

Floodplain Management – Risks to Human Settlements

Session 16: What is risk?

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FLOODPLAIN MANAGEMENT

What is Risk

Objectives:

1. Define terms and explain risk in non-technical terms that could be understood by local decision-makers.
2. Prepare a basic flood risk assessment.
3. Apply risk assessment to flooding problems in a watershed.
4. Prepare vulnerability and flood hazard assessment.

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Reviewing Key Definitions

- **BASE FLOOD** - The National Flood Insurance Program adopted the 1% chance ("100-year") flood as the base flood to indicate the minimum level of flooding to be used by a community in its floodplain management regulations and where flood insurance may be required.
- **FLOODPLAIN** - Low lands adjoining the channel of a river, stream, or watercourse, or ocean, lake or other body of water, which have been or may be inundated by flood water in a 1% chance flood event.

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Floodway Definitions

- **FLOODWAY** - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without causing any cumulative increase in the water surface elevation. The floodway is intended to carry the dangerous and fast-moving water.
- **REGULATORY FLOODWAY** - The area regulated by federal, state or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount (one foot in the NFIP--less by states and locals).

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Reviewing Key Definitions

- **FLOOD FRINGE** - Areas outside the regulatory floodway but still inundated by the designated 1% annual chance flood (Typically not moving water).
- **ONE-PERCENT ANNUAL CHANCE FLOOD** - A flood of the magnitude that has a one-percent chance of being equaled or exceeded in any given year. It may occur more than once in any given year, or not occur for a number of years.

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Critical Facilities

- **Critical facilities** include type and location of police stations, fire and rescue facilities, hospitals, shelters, schools, nursing homes, water supply and waste treatment facilities, and other structures the community identifies as essential.
- Because of their critical nature, these facilities need a **higher level of protection** from flooding--usually the 0.2% chance flood.

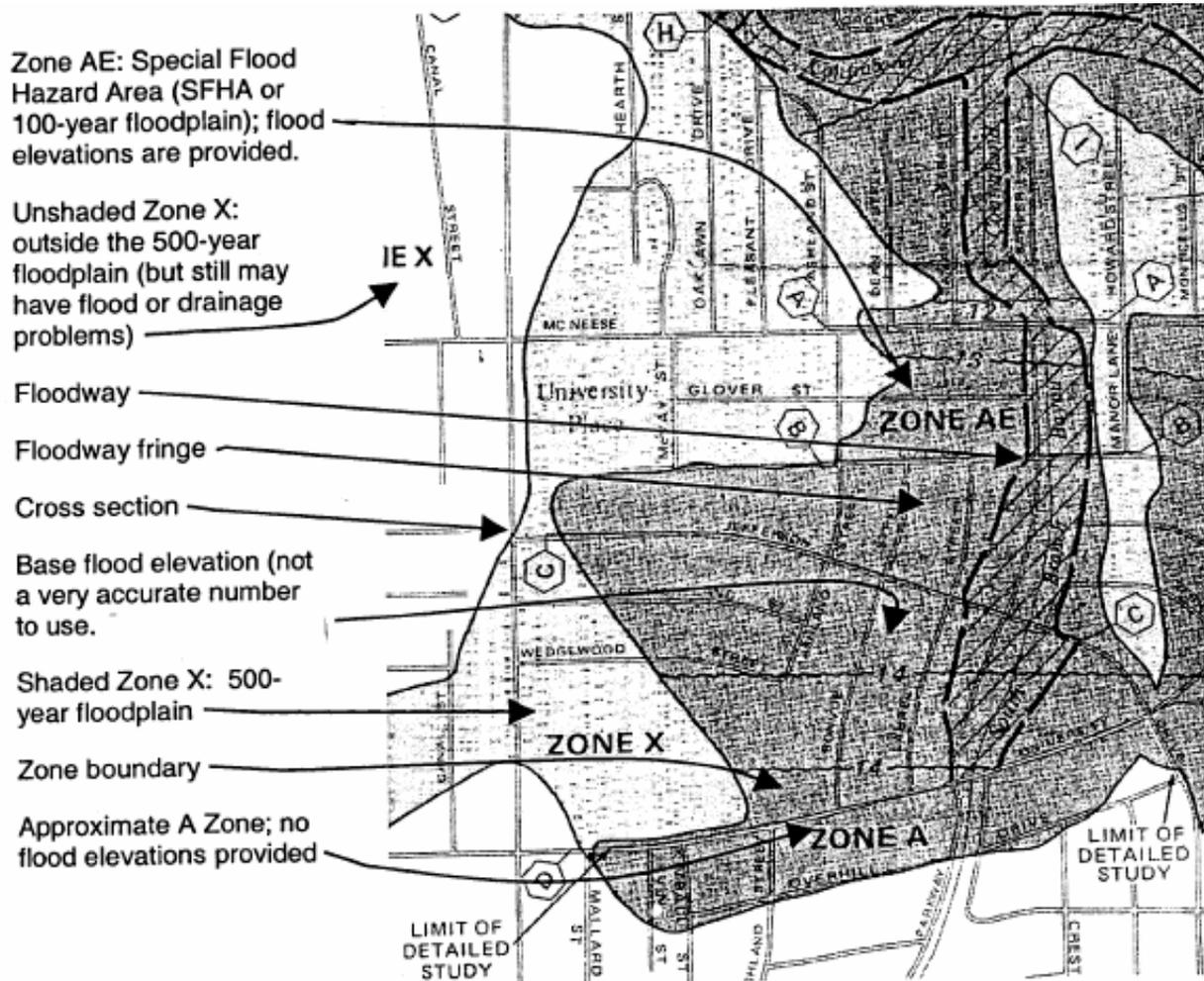
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Defining Risk

- Risk is a function of:
 - the frequency and impact of the hazard.
 - the relationship among the hazards, vulnerabilities, and capabilities.
- RISK - The estimated impact that a hazard would have on people, services, facilities, and structures in a community.
- RISK ANALYSIS makes "a quantitative estimate of damage, injuries, and costs likely to be experienced within a specified geographic area over a specific period of time" (Deyle et al. 1998).

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Flood Disasters



New FIRM format (Lake Charles)

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Risk vs. Vulnerability

- an event, concentrated in time and space, in which society, or a relatively self-sufficient subdivision of a society, undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented (Fritz, 1961, Mileti 1999).
- when individuals and properties are struck by extreme natural forces, such as floods (Godschalk, 1999). [Note disasters occur when human development is involved.]

Floodplain Management Risk vs. Vulnerability



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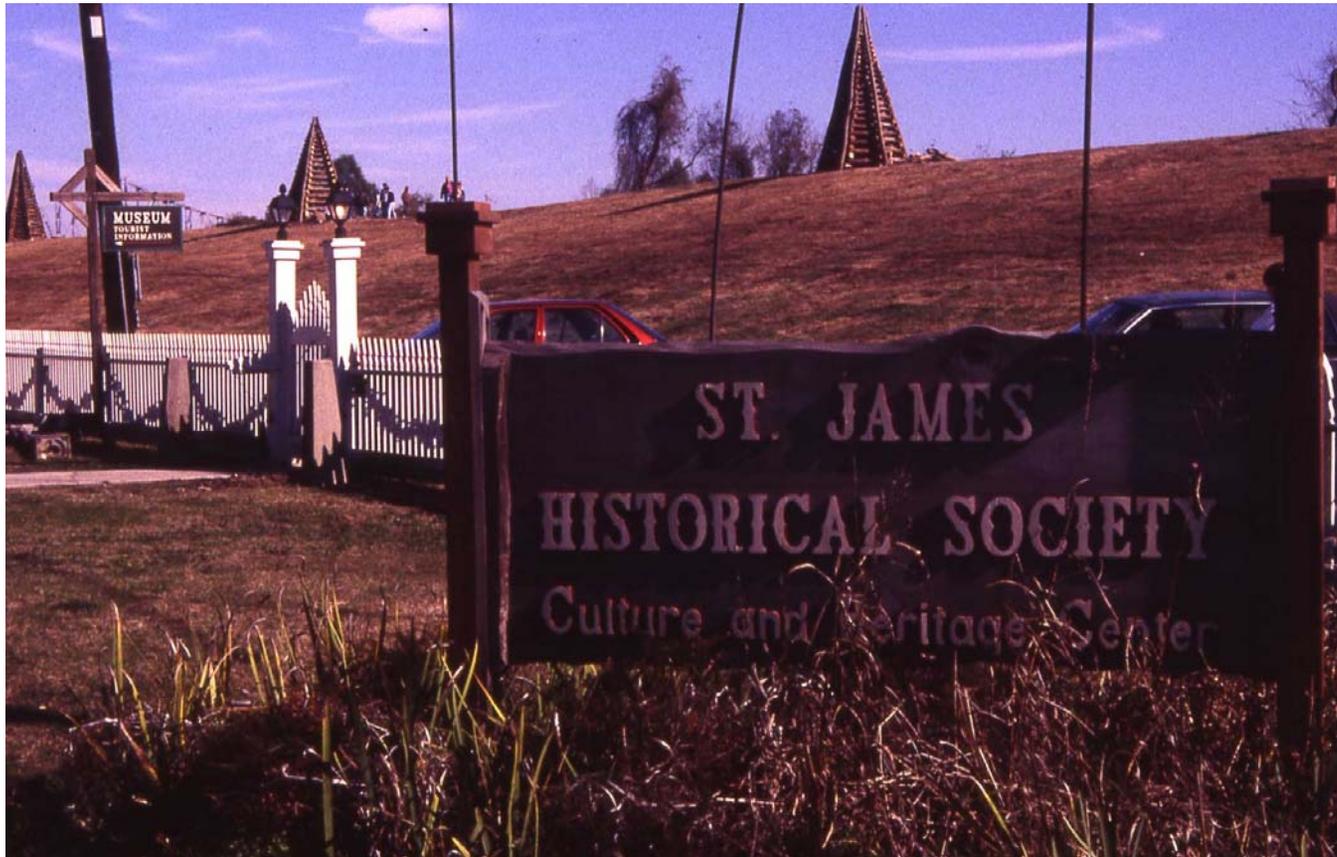
What will be damaged?



Floodplain Management Critical Facilities



Floodplain Management Historic Facilities



Floodplain Management

Industrial



Floodplain Management Natural Systems



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What are the costs?

What will be the cost?

- In a 1% event
- In a 10% event
- In a 0.2% event

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Vulnerability Assessment

- Determine vulnerability of the community
- Conclusions, summary and estimation of risk
- Bibliography
- Appendix

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Vulnerability Assessment

- Vulnerability assessment can build support for hazard management and mitigation.
- Information will be used in next session for developing community mitigation plan.

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Flood Risk Assessment

- What will be damaged?
 - Critical facilities (public and private).
 - Residential.
 - Commercial and industrial.
- Who will be affected? Inventory them.
 - Social, economic and environment.
 - Special needs groups?