

Session No. 38

Course Title: Coastal Hazards Management

Session Title: Hazard Mitigation Planning II

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Time: 50 minutes

Objectives:

- 38.1** Group 1 Presentation: “Identify Potential Natural Hazards,” followed by class critique
 - 38.2** Become familiar with the second step in the mitigation planning process: “Assess Hazard Vulnerability.”
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Scope:

Session 38 will begin with a student presentation on the first step in the planning process: Identify Potential Natural Hazards, followed by a brief class discussion and critique.

The remaining class time will be devoted to a lecture on the second step in the planning process, “Assess Hazard Vulnerability,” based in large part on the assigned reading material: *Keeping Natural Hazards From Becoming Disasters: A Mitigation Planning Guidebook for Local Governments*.

Readings:

Student and Instructor Readings:

NC Division of Emergency Management, Hazard Mitigation Section, Risk Assessment and Planning Branch. May, 2003. *Keeping Natural Hazards From Becoming Disasters: A Mitigation Planning Guidebook for Local Governments*, pp. 22-55. (Available in pdf format from NC Division of Emergency Management: http://www.dem.dcc.state.nc.us/mitigation/planning_publications.htm)

FEMA. August 2001. *Understanding Your Risks: Identifying Hazards and Estimating Losses*. Washington, D.C.: FEMA 386-2, pp. 3-1 through 3-31, “inventory assets;” 4-1 through 4-37, “estimate losses.”

PowerPoint Slides

- PowerPoint 38.1** Tasks in Step Two: Assess Hazard Vulnerability
- PowerPoint 38.2** Tasks in Step Two: Assess Hazard Vulnerability- continued
- PowerPoint 38.3** Task 2.1 Describe the Community
- PowerPoint 38.4** Map 1: Basemap Features
- PowerPoint 38.5** Map 2: Basemap
- PowerPoint 38.6** Identify Critical Facilities
- PowerPoint 38.7** Types of Critical Facilities
- PowerPoint 38.8** Map 3: Critical Facilities
- PowerPoint 38.9** Map 4: Natural Hazard Areas
- PowerPoint 38.10** Map 5: All Hazards Map
- PowerPoint 38.11** Map 6: Hazards Intersect with Community Features
- PowerPoint 38.12** Map 7: Planning Areas
- PowerPoint 38.13** Worksheet #2: Geographic Planning Area Vulnerability Assessment
- PowerPoint 38.15** Worksheet #2: Geographic Planning Area Vulnerability Assessment, page 2
- PowerPoint 38.16** Map 8: Current Conditions in the Riverine Hazards Planning Area
- PowerPoint 38.17** Map 9: Current Conditions in the Coastal Hazards Planning Area
- PowerPoint 38.18** Map 10: Existing Zoning in the Riverine Hazards Planning Area
- PowerPoint 38.19** Map 11: Existing Zoning in the Coastal Hazards Planning Area

General Requirements:

The first 25 minutes of the session will consist of the student presentation by Group 1 on the first step in the planning process: “Identify Potential Natural Hazards.” The Instructor will then lead a class discussion and critique of the presentation for the next 5-10 minutes.

The remaining class time should be presented as lecture supported by PowerPoint slides.

Objective 38.1 Group 1 Presentation: “Identify Potential Natural Hazards,” followed by class critique

Requirements:

The instructor should make sure that the students have access to all equipment and materials needed for their presentation, such as PowerPoint projector, overhead projector, white board, etc. The instructor may wish to designate a time-keeper to make sure the presentation is made within the amount of allotted time (25 minutes, with about 5-10 minutes of critique by other students.

Remarks:

Suggested questions to pose regarding the presentation of Step One in the planning process:

1. Are all the types of natural hazards that threaten the community covered? If not, has Group 1 presented reasons for omitting some hazards while including others?
2. Is a hazard history presented that outlines how past hazard events have impacted the community? Are maps of past hazard events included?
3. Does the Group describe conditions in the community that make it more or less prone to each of the hazards identified (topography, bodies of water, changes in development patterns, population shifts, etc.)?
4. Is the likelihood of occurrence indicated for each of the hazards identified?
5. Is the intensity of each hazard estimated? Are the levels of intensity described in relative terms and/or according to standard scales?
6. Is the potential level of impact estimated for each type of hazard? Does the estimated impact take into account a rough estimate of the amount of development and population levels in the community?
7. Has Group 1 formulated conclusions? Are the hazards ranked according to severity? Is the ranking system explained? Do the conclusions make sense based on the hazard information collected as presented?
8. Has each member of the Group prepared a narrative description of the hazards and their effects on the community?
9. Are sources of data and information listed?
10. Is Worksheet # 1 completed? Does it make sense based on the hazard identification information presented?

Objective 38.2 Become familiar with the second step in the mitigation planning process: “Assess Hazard Vulnerability.”

Requirements:

The content should be presented as lecture, supported by PowerPoint slides.

The following slides will be used during this objective:

- PowerPoint 38.1** Tasks in Step Two: Assess Hazard Vulnerability
- PowerPoint 38.2** Tasks in Step Two: Assess Hazard Vulnerability- continued
- PowerPoint 38.3** Task 2.1 Describe the Community
- PowerPoint 38.4** Map 1: Basemap Features
- PowerPoint 38.5** Map 2: Basemap
- PowerPoint 38.6** Identify Critical Facilities
- PowerPoint 38.7** Types of Critical Facilities
- PowerPoint 38.8** Map 3: Critical Facilities
- PowerPoint 38.9** Map 4: Natural Hazard Areas
- PowerPoint 38.10** Map 5: All Hazards Map
- PowerPoint 38.12** Map 6: Hazards Intersect with Community Features
- PowerPoint 38.13** Map 7: Planning Areas
- PowerPoint 38.14** Worksheet #2: Geographic Planning Area Vulnerability Assessment
- PowerPoint 38.15** Worksheet #2: Geographic Planning Area Vulnerability Assessment, page 2
- PowerPoint 38.16** Map 8: Current Conditions in the Riverine Hazards Planning Area
- PowerPoint 38.17** Map 9: Current Conditions in the Coastal Hazards Planning Area
- PowerPoint 38.18** Map 10: Existing Zoning in the Riverine Hazards Planning Area
- PowerPoint 38.19** Map 11: Existing Zoning in the Coastal Hazards Planning Area

Remarks:

- Step Two of the planning process will assess the number of people and amount of existing property at risk from the hazards that were identified during Step One.
- Step Two also determines whether the community is encouraging or allowing development that could be built in hazard areas.
 - o Step Two builds on the information gathered earlier, and analyzes development patterns to gauge the vulnerability level of the community.

Tasks in Step Two:

- [PowerPoint 38.1 Tasks in Step Two: Assess Hazard Vulnerability]**
- [PowerPoint 38.2 Tasks in Step Two: Assess Hazard Vulnerability-continued]**

- A summary of the tasks in Step Two includes:
 - 2.1 Describe your community**

- 2.1(a) Describe major physical features
- 2.1(b) Identify developed areas, undeveloped areas, and scheduled infrastructure areas.
- 2.2 Identify critical facilities
- 2.3 Identify hazardous locations
 - 2.3(a) describe individual hazard areas
 - 2.3(b) prepare a composite (all-hazards) exposure description
- 2.4 Identify where hazardous areas intersect with community features
- 2.5 Locate repetitive loss structures
- 2.6 Create and analyze Geographic Planning Areas
 - 2.6(a) Create Geographic Planning Areas
 - 2.6(b) Analyze the vulnerability of the Geographic Planning Areas by hazard (Worksheet #2)
- 2.7 Prepare an overview and conclusion for each Geographic Planning Area
 - 2.7(a) Prepare an overview and conclusion of the current vulnerability of each Geographic Planning Area
 - 2.7(b) Prepare an overview and conclusion of the potential future vulnerability of each Geographic Planning Area

- We will go over these steps briefly today, as explained further in the reading material, *Keeping Natural Hazards From Becoming Disasters: A Mitigation Planning Guidebook for Local Governments*.

A Word About Mapping

- Mapping the various tasks in Step Two is an integral part of assessing vulnerability. Maps are useful to **graphically display hazard locations and vulnerability**.
- Use of **Geographic Information Systems (GIS)** as a tool to prepare hazard maps is one way. GIS is not a requirement, however.
 - Many communities that need to prepare hazard mitigation plans do not have the equipment, personnel or resources to prepare maps using GIS. These communities can use more **rudimentary map-making techniques** to produce the same effect.
 - The important thing is that the maps contain enough detail to show which areas of the community are hazardous, and where current and future development intersects with these hazardous areas.

Task 2.1 Describe the Community

This task involves creating an accurate description of the community as it is now, and what it may look like in the future.

[PowerPoint 38.3 Task 2.1 Describe the Community]

- **Task 2.1(a) Describe major physical features**
 - This involves a narrative description and maps of the **baseline features** of the community, including the location of:
 - Jurisdictional boundaries (Municipal and extra-territorial jurisdiction)
 - Number of square miles or acres
 - Major infrastructure (roads, railways, etc)
 - Natural features (rivers, coastline, high tidelines, etc.)

- **Task 2.1(b) Identify developed areas, undeveloped areas, and scheduled infrastructure areas**
 - **Developed Areas:** Prepare a rough estimate of the **types of structures** in each developed area, and their locations. Include structures such as:
 - Residential
 - Commercial
 - Industrial, etc.
 - Any vacant lots among developed parcels

 - **Resources** for describing developed areas include:
 - Local land use maps
 - Tax data
 - Aerial photography
 - Census data
 - Windshield survey

 - **Undeveloped areas:** Describe the location and major features of undeveloped areas. Include elements such as:
 - Type of landcover
 - Current ownership patterns
 - Any structures interspersed in undeveloped areas

 - **Resources** for describing undeveloped areas include:
 - Local land use maps

- Tax data
 - Aerial photography
 - Windshield survey
 - Also describe the **potential future condition** of these undeveloped areas
 - What might be built there in the future?
 - Are currently vacant lands zoned for development?
 - Can they be subdivided?
 - Are there long-range plans for undeveloped parcels?
 - **Resources** for describing potential future conditions:
 - Local zoning ordinance
 - Local subdivision ordinance
 - Floodplain management plan
 - Comprehensive plan
 - Also describe **scheduled infrastructure areas**: A strong predictor for which undeveloped or underdeveloped areas will be built up in the future is to determine if public infrastructure and services are scheduled for these locations. Locate planned infrastructure such as:
 - roads
 - water & sewer
 - government services
 - public transportation
 - schools
 - **Resources** for describing planned infrastructure areas:
 - land use plans
 - local capital improvement plan
 - state department of transportation
 - rural development centers
 - development trends
- **Mapping Task 2.1**
 - [PowerPoint 38.4 Map 1: Basemap Features]
 - [PowerPoint 38.5 Map 2: Basemap]
 - Create or obtain a basemap that **identifies pertinent community features**:

- Corporate limits
 - Special districts
 - Federal and state-owned lands
 - Roads, highways, railways
 - Water features
 - Natural features
- Also map the location of **current development** and **scheduled infrastructure**

Task 2.2 Identify critical facilities

- This task involves **identifying, describing, and locating** all **critical facilities** in the community.

[PowerPoint 38.6 Identify Critical Facilities]

- Critical facilities should be described in terms of
 - Function
 - Size
 - Replacement value
 - Site location
 - Impact on community if facility were incapacitated
- **Types of critical facilities** that should be identified:

[PowerPoint 38.7 Types of Critical Facilities]

- | | |
|--|--|
| <ul style="list-style-type: none"> ▪ Water & wastewater treatment plants ▪ Power generating plants ▪ Schools ▪ Hospitals ▪ Emergency shelters ▪ Fire/police stations ▪ Government buildings | <ul style="list-style-type: none"> ▪ Libraries ▪ Airports ▪ Daycare centers ▪ Retirement homes ▪ Hazardous waste sites ▪ Major infrastructure ▪ Cultural resources/historic sites |
|--|--|
- Some communities also choose to identify facilities that are **important during and immediately following a hazard event**, such as:

- grocery stores
- fuel stations
- pharmacies

- **Mapping Task 2.2**

- **Locate** each of the **critical facilities** that have been identified on the **basemap** created in Task 2.1

[PowerPoint 38.8 Map 3: Critical Facilities]

Task 2.3 Identify hazardous locations

This task focuses on those areas of the community that are subject to the natural hazards identified earlier in Step One.

- **Task 2.3(a) Describe individual hazard areas**

- This involves a narrative description and maps of all the areas of the community that are subject to natural hazards.

- **Mapping Task 2.3(a)**

[PowerPoint 38.9 Map 4: Natural Hazard Areas]

- Display the geographic boundaries of each natural hazard on a separate map.
- **Resources** for mapping 2.3(a) include:
 - Flood Insurance Rate Maps (FIRMs)
 - Hurricane and storm inundation maps
 - Erosion rate maps
 - Topographical maps
 - Seismic zone maps
 - Highwater marks

- **Task 2.3(b) Prepare a composite exposure description**

- This task involves a description and map of the exposure of the entire community to all of the identified hazards.

- **Mapping Task 2.3(b)**

[PowerPoint 38.10 Map 5: All Hazards Map]

- o An “all-hazards” map combines all the maps prepared in Task 2.3(a) together in one map
- o The all-hazards map can be prepared by layering each of the individual hazard maps on top of each other.

Task 2.4 Identify where hazardous areas intersect with community features

- This task identifies what features of the community are in locations that intersect with hazard areas. The **narrative description** will give a good picture of the **community’s vulnerability**.
 - o Combine the information discovered in Task 2.1 (baseline features) and Task 2.2 (critical facilities) with the information on the location of hazard areas.
 - o Describe which critical facilities, developed areas, and scheduled infrastructure areas are exposed to which hazards.
- **Mapping Task 2.4**

[PowerPoint 38.11 Map 6: Hazards Intersect with Community Features]

- o To show the **relationship** between **hazardous areas** and the community’s **infrastructure, facilities and development**, the All Hazards Map is overlaid on the Critical Facilities Map.
- o Areas on **Map 6** in *PowerPoint 38.11* show that much of the area that is scheduled for infrastructure is exposed to flooding, storm surge and landslide. Areas where development is already located are exposed to flooding, storm surge, wildfire and landslide. The entire community is subject to high winds.

Task 2.5 Locate repetitive loss structures

- A major thrust of any local mitigation effort should include removal of structures from areas that have repeatedly been proven hazardous.
 - o FEMA’s definition of repetitive loss property is one for which two or more flood insurance claims of a certain amount have been paid within any 10-year period since 1978.

- Describe in narrative form the number and location of repetitive loss structures in the community.

Task 2.6 Create and Analyze Geographic Planning Areas

The next task in the vulnerability assessment is to break the hazard areas that have thus far been identified into **more manageable units** for planning purposes. These units are called “Geographic Planning Areas.

- **Task 2.6(a) Create Geographic Planning Areas**
 - **Basic criteria** for establishing Planning Areas include:
 - Type of hazard
 - Municipal boundaries
 - Probability and magnitude of hazard threats
 - Unincorporated portions of a County with distinct hazard threats
 - Density of developed areas
 - Natural resource features
 - Land ownership patterns
 - Amount of scheduled and current infrastructure
 - Number and type of critical facilities
 - Number of repetitive loss structures
 - Future development trends and forecasts
 - **Mapping Task 2.6(a)**
 - Illustrate the boundaries of the Geographic Planning Areas on top of the “Hazards Intersect with Community Features Map” prepared in Task 2.4

[PowerPoint 38.12 Map 7: Planning Areas]

- Note some of the characteristics of the **Riverine Geographic Planning Area** in *PowerPoint 38.12*
 - The western border of the Riverine Area follows the boundaries of the floodplain, including historically flooded areas that lie outside the FIRM.
 - The northern and southern borders are defined by the extraterritorial jurisdiction.
 - The Area is subject to flooding, storm surge, and high winds.

- The Area has dense development, and scheduled infrastructure.
 - Much undeveloped land remains here
 - There is a school (also an emergency shelter), a wastewater plant and an historic site
 - o Note some of the characteristics of the **Coastal Hazards Geographic Planning Area** in *PowerPoint 38.12*
 - The Coastal Area is defined by the extent of storm surge on the west and high tide line on the east.
 - The Area is subject to flooding, storm surge, erosion, and high winds.
 - Much of the land is developed, with a small acreage of undeveloped parkland along the beach
 - A small amount of land in the northern most section is undeveloped, with scheduled infrastructure.
 - There is a lighthouse and a school.
- **Task 2.6(b) Analyze the Vulnerability of the Geographic Planning Areas**
 - o **Worksheet #2, “Geographic Planning Area Vulnerability Assessment”** will help with Task 2.6(b). Worksheet #2 is divided into two sections:
 - **Current Conditions**, where present vulnerability is inventoried, and
 - **Potential Future Conditions**, where future vulnerability is indicated by projecting the number of people and the amount of property that could be located in hazardous areas if the land is developed as allowed under the current regulatory regime.
 - o Worksheet #2 is also divided into two pages:
 - **Private development** is inventoried on the first page, and
 - **Public investment** is inventoried on the second page.
- Filling out **Worksheet #2**, page 1: *Current Conditions of Private Development*

**[PowerPoint 38.13 Worksheet #2: Geographic Planning Area
Vulnerability Assessment]**

- List the hazard to be addressed at the top of Worksheet #2
 - Conduct an inventory of existing population and properties in each Geographic Planning Area (“Current Conditions”):
 - Number of Existing Private Buildings: A building count for the different types of private property can be established in various ways: count each type of building during a “windshield survey” (tour of the Planning Area); or use county tax assessment records to inventory the number of each type of building
 - Current Value: Refer to the county tax assessor’s records for the tax value of the private structures that have been counted.
 - Current Number of People: Tax records, Census block data, or local population figures can be used to estimate the number of people in each type of private building
- Filling out **Worksheet #2**, page 2: ***Current Conditions of Public Development***

**[PowerPoint 38.14 Worksheet #2: Geographic Planning Area
Vulnerability Assessment, page 2]**

- Number of Existing Public Buildings and Critical Facilities: Refer to the “Critical Facilities” that were described and mapped earlier in Task 2.2 to determine the number of public buildings and critical facilities located in each Planning Area.
 - Current Replacement Value: Calculate the replacement value for each type of existing public building and facility using local estimates.
 - Current Number of People: Calculate the number of people that work in each type of public building and facility.
- Filling out **Worksheet #2**, page 1: ***Potential Future Conditions of Private Development***

**[Refer again to PowerPoint 38.13 Worksheet #2: Geographic Planning
Area Vulnerability Assessment]**

- This section of the Worksheet helps you to estimate the projected population and number and value of buildings that could potentially be located in each Geographic Planning Area. Some of this land may have development potential, and should be assessed in terms of what could be built there.
- Projected Number of Private Buildings: Estimate the number of additional private buildings of each type that could be built in each Planning Area based on regulations contained in the local zoning and subdivision ordinances, comprehensive plan or capital facilities plan. Add the estimates of potential buildings to the figures for current buildings to get an estimate of the total number of buildings that could be located there in the future.
- Projected Value: To get a rough estimate of private property values, multiply the estimated future number of buildings times the average present value for that type of building. Add in any reliable measures of appreciation and inflation rates for private property in the community. Add the estimate of value for future property to the values for current properties to get an idea of the total amount of value that could be at risk in the future.
- Projected Number of People: Estimate how many more people will be in the Planning Area in the future if current land use policies remain unchanged. Use local projections of population growth or rely on past growth trends. Add this figure to the number of current people to get an estimate of the number of people that will be located in this Planning Area in the future.
- Filling out **Worksheet #2**, page 2: **Potential Future Conditions of Public Development**

[Refer again to **PowerPoint 38.14 Worksheet #2: Geographic Planning Area Vulnerability Assessment, page 2**]

- Projected Number of Public Buildings and Critical Facilities: Calculate the number of public buildings and critical facilities that might be built in the Planning Area in the future according to local comprehensive plan, capital improvements plan, and other local documents that determine the provision of public infrastructure and amenities in the community. Add this number to the number that currently exist to estimate the total number of public facilities and buildings that may be located in the Planning Area in the future.
- Projected Replacement Value: Estimate the projected replacement value for each type of facility or public building. Add this figure to the amounts listed for each type of current buildings and facilities for a total of the value at risk in the future.

- **Projected Number of People:** Based on the number of projected public buildings and facilities, estimate how many people would work or go to school in each building. Add this number to the number of people currently at risk.
- **Add the Totals:** Add the subtotals of each column from page one and page two of Worksheet #2. This will provide a total count of the number of people (both residents and employees), the number of structures (both private and public), and values (both tax assessment and replacement values) for current conditions and potential future conditions.

Task 2.7 Prepare an overview and conclusion of vulnerability for each Geographic Planning Area

This task involves creating an overview and conclusion for both current and future vulnerability for each Geographic Planning Area, using Worksheet #2.

- **Task 2.7(a) Prepare an overview and conclusion of the *current* vulnerability of each Planning Area.**
 - This involves a **narrative description** and maps of the hazard **vulnerability that currently exists** for each structure type, as well as the number of people that are at risk in each Planning Area.
 - Add **additional details** that were not included on Worksheet #2, such as:
 - Special populations (day-care centers, elderly, non-English speakers)
 - Seasonal fluctuations in population
 - Evacuation capacity of the transportation system
 - Mobile home parks
 - Repetitive loss structures
 - Degree of structural mitigation already in place (e.g., elevation, floodproofing, windproofing)
 - Formulate **conclusions** as to the current vulnerability of each Planning Area:
 - Describe the nature of the risk to people and property
 - Quantify the problem with reference to the Totals recorded in Worksheet #2 of the number of lives that are in danger, the number of structures at risk, the dollar amount of the tax base and public investment that is exposed to natural hazards
 - Does this problem need to be addressed?

- Provide the justification for later formulation of goals and strategies to combat the problems identified in this step
- **Mapping Task 2.7(a)**
- This mapping task allows you to “zoom in” on individual planning areas and map their vulnerability in detail. Refer to Worksheet #2, and display on a map the pertinent features for current and future conditions.

[PowerPoint 38.15 Map 8: Current Conditions in the Riverine Hazards Planning Area]

- Note some of the **characteristics** of the **Current Conditions in the Riverine Hazards Planning Area** in *PowerPoint 38.15*:
 - Two major low-density residential neighborhoods, the northernmost one of which lies outside the community’s municipal boundaries but within its ETJ.
 - A small commercial center with a grocery store and abandoned warehouse.
 - A daycare center, school, historic church and wastewater treatment plant
 - Numerous repetitive damage structures
 - Western bank of the river is currently undeveloped
- When this map is compared with the **All-Hazards Map** (as shown in *PowerPoint 38.9*), it is clear that development in the Riverine Planning Area is subject to:
 - flooding
 - high winds
 - storm surge
 - wildfire
- Map 8 graphically illustrates the extent of the Riverine Hazards Planning Area’s current vulnerability.

[PowerPoint 38.16 Map 9: Current Conditions in the Coastal Hazards Planning Area]

- Note some of the **characteristics** of the **Current Conditions in the Coastal Hazards Planning Area** in *PowerPoint 38.16*:
 - Current land uses in the southern end of the Area are commercial development along the beach, including

- Will transportation routes have enough capacity to evacuate future populations?
 - **Conclusions** as to the future vulnerability of each Planning Area should provide **the basis for policy recommendations** that will be made later in the planning process.
- **Mapping Task 2.7(b)**
 - Show on a map what could occur in each Planning Areas based on the information collected on Worksheet #2, and the information described in the overview of potential future vulnerability.
 - The local zoning map identifies density limits and types of use that are allowed.
 - Designate which areas are scheduled for infrastructure improvements and the locations of any proposed critical facilities
 - Identify existing repetitive loss structures that have not been targeted for demolition or removal.

[PowerPoint 38.17 Map 10: Existing Zoning in the Riverine Hazards Planning Area]

- Note some of the **characteristics** of the **Existing Zoning in the Riverine Hazards Planning Area** in *PowerPoint 38.17*:
 - The entire Planning Area has the potential to become much more vulnerable in the future
 - The western bank of the river is zoned to allow high-density residential development.
 - Infrastructure is scheduled to support the impending development
 - On the eastern bank of the river, current open space is zoned for low-density residential
 - The community has no plans to remove the wastewater treatment plant, the historic site, daycare center, school grocery store, abandoned warehouse, or the repetitive loss structures, so they will remain there in the future
- This map graphically illustrates a **vulnerability scenario** that holds the **potential for a future disaster**.

[PowerPoint 38.18 Map 11: Existing Zoning in the Coastal Hazards Planning Area]

- o Note some of the **characteristics** of the **Existing Zoning in the Coastal Hazards Planning Area** in *PowerPoint 38.18*:
 - The entire Planning Area has the potential to become even more vulnerable in the future
 - The two remaining open spaces are anticipated to be developed
 - These areas are zoned for high-density development
 - The northern area is scheduled for infrastructure
 - The rest of the Planning Area is already densely developed, and is expected to remain so in the future
 - There are no plans to remove the school, junkyard, or the repetitive damage structures

- o Map 11 depicts a scenario of **serious vulnerability** if the Planning Area is developed as allowed under the current zoning scheme.

Conclusions:

- Let's discuss briefly:
 - What is the main point of going through a Vulnerability Assessment for a community?
 - What do all the numbers mean?
 - Why does it matter?

- In order to develop an effective mitigation plan, we must **understand the problems** which the plan is to address.
 - o The Vulnerability Assessment helps us to **define the problem** in terms of the number of people, critical facilities, and value of property at risk.
 - o A vulnerability assessment takes a **snapshot look** at the community in terms of its position relative to natural hazards, in particular, the *impact* that those hazards may have on the community – both now and in the future.

- **The Vulnerability Assessment is *not* a mitigation plan.**
 - o It serves as **background information**; it provides **baseline data** on which to create a plan.
 - o The numbers derived during this step in the planning process contribute to the **rationale for mitigation policy** that will be created in later steps in the planning process.

- The Vulnerability Assessment also very importantly serves to **highlight the extent of the hazard problem** for the public and local officials.
 - Being presented with the numbers, including the **number of people** that are in harm's way, and the **dollar amount** of tax-base and public property that is at risk, can really **open their eyes** in dramatic fashion!
 - And when these problems are displayed **graphically on a map**, the **need for proactive change** can become even more clear to local decision-makers, taxpayers, business owners and residents.
 - This is certainly **critical** for ensuring **that mitigation policies** are **formulated and implemented** to lessen the vulnerability of the community.