Goal:
Support the development of an effective hazard mitigation strategy based on systematic evaluation of vulnerabilities.

Strategy:
Develop the methodology to support such an assessment.

Demonstrate the use of geo-spatial analysis to complete such an assessment.
• What is vulnerability?

The susceptibility of resources to negative impacts from hazard events

• Why conduct vulnerability assessments?

Know where you are before mapping out where you are going.
Comprehensive Assessments

- Focus on mitigation outcomes
- Address community-wide issues and multiple disciplines
- Assess the potential for long-term impacts
- Provide a foundation for sustainable solutions
Community Vulnerability Assessment Tool (CVAT)

- Developed by NOAA Coastal Services Center
- Methodology for state and local governments to conduct community-wide vulnerability assessments, in their efforts to reduce hazard vulnerability

The foundation for the methodology was established by the Heinz Center Panel on Risk, Vulnerability, and the True Cost of Hazards (1999).
This tool provides tutorials, case studies, and the framework for communities to determine multi-hazard susceptibility to:

- develop and prioritize hazard mitigation strategies
- improve response capabilities
- expedite recovery activities
- implement land use policies
The general methodology is included as a tutorial that steps the user through a “community level” process of analyzing the following vulnerability factors with respect to multiple hazards:

- physical
- social
- environmental
- economic

NOAA Coastal Services Center
Linking People, Technology, and Information
Demonstrates the benefits of geographic information systems (GIS) technology for:

- performing **spatial** risk assessments
- conducting vulnerability analyses for **hazards planning**

NOAA Coastal Services Center
Linking People, Technology, and Information
Several GIS and remote sensing applications are introduced as potential tools for supporting detailed hazards analysis.

Includes a section that lists potential data sources for communities to acquire data to perform RVAs.
Community Vulnerability Assessment Tool
New Hanover County, North Carolina Case Study

- Background Information
- Vulnerability Assessment Tutorial
- Case Study
- Data Tools

About this CD-ROM

NOAA Coastal Services Center
Background Information

Photos courtesy: News and Observer, New Hanover County, The Morning Star, NOAA

Are you interested in or responsible for reducing the impacts of hazards in your community? Would you like to know more about this product and the history of the case study?

This section provides a description of this project and other background information related to the community vulnerability assessment tool.
Hazard History

Total major weather event occurrences for New Hanover County, from 1962-1998

- Coastal Erosion
- Drought/Extreme
- Flash Floods
- Floods
- Hail
- Hurricanes
- Lightning
- Rain
- Rip Currents
- Snow, Ice, Cold
- Storm Surge
- Tornadoes/Funnel
- Water Spouts
- Wind
- Other

Weather Event Type

Total number of Occurrences

0 20 40 60 80 100 120
Hurricane History

Federal Disaster Declarations for North Carolina
(Hurricane Bonnie, 1998)

Hurricane Bonnie’s Path
New Hanover County
Federal disaster counties
Counties

Hurricane Diane, 1955

Hurricane Diane’s Path
New Hanover County
Counties

Hurricane Hazel, 1954

Hurricane Hazel’s Path
New Hanover County
Counties

Hurricane Hazel
1955 Hurricanes
Hurricane Donna
Hurricane Diana
Hurricane Hugo
Hurricane Emily
Hurricane Bertha
Hurricane Fran
Hurricane Bonnie
Hurricane Fran Story

Hurricane Fran - High Water Marks
New Hanover County, NC

- Figure Eight Island
  12.7 ft high water mark
- Wrightsville Beach
  11.1 ft high water mark
- Carolina Beach
  11.1 ft high water mark
- Kure Beach
  15.4 ft high water mark

Precipitation Amounts from Sept. 5-8, 1996
- 0.0 inches
- 0.6
- 0.8
- 1.0
- 1.5
- 2.5
- 3.0
- 4.0
- 5.0
- 6.0
- 8.0
- 10.0
- 14.0

locations
roads
Do you need to know where your community is most vulnerable to hazards? Are you preparing disaster or hazard mitigation plans for your community?

This section provides a general tutorial for conducting a comprehensive community-wide vulnerability assessment. Proceed to the Case Study for a more thorough example of this methodology.
Would you like to see an example of a vulnerability assessment following the tutorial format? Are you interested in using GIS as a tool in your vulnerability assessment? Would you like to know where you can go to obtain data for your vulnerability assessment?

This section provides a case study vulnerability assessment, complete with a GIS project file and data. Also included are links to Internet resources for obtaining useful data and information.
Vulnerability Assessment Methodology

Seven Major Steps:

- Hazard Identification
- Hazard Analysis
- Critical Facilities Analysis
- Societal Analysis
- Economic Analysis
- Environmental Analysis
- Mitigation Opportunities Analysis
**Step 1 - Hazard Identification**

*What hazards are you concerned about?*

*How would you prioritize them?*

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<th>Magnitude =</th>
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<td>3</td>
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</tbody>
</table>
Step 2 - Hazard Analysis

Where are your risk consideration areas?
How would you prioritize these risk areas?
Step 3 - Critical Facilities Analysis

What are your critical facilities and where are they located?

How vulnerable are they to physical and operational impacts from hazards?
Step 4 - Societal Analysis

Where are your high-need neighborhoods?

How vulnerable are they to hazard impacts?
Step 5 - Economic Analysis

What are your primary economic sectors and how vulnerable are they to hazards?

Where are your largest employers and how vulnerable are they to hazard impacts?
Where are your hazardous materials located and how vulnerable are they to natural hazards?

How vulnerable are critical natural resources to secondary hazard impacts?
Where are your best opportunities for mitigation policy changes to have significant impacts on future hazard vulnerability?