

Composite of Brown County

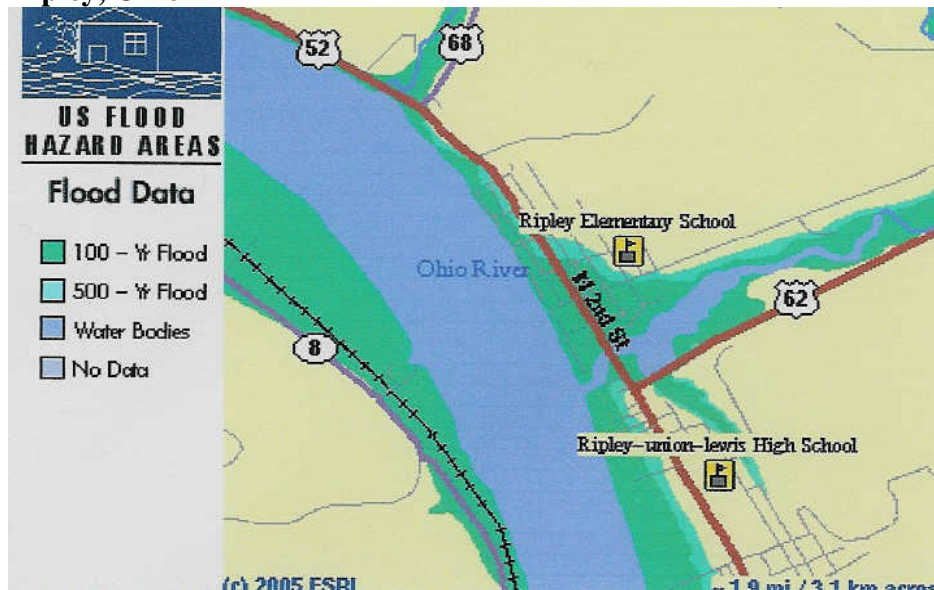
Brown County borders on the Ohio River and may properly be termed an Ohio River county. It lies nearly midway between the Little Miami and Scioto Rivers. A small portion of the county is drained by East Fork into the Little Miami, however no part of the drainage reaches the Scioto. Nearly all the surface is drained directly into the Ohio River by White Oak, Straight and Eagle Creeks and smaller streams.

History

The historical information provided in Chapter 2: Community Profile details historical flooding events in Brown County. Historical information accompanied by data provided by the National Climatic Data Center regarding more recent hazard events confirms that flooding is the greatest natural hazard threat in Brown County. The NCDC data indicates more than 33 flood events occurred in Brown County since September 1993.¹² Although all parts of Brown County are susceptible to flooding and flash flooding, the communities along the Ohio River have felt the greatest impact during large-scale flood events.

The following maps isolate the Villages of Ripley, Higginsport and Aberdeen along the Ohio River and provide a general overview of 100 and 500 year floodplain data.

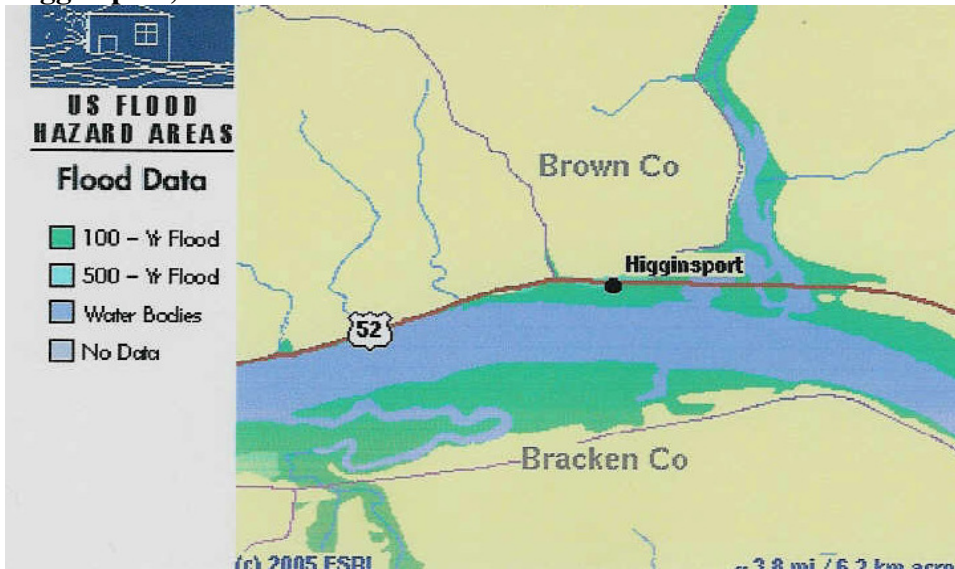
Ripley, Ohio



source: www.esri.com/hazards

The data displayed on this web site is developed by scanning the existing Flood Insurance Rate Map (FIRM) hardcopy and capturing an overlay of flood risks. The maps displayed on this site should be considered an advisory tool for general hazard awareness, education and flood plain management.

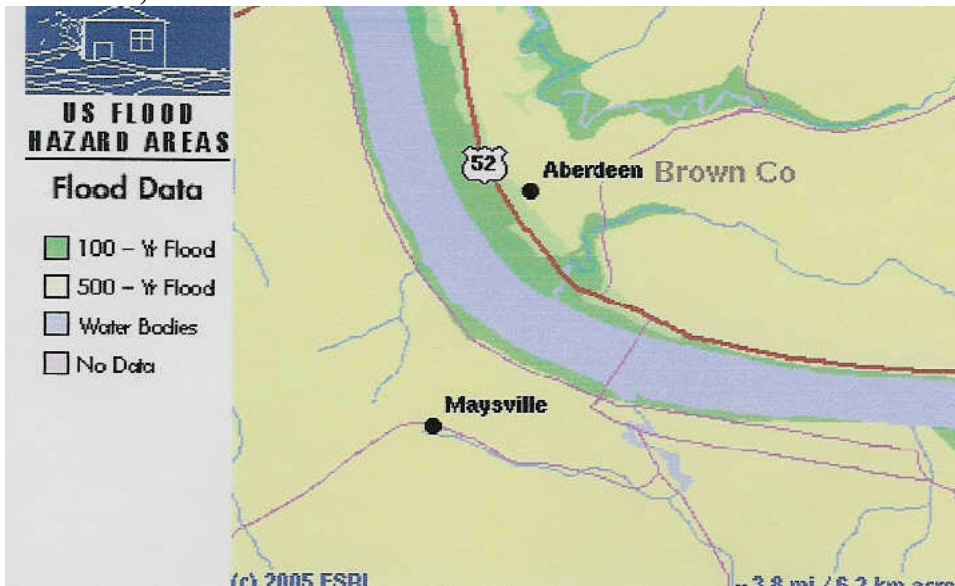
Higginsport, Ohio



source: www.esri.com/hazards

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Aberdeen, Ohio



source: www.esri.com/hazards

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The 1997 Flood

Special emphasis will be given to the flood event which began on March 1, 1997 and significantly impacted Brown County. Many of the members of the Core Group Committee participated in the county's response to the disaster and the experience contributed greatly to the development of this plan.

The beginning of March 1997 began with heavy rainfall totaling more than 12.36 inches over a two day period. Not since 1964 had the area seen such widespread flooding and destruction. The Village of Ripley was flooded from March 8th through March 13th when the Ohio River crested at 64 feet. Schools were closed and businesses made every effort to move inventories to higher ground. A shelter was set up at a local high school to provide shelter, food and medications to local residents displaced by the flood. The National Guard was called in to assist with evacuations.

The flooding contributed to floating debris, dead livestock and washed out roads. Within the Village of Ripley, more than 60 residents and 30 businesses were evacuated due to the flood.¹³ Also significant was the damage to crops. Although farmers were eligible for some financial assistance from crop and livestock losses, the damage done to fertile topsoil was not recoverable and impacted several acres of farmland.

Weather Forecasting

A Flash Flood Watch means it is possible that rains will cause flash flooding in the specified area. Citizens should be alert and prepared for a flood emergency. A Flash Flood Warning means flash flooding is occurring or is imminent in the specified area. People near the warning area should move to safe ground immediately.

Riverine Flooding

This type of flooding is simply the overbank flooding of rivers and streams. Flooding in large rivers usually results from large-scale weather systems that generate prolonged rainfall over wide areas.

In Brown County, small rivers and streams are susceptible to flooding from more localized weather systems that cause intense rainfall over small areas.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) was established by the National Flood Insurance Act of 1968, and was strengthened by the Flood Disaster Protection Act of 1973. Participation in the NFIP ensures affordable flood insurance is available to community residents in flood-prone areas. In return, communities adopt floodplain regulations into zoning codes that meet minimum criteria established by FEMA. Brown County zoning requires a minimum elevation of one-foot above the base flood elevation. Subdivision Standards adopted in 2003 state that proposed subdivisions may be denied if access to the subdivision is periodically blocked by floodwaters. These guidelines also provide for flood control and storm drainage facilities.¹⁴

A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates where NFIP regulations apply. FIRM's are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

The floodplain consists of the floodway and the floodway fringe, also known as the 100-year floodplain. The floodway includes the river channel and those areas which are most likely to become inundated with flood waters. The floodway is sized so that if the entire floodway fringe were filled, the base flood elevation would rise no more than an additional one-half foot. The base flood is commonly referred to as a 100-year flood.

Community Rating System (CRS)

The goals of the Community Rating System are to reduce flood losses and to promote the awareness of flood insurance. A community can benefit from actions it takes above and beyond the Federal minimum requirements of the National Flood Insurance Program. In a CRS participating community, the cost of flood insurance for residents is reduced by 5% to 45% based on the number of activities it undertakes and the points it receives for those activities.

Flood Terminology

Floodplain

A floodplain is a land area adjacent to a river, stream, lake or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess floodwater. The floodplain is made up of two sections: the floodway and the flood fringe.

Floodway

The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the overbank areas adjacent to the channel. The floodway carries the bulk of the floodwater downstream and is usually the area where water velocities and forces are greatest. NFIP regulations require that the floodway be kept open and free from development or structures that divert flood flows onto other properties.

Flood Fringe

The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward. This is the area where development is most likely to occur, and where precautions to protect life and property need to be taken.

Stormwater Management

Water resource protection at the local level is becoming more complicated due to polluted runoff from impervious surfaces. Impervious surfaces are defined as an impenetrable material that prevents infiltration of water into the soil such as rooftops, roads and parking lots. As development alters the natural landscape, the percentage of land covered by impervious surfaces increases, initiating a chain of events that begins with alterations in the hydrologic cycle, works its way through physical and ecological impacts on riparian areas, adds on water pollution, and culminates in degraded water resources.

The Nonpoint Education for Municipal Officials (NEMO) project, funded by the United States Department of Agriculture's Cooperative State Research, Education and Extension Service, uses geographic information system (GIS) technology as a tool to develop links between land use and water quality. NEMO uses modeling to project future build-out of impervious surfaces based on existing zoning laws. The results can help guide planning goals for local drainage basins.

Impervious surface modeling can be useful in mitigating a reduction in water quality and enhance site planning. An example of mitigating stormwater runoff in new development is reducing road widths in residential areas, and parking spaces in commercial zones. Other mitigating concepts include an "impact fee" stormwater utility assessment which is based upon the impervious coverage of the property.

National Pollution Discharge Elimination System (NPDES)

The NPDES program was established by the Federal Water Pollution Control Act Amendments of 1972. Thirty years ago, only one-third of our waters were considered healthy. Today, approximately two-thirds are healthy. Even with the gains that have been achieved, the NPDES faces significant challenges maintaining and improving water quality in the future due to increases in population and development throughout the country.

The National Pollution Discharge Elimination System Phase I and II rules stem from the U.S. EPA's Clean Water Act amendment passed in 1998. NPDES rules pertain to sediment control practices resulting from new construction. NPDES Phase I rules affected only those sites disturbing five or more acres. Beginning in March 2003, Phase II rules will apply to construction sites of one acre or more. Sediment migration from construction sites due to stormwater discharge is one of the primary areas of water quality regulated by the new Phase II rules. Approximately 97.5% of all acreage under development in the United States will be regulated under NPDES Phase II rules. Additionally, the EPA has earmarked additional funding for implementation and enforcement of NPDES regulations.

In order for developers to comply, they must reduce sediment migration by limiting the level of soil erosion occurring at the site. Vegetation is an excellent form of erosion control because it provides permanent cover for the soil and reduces the transportation of soil particles. It also improves infiltration which reduces the amount of water potentially leaving the site. Other forms of erosion control include mulching, grassed swales, stormwater wetlands, silt fencing and sediment basins.

The EPA's 2000 Strategic Plan seeks to increase the number of watersheds meeting water quality standards to meet the basic goal to provide clean and safe water. One of the strategic goals from this plan is to support more flexible watershed planning. Past efforts have focused on Federal, "one size fits all" programs. Solutions that will improve water quality may best be achieved by working in collaboration with a broad array of stakeholders such as state and local officials, conservation groups and planners. Further, the NPDES program is exploring the potential for municipal "integrated watershed" permits based on local planning and decision-making.¹⁵

Vulnerability and Risk

The Ohio River borders the southern boundary of Brown County. Several streams and creeks running through the county are subject to flooding. Also, extended periods of rainfall contribute to localized flooding.

There have been more Presidential disaster declarations for flooding than any other hazard in Brown County. Brown County is susceptible to changeable weather patterns and some flooding occurs seasonally.

The economic impact of flooding on Brown County is significant. Historically, flood damage has impacted private property (residential and business), public infrastructure (roads and bridges) and affected commerce through road closures and shut downs. The taxable value of residential real estate in Brown County totals \$309,104,380. All other parcels including farms, commercial and industrial land uses is \$131,058,220, for a total assessed value of \$440,162,600. There are more than 17,193 housing units in Brown County, with more than 71% of them owner occupied. Of the owner occupied homes 62.8% are valued between \$60,000 and \$125,000, for a median value of \$89,900.

The map on the proceeding page pinpoints critical facilities located in Brown County.