



Planning Perspectives

A Newsletter from the York County Planning Commission

March 2010

Flood Safety Awareness

In light of the recent rains affecting York County and as part the implementation of the York County Hazard Mitigation Plan, the York County Planning Commission thought this would be a good time to pass along some facts and information on flooding in York County. The following is a summary of flood-related information from the York County Hazard Mitigation Plan (2008) and NOAA safety recommendations from their website. It should be noted that March 15 - 19 was designated as Flood Safety Awareness Week by the National Oceanic and Atmospheric Administration (NOAA).

Types of Flooding

According to NOAA, in terms of deaths and injuries, flooding is the most dangerous naturally occurring hazard. As with most communities along the Susquehanna River, York County is susceptible to the problems and hazards associated mainly with three (3) types of flooding events.

- **Riverine flooding** - This is the most typical type of flooding and occurs when a channel (i.e., a river, creek, stream, or ditch) receives too much water and the excess flows over its banks onto the adjacent floodplain.
- **Flash Flooding** - A modified form of riverine flooding, flash floods occur in areas where surface water runoff enters a drainage channel and/or in urban areas where pavement and drainage improvements speed runoff to a stream immediately following a significant storm event. They are characterized by a rapid rise in water levels and higher velocity flows which can be particularly dangerous and destructive.
- **Ice Jam Flooding** - The balance of flooding in the County is mostly caused by ice jams that occur on the Susquehanna River. Ice jam flooding is comparable to flash flooding as the ice jam causes water upstream to rise rapidly. When the jam releases, sudden flooding occurs downstream. Ice jams can occur during fall freeze-up when ice begins to form, during midwinter when channels freeze solid and form anchor ice, and during spring melt when

the breakup of surface ice results in large, floating masses of ice. The force of impact from ice carried by flood waters typically causes more damage than open-water flooding.

In York County, riverine flooding can be expected about five (5) times each year according to York County EMA. Storm events producing greater than one-half inch of rain per hour and/or hurricane- and tropical storm-induced floods are harder to predict based upon historical events. River ice jam flooding can be expected about every four (4) or five (5) years.



Historical Occurrence

York County has experienced its worst flooding as a result of tropical storms/hurricanes and snow melt events. Tropical storms and hurricanes occur between the months of June and November, with the peak season being September to October. These storms bring torrential rains and high winds and often cause flash flooding, as well as riverine flooding of inland streams and rivers. Snow melts typically occur between the months of January and April. Because the ground often remains frozen under snow, it cannot absorb the water from the melt, and large volumes of surface water runoff are produced. Extreme flooding events can occur during snowmelts when additional rainfall combines with the snow melt runoff.

Tropical Storm Agnes of 1972 is the storm of record for York County. It hit in June just after an earlier rainfall had saturated the ground. Agnes brought as much as 18 inches of rain to some places in Pennsylvania, with York receiving a reported 16 inches, producing severe surface water runoff conditions which caused abnormally high flows in local streams and tributaries.



Most communities along the Susquehanna River, experienced severe flooding. The USGS gauge at Marrietta recorded a peak river stage of 64.54 feet, 15.54 feet above the 49.00 foot flood stage. Damage estimates indicated that the Susquehanna River basin (from Sunbury to York) incurred approximately \$832.662 million (1972) in damages, with York County accounting for approximately \$34 million of that total. Pennsylvania incurred over \$2.12 billion in damages (USGS) and was so severely impacted that President Richard Nixon declared the entire State a disaster area.



which includes approximately 7,849 structures with estimated population of 18,701 and 14 critical facilities. According to the Governor's Center for Local Government Services, 40 of these structures are known to have repetitive losses due to flooding. Particularly vulnerable are those residing in mobile homes, as well as elderly and handicapped persons living in the floodplain areas. Additionally, numerous roads throughout the County flood on a regular basis. The most controllable factor in the County's flooding future is where and how future development takes place.

Current and Future Dangers

Most of the watercourses in York County have delineated floodplains established by FEMA through the National Flood Insurance Program (NFIP). These floodplains indicate the estimated area of inundation associated with 100 and 500 year storm events. Sixty of the County's 72 municipalities lie within these delineated floodplains indicating their vulnerability to periodic flooding. Approximately 27,281 of the County's 583,398 acres are within a 100 year floodplain

Since the development of flood prone lands contribute to increased flooding, development in floodplain areas should be restricted and measures should be assessed to determine flood reduction potential. Development outside the floodplain can result in more water being channeled into streams, thus the effects on the 100-year floodplain need to be considered. Tools available to help guide development and prevent flooding include education, comprehensive plans, zoning ordinances, construction codes, stormwater best management practices, land acquisition, and NFIP compliance.

NOAA Safety Rules:

- ☉ Monitor the NOAA Weather Radio, or your favorite news source for vital weather related information.
- ☉ If flooding occurs, get to higher ground. Get out of areas subject to flooding. This includes dips, low spots, canyons, washes etc.
- ☉ Avoid areas already flooded, especially if the water is flowing fast. Do not attempt to cross flowing streams. Turn Around Don't Drown™
- ☉ Road beds may be washed out under flood waters. NEVER drive through flooded roadways. Turn Around Don't Drown™
- ☉ Do not camp or park your vehicle along streams and washes, particularly during threatening conditions.
- ☉ Be especially cautious at night when it is harder to recognize flood dangers.

For More Information

York County Hazard Mitigation Plan:
<http://www.ycpc.org>

Pennsylvania Emergency Management Agency:
<http://www.pema.state.pa.us>

National Flood Insurance Program
<http://www.floodsmart.gov>

Federal Emergency Management Agency
<http://www.fema.gov>

National Oceanic and Atmospheric Administration
<http://www.floodsafety.noaa.gov>

Planning Perspectives is a newsletter created by the staff of the York County Planning Commission. It covers current topics of interest in the field of Urban and Regional Planning. If you have a suggested topic for future issues, please contact Felicia Dell at 771-9870.