2195 Front Street
Logan, Ohio 43138
(614) 385-8501
1 (800) 686-7330

Southwest District Office (SWDO)
40 South Main Street
Dayton, Ohio 45402
(513) 285-6357
1 (800) 686-8930

Sources of Further Information

Contact:

Ohio EPA
Division of Water Quality Planning
and Assessment
P. O. Box 1049
1800 WaterMark Dr
Columbus, OH 43266-0149
(614) 644-2856

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