

Problems / Challenges Identification (System Gaps)

The challenges facing Clinton County are not unlike many other similarly sized communities. The analysis suggests the following findings:

Tornados and Severe Weather Storms:

- Tornados and severe weather storms will continue to occur in the County.
- There is a need to enhance the storm warning systems in the rural areas.
- Limited wind resistant construction is required for those structures that are located in wind prone areas.



Snow Storms:

- Snowstorms will continue to occur.
- Education of residents of Clinton County regarding awareness of snowstorm impacts must be improved.
- Snow drifting remains a significant problem in several areas of the County. Alternative means of snow removal or fencing should be investigated.
- Business and industry representatives must be better informed regarding snow emergencies and snow alert levels.



Flooding:

- Flooding will continue to occur.
- The flood hazard areas of Clinton County are subject to period inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and welfare.
- A general perspective that “natural disasters will not occur and impact my property or life” is prevalent in Clinton County. Therefore a need to enhance the public awareness of the potential for natural disasters and the influence that man has on the natural systems must be addressed. Specifically the residents should be better informed about and exposed to the Ohio Department of Natural Resources Division of Water efforts regarding Tornado/Flood Safety Awareness.



- The Winter 1997 edition of the Ohio Floodplain Management Newsletter indicated that almost 40 percent of the individuals surveyed answered no to the question: “Do you believe that your community’s NFIP floodplain maps accurately depict the 100-year flood hazard?” Many individuals in Clinton County may give this same answer. Thus, there appears to be a need to inform the users and the administrators of the regulations about alternatives to determining the susceptibility of a site to flooding.
- There is insufficient warning time regarding flash flooding in Clinton County.
- There are existing structures in the flood plain areas.
- The County must review and update its flood plain management regulations.
- The existing National Flood Insurance maps inadequately detail specific parcels and alternatives, such as up-to-date modern maps, are needed.

On the following page you will find the flood plain assessment for Clinton County.

RISK ASSESSMENT: METHODOLOGY, FACTORS AND VALUES

The analysis used by Clinton County was taken from the State of Ohio Hazard Analysis and Risk Assessment publication dated January 1998. The hazards affecting Ohio were evaluated using eight factors: Historical Occurrence, Affected Area, Collateral Damage, Warning Time, Population Impact, Fiscal Effects, Duration and Response/Recovery Time. Factors were assigned an even-number numerical value ranging between 2 and 8. The sum totals of factor values were then added, allowing hazards to be compared against each other using the totals.

HISTORICAL OCCURRENCE

If there is a likelihood of a hazard occurring more than five times within a ten year period, then that hazard has a low probability. If it is likely to occur up to ten times within ten years, it has a medium probability. If the hazard is likely to occur more than ten times in ten years, it has a high probability. There is an excessive probability if the hazard is likely to occur ten or more times in one year.

| | | | |
|-----|--------|------|-----------|
| 2 | 4 | 6 | 8 |
| Low | Medium | High | Excessive |

AFFECTED AREA

Each hazard affects a geographic area. A blizzard can affect several states and a flood might only affect a neighborhood creek. Numerical values have been assigned that represent the size of the affected area. Example – A tornado might strike a village, a city, or part of a township within the county. This would be a single site. If it strikes more than one village, city or other sites within a township then there would be multiple sites. If the tornado causes damage at multiple sites in two townships the affected sites would be considered a small area. If the tornado affects sites in three or more townships or an entire county, then for purpose of the hazard analysis, it is in a large area.

| | | | |
|-----|--------|------|-----------|
| 2 | 4 | 6 | 8 |
| Low | Medium | High | Excessive |

COLLATERAL DAMAGE

This effect/factor has also been called a secondary event. For example, in addition to all the damage caused by an earthquake, the earthquake may also cause failure of a dam. The dam failure also causes water damage. In the failure of that dam, the collateral or secondary damage is a hazard that was caused by the occurrence of another hazard.

| | | | |
|----------------------|----------------------------|----------------------------|--------------------------|
| 2 | 4 | 6 | 8 |
| No Possibility 0% | Some Possibility 25-50% | Much Possibility 51-75% | High Possibility 76%+ |

Flood Plain Assessment

Village of Sabina

SR 22/3 at Jackson Street – Moderate risk; mainly roads.

Substantial rainfall will and does create flooding on the main road of SR22/3. Consequently, traffic must be re-routed although property damage does not result. However, should rainfall in significant amounts continue for more than a week, flooding may reach homes along this route causing minimal damage. The damage may include water into basements or crawl spaces and may reach dollar amounts of to \$15,000 per home in extreme case. There are approximately 25 homes located in the affected area. Debris management and increased drain size are needed.

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Wilson & Richland Township

Polk Road – Low Risk: only farmland affected.

The area is predominantly agricultural with minimal residential property. The land is fairly flat with little waterways to handle substantial rainfall. Debris management is a major concern for this area and improved watershed waterways would greatly enhance or correct flooding concerns. The residential properties could potentially suffer damages of \$10,000 per home which may include flooded basements and crawl spaces. This would be the maximum amount for each of the 20 to 25 homes in the area.

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Union Township

Gurneyville Road – Low risk; moderate growth.

The area is mostly agricultural with signs of residential growth. This area would require significant amounts of rainfall in order for water to reach any residential structure in the area. However, future growth could potentially change this observation. The watersheds are few but seem to be adequate for the area. The biggest concern for the area is debris management of watersheds. If watersheds are not managed and the area sees large rainfalls, residential damage in the amount of \$8,000 per home may occur. This damage may include flooding in basements and crawl spaces. If future growth is not properly managed, the estimated value could significantly increase. There are approximately thirteen homes in the area with most positioned on elevated ground. Only three of these homes are located in lower areas.

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|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Village of Clarksville – High risk.

The Village of Clarksville is an area of concern and very much prone to flooding. The village, located in the West side of the county, has Cowan Creek running along Clarksville Road. This area contains nine homes that could have large amounts of damage during floods. The estimated amount of damage could easily reach in the high \$90,000 range and major floods could total these homes. Cowan Creek also continues along Second Street, however, the eight homes located in this area are further away from the waterline. The distance from the waterline dramatically reduces potential damage and these homes would most likely escape damage all together.

The village also has Todd's Fork Creek running on the South side of the village that poses the threat of flood damage to the homes along the creek, on SR 350 and Second Street. The nineteen homes located in this area are likely to suffer from significant damage during flooding with estimated costs up to \$100,000 per home. The greatest benefit for the Village of Clarksville is to provide a debris management program and to possibly institute some type of protection wall along these creeks to prevent flooding. These walls could be constructed from man-made materials such as concrete or natural products such as mounds of dirt and clay to make deterrent mounds. It also appears that the village has some type of water drainage system. The current drains are very old and not well maintained. New drains, larger in size, along with debris management could prove to be a significant improvement by providing better diversion of water fall.

| | | |
|--------------------------------|---|----------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 8 | High – over \$10,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 6 | High – 6-10 days |

Village of Midland – Moderate to high risk.

The Village of Midland is located in the Southwest portion of the county. Being an economy-stressed community, this area shows signs of moderate risk of flooding. The drain basins are limited and show signs of problems with debris. The waterway looks to be of adequate size but again is hampered by debris. Debris problems along with drain size could very well create flooding all along the village. The village is small in size, having six businesses and the remainder residential properties. With possible heavy rainfall in the spring and with thawing, any and all structures could potentially be damaged easily reaching \$100,000 to \$150,000 each. This is largely due to the predominately flat land along with little to no run off in addition to debris problems that allow water to lie for longer periods of time. A debris management program along with the new drain system would greatly decrease or eliminate these damages and associated costs. The drains and waterways run off into Lytle Creek - estimated 50 homes. This area ranks as the second highest risk area in the county, following the Village of Clarksville.

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|--------------------------------|---|-------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% - No possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 4 | Low - \$10,000-\$50,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 4 | Medium – 1-5 days |

Clark Township

Wise Road and Swartz Road -

These areas are low laying areas and consist of mostly agricultural land. The residential properties are 300+ feet away from waterways, thus requiring a substantial amount of rainfall in order for flooding to reach them. Therefore, property damage to these homes is considered minimal if any at all. The primary damage due to flooding in this area will be the crop damage with an estimated 100-150 acres, a monetary value of reaching up to \$250,000 in crop loss. The bridge on Wise Road is new, a large improvement. A debris management program, a program to clean and widen ditch lines and added drainage ditches within the agricultural land could greatly reduce damage and costs. However, with the contour of the land, it is nearly impossible to eliminate without tremendous costs of improvements and loss of agricultural land.

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| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 6 | Short – 15-30 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 6 | Medium - \$50,001-\$100,000 |
| Duration: | 6 | Medium – 13 hrs-1 wk |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

City of Wilmington

Walnut Street and Lincoln Street along Main Street –

These areas located in the city are highly traveled and populated with businesses and residential structures – four businesses and one residential property. It does not appear that property damage is impacted by flooding; however, it does impact the roads and traffic, effecting day-to-day business. It appears that the drains are inadequate to handle the large rainfalls along with the contour of the landscape, as most of the surrounding landscape slopes to this area, the major cause of flooding. Improvement of larger drains, debris management program and the placement of some landscape barriers would greatly reduce the effects of flooding in this area.

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|--------------------------------|---|-----------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 6 | Medium - \$50,001-\$100,000 |
| Duration: | 4 | Short – 1-12 hrs |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Drought:

- Drought will continue from time to time in Clinton County.
- The residents of the County must be made aware of the impact of development and its influence on ground water usage during drought situations.

**Earthquakes:**

- Earthquakes are not believed to impact Clinton County.

On the following page you will find the earthquake assessment for Clinton County.

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COLLATERAL DAMAGE

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| | | | |
|----------------------|----------------------------|----------------------------|--------------------------|
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| No Possibility 0% | Some Possibility 25-50% | Much Possibility 51-75% | High Possibility 76%+ |

Earthquake Vulnerability Assessment

Clinton County is situated along the Grenville Tectonic Zone. The following townships, villages and cities, in their entirety, are at greatest vulnerability to earthquakes:

| | | |
|--------------------------------------|---------------------------------------|-----------------------------------|
| <i>Chester Township</i> | <i>Village of Blanchester</i> | <i>Union Township</i> |
| <i>Vernon Township</i> | <i>Adams Township</i> | <i>City of Wilmington</i> |
| <i>Village of Clarksville</i> | <i>Liberty Township</i> | <i>Washington Township</i> |
| <i>Marion Township</i> | <i>Village of Port William</i> | |

Portions of the following townships villages are also vulnerable areas to earthquakes:

| | | |
|----------------------------------|---------------------------------|------------------------------|
| <i>Jefferson Township</i> | <i>Wilson Township</i> | <i>Wayne Township</i> |
| <i>Village of Midland</i> | <i>Richland Township</i> | <i>Green Township</i> |

The following townships and villages are at the least vulnerability to earthquakes:

Village of Sabina
Village of New Vienna
Clark Township
Village of Martinsville

Chester Township

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Vernon Township & Village of Clarksville

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Marion Township & Village of Blanchester

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Adams Township

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Liberty Township & Village of Port William

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Union Township & City of Wilmington

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Washington Township

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Jefferson Township & Village of Midland

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Wilson Township

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Richland Township & Village of Sabina

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Green Township & Village of New Vienna

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Wayne Township

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |

Clark Township & Village of Martinsville

| | | |
|--------------------------------|---|------------------------|
| Historical Occurrence: | 2 | Low |
| Affected Area: | 2 | Single Site |
| Collateral Damage: | 2 | 0% No Possibility |
| Warning Time: | 2 | Long – over 60 min |
| Population Impact: | 2 | No Casualties |
| Fiscal Effects: | 2 | Minimum - \$0-\$10,000 |
| Duration: | 2 | Minimum – Up to 1 hr |
| Response/Recovery Time: | 2 | Low – less than 24 hrs |