86-325

WATER FACT SHEET

U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

WEST VIRGINIA GROUND-WATER DATA-BASE MANAGEMENT SYSTEM

GROUND-WATER USE

Ground water is an important resource for public, domestic, and industrial uses throughout West Virginia. Ground-water withdrawals in 1980 comprised only 4 percent of the total freshwater used in the State; however, it was the source of supply for about 53 percent of the total population in the State and about 90 percent of the rural population (U.S. Geological Survey, 1985, p. 439). Despite the importance of ground water in West Virginia, ground-water data are not readily accessible.

AVAILABILITY OF GROUND-WATER DATA

Ground-water data are stored in data-base systems such as the U.S. Geological Survey's National Water Data Storage and Retrieval System (WATSTORE) and the U.S. Environmental Protection Agency's Storage Retrieval (STORET) system. Unfortunately, retrieval of data from these systems can be time consuming and expensive. Much of the ground-water data for the State also are not in computer storage and are available only in local, State, and Federal publications or in the data files of the respective governmental agency.

The West Virginia District of the U.S. Geological Survey's Water Resources Division, in cooperation with the West Virginia Department of Natural Resources, Division of Water Resources, is developing a computerized ground-water data-base system for West Virginia using data-base management software developed through the Geological Survey's National Headquarters. A central computerized ground-water data-base management system will provide information that is needed in the formulation of water-resources protection and management plans by local, State, and Federal agencies.

MISSION OF THE U.S. GEOLOGICAL SURVEY

The mission of the U.S. Geological Survey is to provide geologic, topographic, and *hydrologic information* that contributes to the wise management of the Nation's natural resources and that promotes the health, safety, and well-being of the people. This information consists of *maps, data bases, and descriptions and analyses of the water*, energy, mineral resources, land surface, underlying geologic structure, and the dynamic processes of the Earth.

The Water Resources Division of the Geological Survey has the principal responsibility for appraising water resources and for providing hydrologic information. The Division is the Nation's major scientific water organization, and its sole product is water information—it has no regulatory authority. Virtually all the information produced is multipurpose and, after its initial use, the information becomes a vital part of future resource evaluation and water-management decisions.

The Water Resources Division is presently (1986) in the process of transferring its National computer-data files to the computer-data files of its 43 districts nationwide. The data, therefore, will become more readily available to local needs. The ground-water data for West Virginia in the WATSTORE files have been transferred to the computer in the Geological Survey District office in Charleston, W.Va. Data for approximately 12,000 sites are in this file, and a sample retrieval is shown in table 1. Water-quality and surface-water data also will be transferred in the future.

MAJOR SOURCES OF DATA

Some sources of ground-water data in West Virginia in addition to the Geological Survey are:

- U.S. Environmental Protection Agency;
- U.S. Office of Surface Mining;
- U.S. Soil Conservation Service;
- West Virginia Department of Energy;
- West Virginia Geological and Economic Survey;
- West Virginia Department of Health;
- West Virginia Department of Natural Resources; and
- Academic institutions.

Table 1. *Example of a ground-water data retrieval*

DATE: 04/01/86 ALLUVIAL WELLS IN MASON COUNTY, WEST VIRGINIA

SITE-ID	PRIMARY USE OF WATER[1]	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	AQUIFER CODE[2]	TOP OF OPEN INTERVAL (FEET)	BOTTOM OF OPEN INTERVAL (FEET)	TYPE OF OPENINGS[3]
383533082110901	H	540	60.0	111ALVM	40.0	60.0	P
383740082095301	H	565	68.0	111ALVM	53.0	68.0	S
383952082102601	N	580	85.0	111ALVM	65.0	85.0	S
383956082102601	N	580	86.0	111ALVM	66.0	86.0	S
383959082102001	N	580	85.0	111ALVM	72.0	85.0	S
384758082122001	U	560	63.0	111ALVM	48.0	63.0	S
385125082080901	P	560	87.0	111ALVM	67.0	87.0	S
385212082080801	F	560	94.0	111ALVM	[4]---	[4]---	[4]-
385223082080801	T	560	94.0	111ALVM	[4]---	[4]---	[4]-
385657082060301	C	560	71.0	111ALVM	56.0	60.0	S

[1]H = DOMESTIC N = INDUSTRIAL U = UNUSED P = PUBLIC F = FIRE T = INSTITUTION C = COMMERCIAL.
[2]111ALVM = HOLOCENE ALLUVIUM.
[3]P = PERFORATED OR SLOTTED S = SCREEN (UNKNOWN) T = SAND POINT.
[4]--- or - = NO DATA AVAILABLE.

The data base will contain a variety of information from many of these sources. For example, using information from the West Virginia Department of Health, the Geological Survey inventoried almost 1,000 ground-water sites used for public water supply including communities, municipalities, schools, trailer parks, and campgrounds. Chemical data, from analyses performed by the Department of Health, are available for many of these sites.

TYPES OF INFORMATION

Information stored in the data base, depending on the type of water source (well, spring, cavern, mine) and the amount of available data for the site, will include:

- Location—Data such as latitude/longitude, altitude of land surface, topographic setting, and the U.S. Geological Survey topographic quadrangle map on which it is located;
- Physical characteristics—Data such as:
  - Site type (well, spring, cavern, mine),
  - well construction data including well depth, type of well finish (open hole, screened, sand point), and casing information,
  - spring type (contact, fracture, perched),
  - dip, orientation, and dimensions of mine tunnels;
- Ground-water levels—Data includes depth to water and date of measurement;
- Water yield—Data such as yield (for flowing wells and springs) and pumped discharge, water-level drawdown, specific capacity, and other hydraulic information;
- Geology—Data such as the name and lithology of geologic units issuing springs or penetrated by wells;
- Water use—Type of use, such as public, domestic, industrial; and
- Ground-water quality—Data includes field determinations of temperature, pH, specific conductance, and alkalinity (detailed chemical analyses are stored in a separate water-quality data base).

DATA BASE USE

The computerized Ground-Water Data-Base Management System will be responsive to the needs of local, State and Federal managers when formulating ground-water use, protection, and resource-management plans (such as evaluation of waste-disposal permits). The system will be accessible 24 hours per day for retrieval, statistical manipulation, and graphic display of the data. This will give responsible agencies the capability to make rapid resource assessments and responses to ground-water related problems. The ground-water data-base also will have other applications, such as:

- Describing regional ground-water quality;
- Planning for public-water systems and for housing and industrial developments;
- Determining spatial and temporal trends in ground-water levels and quality;
- Investigating ground water at State, regional, and local levels;
- Describing the hydrologic system; and
- Identifying areas where hydrologic data are inadequate.

REFERENCE CITED

U.S. Geological Survey, 1985, National Water Summary 1984: U.S. Geological Survey Water-Supply Paper 2275, 467 p.

Additional information on the West Virginia Ground-Water Data-Base Management System can be obtained from:

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U.S. Geological Survey, WRD
603 Morris Street
Charleston, West Virginia 25301