TETRA TECH

Thurston County HMP Risk Assessment

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Risk Assessment - Overview

- Why is the risk assessment important?
- Assessment tools
- Inputs to the assessment
- Outputs from the assessment
- Q & A

Why is the risk assessment important?

- You can’t mitigate risk without knowing what the risk is.
- Risk assessment informs the mitigation actions
- Quantitative analysis
- FEMA requires estimates of exposure and loss for structures, population and critical facilities

Risk assessment tools

- GIS
  - Exposure to hazards
- Hazus
  - GIS tool developed by FEMA
  - Modules for flood and earthquake
  - Flood module estimates damages using depth-damage curves
  - Earthquake module estimates damages using the amount of shaking and other information such as liquefaction and landslide susceptibility

Risk assessment tools

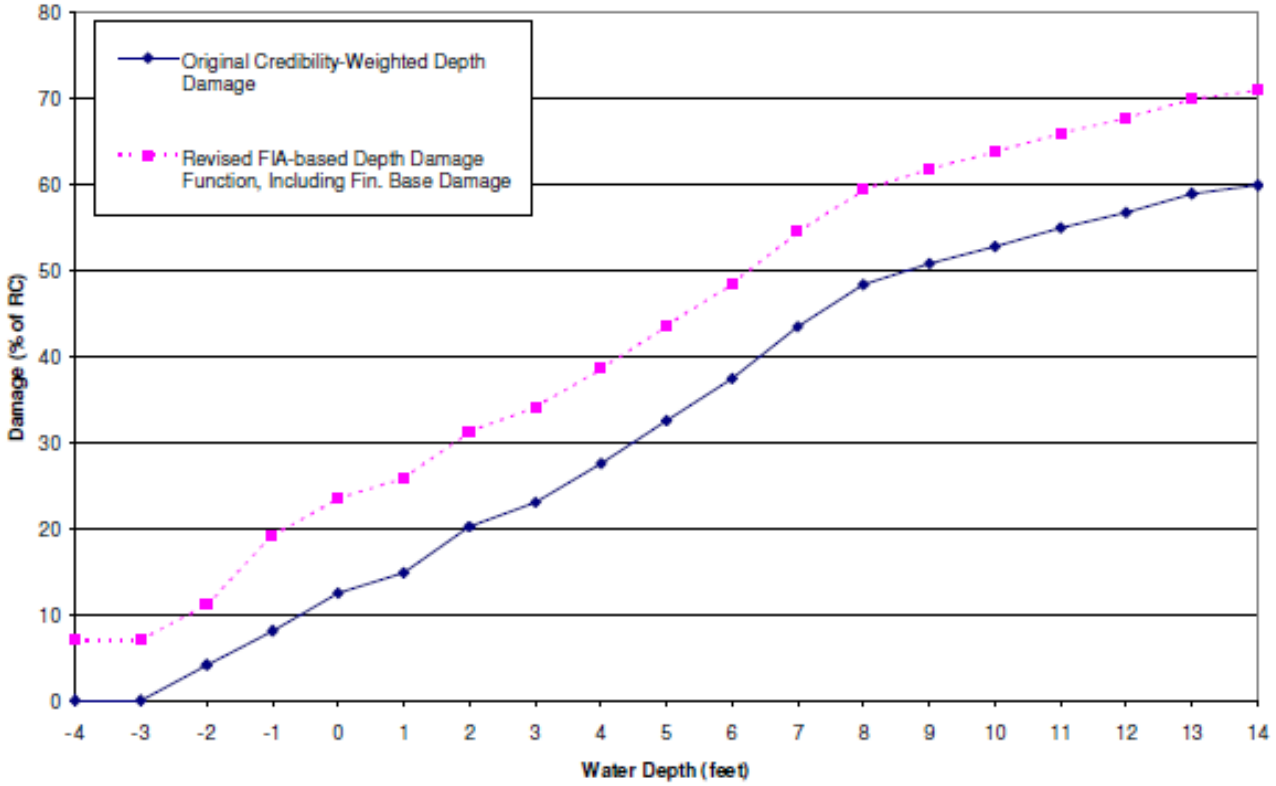

Figure 5.3 FIA-Based Structure Depth-Damage Curve 2 or More Stories, Basement-Modified

Risk assessment inputs

- Hazard data
  - Dam failure, earthquake, flood, landslide, tsunami, wildfire
- General building stock inventory
  - Point locations for all structures – residential, commercial, industrial
  - Inventory generated from tax assessor data and building footprints
- Critical facilities inventory
  - FEMA Community Lifelines categories
  - Compiled from various data sources but most importantly directly from you
  - Types of information needed for each facility:
    - name, use/purpose, location
    - replacement cost, square footage, year built, number of stories, foundation type, building frame material

Risk assessment inputs

Community Lifeline Components

Multiple components and subcomponents establish the parameters of the lifeline; component-level assessment is required to determine the condition of each lifeline.

1. Safety and Security
- Law Enforcement/Security
- Fire Service
- Search and Rescue
- Government Service
- Community Safety

2. Food, Water, Shelter
- Food
- Water
- Shelter
- Agriculture

3. Health and Medical
- Medical Care
- Public Health
- Patient Movement
- Medical Supply Chain
- Fatality Management

4. Energy
- Power Grid
- Fuel

5. Communications
- Infrastructure
- Responder Communications
- Alerts, Warnings, and Messages
- Finance
- 911 and Dispatch

6. Transportation
- Highway/Roadway/Motor Vehicle
- Mass Transit
- Railway
- Aviation
- Maritime

7. Hazardous Material
- Facilities
- HAZMAT, Pollutants, Contaminants

ASSESSMENT	
Status	*"What?"*
Impact	*"So What?"*
Actions	*"Now What?"*
Limiting Factors	*"What's the Gap?"*
ETA to Green	*"When?"*

Risk assessment outputs

- Analysis results for general building stock include:
  - From GIS:
    - Structure counts
    - Population counts
    - Value exposed
  - From Hazus:
    - Dollar damages
    - Debris
    - Displaced population and shelter needs
    - Casualties

Risk assessment outputs

- Analysis results for critical facilities include:
  - From GIS:
    - Facility counts
  - From Hazus:
    - Flood
      - Percent damage to facility
      - Days to 100% functionality
    - Earthquake
      - Probability of damage states (“No damage” to “Complete Damage”)
      - Percent functionality (At “Day 1” to “Day 90”)

Risk assessment outputs

Q & A