



WATER FACT SHEET

U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

GROUND-WATER WITHDRAWAL IN 1990 — Midwestern Basins and Arches Regional Aquifer Systems study area

BACKGROUND

The U.S. Geological Survey Regional Aquifer-System Analysis (RASA) program was initiated in 1978 in response to a national concern for the availability of ground water after a severe drought in the late 1970's (Sun, 1984). The Midwestern Basins and Arches RASA study area encompasses parts of Indiana, Ohio, Michigan, and Illinois. This fact sheet focuses on the Indiana and Ohio parts of the study area because the Michigan and Illinois parts are small and the contribution of these States to the total reported ground-water withdrawal within the study area is minimal (fig. 1).

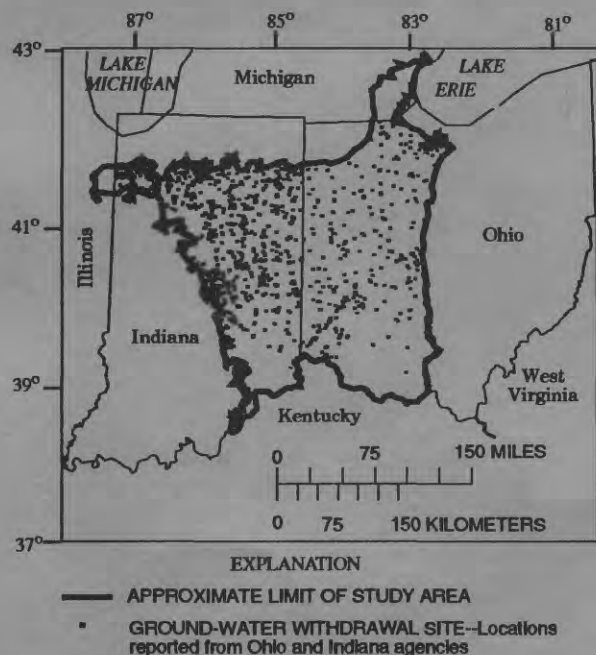


Figure 1. Location of the Midwestern Basins and Arches study area and wells capable of withdrawing at least 100,000 gallons per day in 1990.

This fact sheet presents the reported ground-water withdrawals in 1990 from the RASA study area within Indiana and Ohio. The reported ground-water use was sorted into six categories to enable uniform comparisons. The data used in this fact sheet were obtained from the Indiana

Department of Natural Resources (IDNR) and the Ohio Department of Natural Resources (ODNR).

REQUIREMENTS FOR REPORTING GROUND-WATER USE

Each State has a water-withdrawal registration program that requires owners of wells capable of withdrawing at least 100,000 gal/d (gallons per day) to register with their respective State agencies. Of the 2,134 wells that were registered in 1990, 86.2 percent were in Indiana and 13.8 were in Ohio.

In 1983, the Water Resources Management Act established requirements for reporting ground-water use. Since the passage of the Act, the IDNR has developed methods for promoting compliance with the law that include mail inquiries and field inspections made by IDNR conservation officers. The IDNR has been reporting water-use data annually since 1986.

In 1990, the ODNR Division of Water implemented a Water Withdrawal Facility Registration Program. The ODNR encourages compliance by mail inquiries, bulletins and newsletters, and by checking new well logs. Documentation of well drilling is required and kept on file at the ODNR, and can be checked by ODNR personnel to identify wells that have the capacity to withdrawal more than 100,000 gal/d.

For purposes of this fact sheet, Indiana and Ohio's water-use data are grouped into six categories: (1) agricultural/irrigation, (2) public supply, (3) industrial, (4) energy production, (5) rural use, and (6) miscellaneous.

GROUND-WATER WITHDRAWALS

The average rate of total reported ground-water withdrawals in the study area in 1990 was 433 Mgal/d. Amounts for each of the six categories are given in figure 2.

Sixty-five percent of the total reported ground-water withdrawals is for public supply which includes not only water companies but also mobile home parks, restaurants, hospitals, and schools. Of the total withdrawals for public supply, 59 percent is from Indiana and 41 percent is from Ohio. Nearly 22

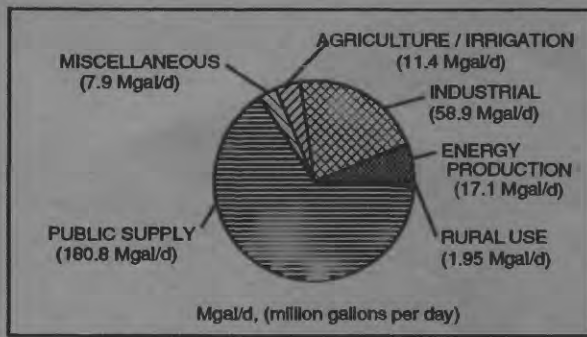


Figure 2. Reported ground-water withdrawal rates by water-use category in the Midwestern Basins and Arches study area, 1990.

percent of all reported ground water withdrawn from the study area is used for industry, which includes metal, chemical, petroleum and mineral-extraction operations. Four percent of the reported total ground-water withdrawals is for agricultural/irrigation use, which includes farming activities and any type of irrigation (primarily golf course and crop irrigation). Energy production (generation of electricity) accounts for 6 percent of the ground water withdrawn. Less than 1 percent of reported ground-water withdrawals are for rural use. The remaining 3 percent of ground-water withdrawals, categorized as miscellaneous use, are by hotels, rest areas, recreational facilities, amusement parks and construction-site-dewatering operations that occur only for short periods of time but withdraw large amounts of water. These figures represent ground-water withdrawals for the selected categories only. The degree to which ground-water withdrawals vary from year to year or the quantity that is withdrawn by unregistered well owners is not known.

The reported total monthly withdrawals for the study area are shown in figure 3. A seasonal trend is evident for each State. The greater pumpage during the summer months is probably due to irrigation, increased outdoor activity, and a need to supplement surface-water withdrawals with ground-water withdrawals. In August, the reported ground-water withdrawn in Ohio totaled about 12,000 Mgal (million gallons), which represents the highest monthly withdrawal for either state. Indiana's highest reported monthly withdrawal (about 8,000 Mgal) occurred in July. The lowest monthly ground-water withdrawals reported for Indiana and Ohio occurred in February—4,300 and 6,800 Mgal, respectively. Total reported ground-water withdrawals in Ohio in 1990 were larger than in Indiana.

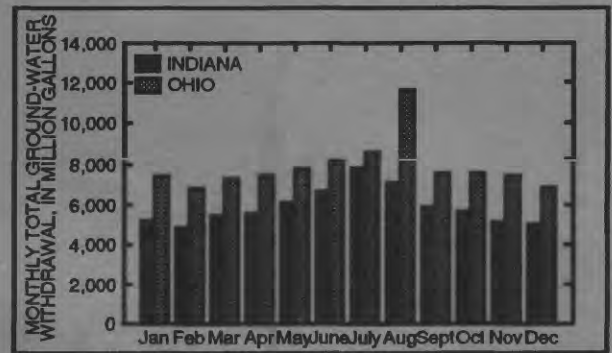


Figure 3. Monthly total reported ground-water withdrawal for parts of Ohio and Indiana in the Midwestern Basins and Arches study area, 1990.

SELECTED REFERENCES

- Bugliosi, E.F., 1990, Plan of study for the Ohio-Indiana carbonate-bedrock and glacial-aquifer system: U.S. Geological Survey Open-File Report 90-151, 26 p., 1 pl.
- Indiana Department of Natural Resources, 1990, Indiana's water use --1990: Division of Water, 9 p.
- Ohio Department of Natural Resources, 1990a, Water withdrawal registration instructions: Division of Water, 4 p.
- _____, 1990b, Water withdrawal registration facility program--1990 data: Division of Water, 4 p.
- Sun, R.J., 1984, Regional aquifer-system analysis program of the U.S. Geological Survey--Summary of projects, 1978-84: U.S. Geological Survey Circular 1002, 364 p.

ADDITIONAL INFORMATION

Additional information about the "1990 Ground-water withdrawal--Midwestern Basins and Arches Regional Aquifer Systems study area", can be obtained from:

U.S. Geological Survey
Regional Aquifer Systems Analysis
975 West Third Avenue
Columbus, Ohio 43212

Open-File Report 93-119 Elizabeth A. Beary, 1993

REVISED: October, 1993