Fremont, Nebraska Flood Risk Management Feasibility Study (General Investigation)

Nonstructural Informational Meeting

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Objectives for the Meeting

- Flood Risk Management Feasibility Study – Overview/Update
  - Jeff Greenwald (Corps)

- National Flood Insurance Program (NFIP) – Overview
  - Mitch Paine (DNR)

- Nonstructural Flood Risk Management Measures – Overview
  - Randall Behm (Corps)

- Flooding Examples Illustrating the Benefits of Flood Risk Management
  - Tony Krause (Corps)
Overview of General Investigation Study

- How are we studying this?
  - “Lower Platte River and Tributaries” authorization
    - Resolution adopted by the U.S. House of Representative Committee on Transportation and Infrastructure on September 28, 1994
    - Allows studies for flood control along the lower Platte River
    - Study costs shared 50/50
    - Implementation costs shared 65/35

- Partnership
  - Lower Platte North Natural Resources District
  - City of Fremont
  - Village of Inglewood
  - Dodge County
  - Corps of Engineers
Flood Problems

- Wide floodplain with significant development
- Flooding originates from the Platte River due to:
  - Rainfall and runoff
  - Snowmelt runoff
  - Ice-affected flooding
- Majority of flood risk is from ice-affected flooding (ice-jams)
2-Dimensional Model vs. FEMA 100-year Floodplain
Economic Impacts of No Action

- **Structure damages:**
  - A 1.0% (100-year) chance event could damage ~1,750 structures and cause damages of close to $60 million
  - A 0.02% (500-year) chance event could damage ~5,000 structures and cause damages of close to $200 million

- **Public sector expenses**
  - Road repairs, emergency services, relocations and displacement costs

- **Detours and delays from road closures**

- **Business income losses from shutdowns**

- **Flood insurance premiums**

Other Social Effects of No Action

- **Life safety and public safety**
Flood Risk Management Measures Screening Summary

- Upstream diversions/bypass channel – eliminated
- Straighten Platte River – eliminated
- Widen/deepen Platte River – eliminated
- Melt ice on Platte River – eliminated
- Dynamite ice on Platte River – eliminated
- Upstream dams – eliminated

- Levee(s)/floodwall(s) – carried forward
- Nonstructural measures – carried forward
Initial Array of Alternatives Map
Is this the new National Normal?
Property Damages of $10.2 Billion Annually from 1985-2016

Nebraska Major Declarations for Flooding

Flood Risk

Risk = \( f [(\text{Probability of Flooding}) \times (\text{Consequences})] \)

(Probability of Flooding) is the frequency of flooding or how often does flooding occur in a particular location. Reduce the frequency of flooding and risk is reduced.

(Consequences) are the potential damages and life loss associated with flooding. The structures (critical, residential, commercial, public, and industrial), land use (agricultural, urban, public), and infrastructure (highways, roads, rail, utilities) make up the potentially damageable assets. Reduce the consequences of flooding and risk is reduced.

Note: If critical facilities (utilities, fire and rescue, hospitals, etc.) become inoperable during a flood event, the area of impact extends beyond the area of flooding and increases adverse impacts to health and welfare.
Nonstructural Flood Proofing

The most common physical flood proofing measures implemented for flood damage reduction are considered to be:

- Acquisition
- Relocation
- Elevation
- Dry Flood Proofing
- Wet Flood Proofing
- Basement Removal

Nonphysical flood proofing measures for life loss reduction are considered to be:

- Floodplain Mapping
- Land Use
- Flood Insurance
- Evacuation Plans
- Flood Warning
- Zoning
- Emergency Preparedness Plans

Existing Structure  Mitigated Structure
ASSESSING THE SITUATION

**Flood Characteristics**
Flood depth, Flood velocity, Flood duration, Rate of rise, Debris/Ice flows, Wave action, Floodway

**Site Characteristics**
Location, Soil type, Topography, Site size, Urban/Rural

**Building/Structure Characteristics**
Type of construction, Foundation, Condition of the building, Building Occupancy, Lower levels (Basement), Historical Significance

**Other Considerations**
Building Codes, Zoning Ordinances and Local Restrictions, Other Agencies (Local / State / Federal), Aesthetics, Public Health/Safety/Welfare
* Caution Caution Caution Caution *

While flood proofing measures may result in lower property damages, there could be potential restrictions which the property owner needs to investigate prior to implementation:

- Local Ordinances
- State Regulations
- National Flood Insurance Program (NFIP)

Some of the methods shown in this presentation may not comply with local code or the NFIP minimum requirements and may not be creditable for flood insurance savings. USACE focuses on flood damage reduction.

Flood insurance is always recommended, even for structures which may have been retrofitted with nonstructural measures.
Elevation on Extended Foundation Walls

Flood Vent
Dry Flood Proofing
Darlington, Wisconsin Commercial Flood Proofing

[Images of flood damages and flood proofing installations]
Basement Fill with Utility Room Addition

- Elevation within an existing structure
- US Post Office within 100-yr floodplain
- Relatively new building
- High ceilings
- Elevated interior

Concerns:
- Seepage
- No flood vents
- Standard glass doors
Relocation
Flood Risk and Flood Insurance

**Elevation lowers premiums.**

**ZONE A" EXAMPLE**

Under the Flood Insurance Reform Act of 2012, You Could Save More than $90,000 over 10 Years if You Build 3 Feet above Base Flood Elevation *

<table>
<thead>
<tr>
<th>Elevation Level</th>
<th>Premium at 4 Feet Below Base Flood Elevation</th>
<th>Premium at Base Flood Elevation</th>
<th>Premium at 3 Feet Above Base Flood Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$9,500/year</td>
<td>$1,410/year</td>
<td>$427/year</td>
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<tr>
<td></td>
<td>$95,000/year</td>
<td>$14,100/year</td>
<td>$4,270/year</td>
</tr>
<tr>
<td></td>
<td>$95,000/10 years</td>
<td>$14,100/10 years</td>
<td>$4,270/10 years</td>
</tr>
</tbody>
</table>

* Homes built below BFE could be hit hard by an increase to full-risk rates

Elevating 3 feet above the BFE could lower premiums significantly!
FLOOD RESILIENCY
Comprehensive Approach to Resisting Catastrophic Loss
Hebron, NE
(homeowner evaluating HMGP as means of elevating structure and filling basement)
Dewitt, NE
Dewitt, NE
(basements flooded)
Dewitt, NE
(homeowner had let insurance lapse)
Beatrice, NE
(pre-buyout program)
Beatrice, NE
(post-buyout program)
Roundup, MT
Roundup, MT
Feasibility Study Completion Paths

1. Terminate feasibility study with no recommendations
   - Study would end
   - No implementation phase

2. Continue and complete feasibility study with nonstructural flood risk management assessment and recommendation
   - Elevation, basement fill, utility relocation for residential structures
   - Wet and dry floodproofing for commercial structures
   - Finalize economic analysis
   - Complete draft feasibility report
   - Coordinate with study team (local stakeholders)
   - Public review of draft report in 3-4 months
   - A positive finding for the nonstructural assessment, with report approval, could move project into implementation

- We need your input on these two paths
Thank You

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