Kickapoo River Flooding in Gays Mills, Wisconsin

The Challenges, Success Stories, and Resources Used
Presentation Goals

• Describe the history of flooding in Gays Mills
• Describe the village’s challenges as they pertain to flooding
• Explain our success stories
• Report on the resources we’ve used
Village of Gays Mills

- Located in Southwest Wisconsin
- Population is 505
Brief History of Gays Mills

• 1839: Kickapoo River was first surveyed
• 1848: John Gay built a sawmill on the Kickapoo River
• 1892: Rail service connected villages up and down the Kickapoo River
• 1905: Apple orchards established
Our Biggest Challenges

• We are a small village with limited resources
• Our geography, sentiment issues, and river type make it difficult for us to control flooding
Unique Geography of Gays Mills

• Part of the un-glaciated Driftless Region, aka:
  – Ocooch Mountains
  – Western Upland of Wisconsin

• Valleys created by river/stream erosion

• Gays Mills was built along the Kickapoo River
Ocooch Mountains

• 350 feet above the Kickapoo River valley
• 300+ species of rare plants and wildflowers
• 100+ species of bird
Kickapoo River

• Known as the “crookedest river in the world”

• Length
  – Flow: 126 miles
  – Source to mouth: 60 miles

• Size
  – Drainage: 800 square miles
  – Watershed: 492,000 acres
Kickapoo River (Continued)

- Oxbows retain water in old river channels
- Swamp land in river bottom
- Lots of sediment in the floodplain
Contributing Factors

• Prior to European settlers, the area around Gays Mills included: prairies, oak savannas, upland forests and valley wetlands
• Settlers filled wetlands, cut forests, rerouted waterways, and plowed slopes
• Massive erosion after heavy rains left sediment in the valleys and floodplains
• Today farmers use sustainable practices (like strip cropping) to avoid erosion and some land has been reforested
Recorded History of Flooding

- 1907
- 1912
- 1917
- 1935
- 1951
- 1962
- 1963
- 1965
- 1966
- 1967
- 1972
- 1973
- 1975
- 1978
- 1980
- 1981
- 1982
- 1993
- 2000
- 2004
- 2007
- 2008
- 2016
## Crests in Gays Mills
(flood stage of 13 feet)

### Historical Crests

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Crest Height</th>
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<tbody>
<tr>
<td>1</td>
<td>06/09/2008</td>
<td>20.44 ft</td>
</tr>
<tr>
<td>2</td>
<td>07/02/1978</td>
<td>19.80 ft</td>
</tr>
<tr>
<td>3</td>
<td>08/20/2007</td>
<td>19.79 ft</td>
</tr>
<tr>
<td>4</td>
<td>09/23/2016</td>
<td>18.10 ft</td>
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<tr>
<td>5</td>
<td>02/10/1966</td>
<td>16.75 ft</td>
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<td>6</td>
<td>06/01/2000</td>
<td>16.50 ft</td>
</tr>
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<td>7</td>
<td>04/03/1982</td>
<td>16.10 ft</td>
</tr>
<tr>
<td>8</td>
<td>07/22/1951</td>
<td>16.00 ft</td>
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<tr>
<td>9</td>
<td>03/03/1965</td>
<td>15.80 ft</td>
</tr>
<tr>
<td>10</td>
<td>08/16/2010</td>
<td>15.43 ft</td>
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</table>

### Crests in Last 17 Years

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Crest Height</th>
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<tbody>
<tr>
<td>1</td>
<td>06/09/2008</td>
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<tr>
<td>6</td>
<td>06/01/2000</td>
<td>16.50 ft</td>
</tr>
<tr>
<td>10</td>
<td>08/16/2010</td>
<td>15.43 ft</td>
</tr>
<tr>
<td>13</td>
<td>09/09/2016</td>
<td>14.62 ft</td>
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<tr>
<td>14</td>
<td>05/25/2004</td>
<td>14.51 ft</td>
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<td>15</td>
<td>07/10/2000</td>
<td>14.45 ft</td>
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<td>22</td>
<td>06/03/2004</td>
<td>13.80 ft</td>
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<tr>
<td>23</td>
<td>08/24/2016</td>
<td>13.73 ft</td>
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1935 Flood
1935 Flood
1978 Flood
2007 Flood
2008 Flood
2010 Flood
2016 Flood
## Flooding Impact on Population

<table>
<thead>
<tr>
<th>Year (source)</th>
<th>Population</th>
<th>% Change</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1960 Census</td>
<td>634</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1970 Census</td>
<td>623</td>
<td>-1.7%</td>
<td></td>
</tr>
<tr>
<td>1980 Census</td>
<td>627</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>1990 Census</td>
<td>578</td>
<td>-7.8%</td>
<td>Multiple floods and buyouts</td>
</tr>
<tr>
<td>2000 Census</td>
<td>625</td>
<td>8.1%</td>
<td></td>
</tr>
<tr>
<td>2010 Census</td>
<td>491</td>
<td>-21.4%</td>
<td>2 major floods caused decrease</td>
</tr>
<tr>
<td>2016</td>
<td>505</td>
<td>2.8%</td>
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Flood Containment Efforts in the Kickapoo River Valley

• 1930s: First proposals to dam the Kickapoo
• 1962: Congress approved flood control plan for the Kickapoo River Valley
  – Dam and recreation lake near mouth of river
  – Levee in Soldiers Grove (7 miles upriver of Gays Mills)
  – Construction by U.S. Army Corps of Engineers
Flood Containment Efforts in the Kickapoo River Valley

- 1969: Acquisition of 140 farms
  - Majority of farms did not want to sell
- 1970s: Construction began on dam and levee
- 1975: Dam project stopped
  - Environmental impact
    - endangered species
    - water quality concerns
  - Re-evaluation of the cost-benefit
  - Land now jointly owned by the Bureau of Indian Affairs (held in trust for the Ho-Chunk Indian Nation) and the State of Wisconsin. It is open to the public.
Flood Containment Efforts in Gays Mills

- **1980s:**
  - Levee referendum did not pass
  - Houses raised, moved, and leveled

- **2000s:**
  - Relocation study and commitment
  - Houses and business are raised, moved, and leveled
“Greater than 500-year flood events”

• Gays Mills experienced back-to-back “greater than 500-year flood events” in 2007/2008 (FEMA)
  – 100-year flood has a 1% probability of occurring in any given year
  – 500-year flood has a 0.2% probability of occurring in any given year

• The 2008 flood was declared a National Disaster by President Bush
  – 90 percent of the original village site flooded in 2008
Emergency Action Plan and Clean-up

- County Emergency Management – Weather Predictions
- Fire Department - Watch River Level
- Fire Dept. – Evacuations to Community Center (no sirens, 3-4 hrs notice)
- Fire Dept. secures Village
- Work with other communities on emergency services
- Clean-up and re-enter into homes/businesses
Recovery Planning

• FEMA activated the Long-Term Community Recovery (LTCR) program on the heels of the National Disaster declaration
• The Gays Mills Village Board requested LTCR assistance and held a kickoff meeting in August 2008
• LTCR is a 3-month planning process between committees, community, and multi-level officials
• By October 2008, a LTCR plan was complete
The LTRC Plan served as a framework for the Village’s recovery efforts – “Focus on sustainable and resilient future” – Outlines “critical funding and resource allocation decisions”

The Village Board is responsible for prioritizing plan items and overseeing implementation
Recovery Objectives

• Provide for more options and choices in housing types
• Recreate neighborhoods that are pedestrian friendly
• Preserve and create affordable housing
• Support the retention of existing businesses and encourage new entrepreneurs
• Incorporate sustainable design principles in future developments
• Provide public facilities and services in a coordinated and efficient manner to meet current and future needs
• Promote small businesses that support tourism and create a destination for Gays Mills and the Kickapoo watershed
Four Recovery Options

1. No Action Alternative
   – Keep with previous acquiring/demolishing and elevating efforts

2. Levee Option
   – Not feasible for financial, risk, and technical reasons

3. Partial Relocation
   – Voluntary relocation for residents and businesses

4. Total Relocation
Suitability Maps
Relocation Site Selection

• “Lands within the incorporated limits of Gays Mills are severely constrained by landscape features, wetlands and floodplain regulations.”
Site A - Chestelson

- Nearly 30 acres
- Land on both sides of Route 131
- Plan included:
  - 45 single family residential lots
  - 9 patio/townhomes
  - 18,000 SF of commercial buildings
Relocation Process

• Staged approach
  – Infrastructure
  – Water and sewer
  – Roads
  – Sidewalks
  – Buildings
  – Etc

• Vision included
  – multi-use buildings
  – Relocating public works and community offices
  – Driving business to new end of village
Funding

• Gays Mills was pre-approved for millions of dollars, but that funding was cut when other damages came in
• The Village had to revamp plans for buildings, etc. to stay within new budget
Housing

• 75% of homes are mortgaged

• Rental properties were substantially damaged

• After 2007 flood:
  – 53% of homes in historic center were damaged
  – 30 properties were in the process of buyouts

![Pie chart showing housing damage by percentage: 30% substantial damage 2007, 30% substantial damage 2008, 22% minor damage 2007 & 2008, 18% no reported damages.](image)
Housing (Continued)

• After 2007 flood, majority wanted to elevate
• After 2008 flood, majority wanted a buyout
• Issues with this change:
  – Village had to modify applications for funding
  – Some people waited to ask for a buyout at the very end after the money had been already spent
• Some people took the buyout and left village
• Some residents did not qualify because of their higher income
Gays Mills Village Hall

• Multi-use building
• Village offices
• Community Library
• Community Kitchen (food business incubator)
• Community Room (rentable)
• Police office (used by the County Sheriff as their “North District” office)
Gays Mills Village Hall
Gays Mills Village Hall

- Two companies have already moved out of the kitchen to their own buildings
- Frequent use
- Cooking classes and demonstrations
Gays Mills Village Hall

• Community room rentals include:
  – Wedding receptions
  – Baby showers
  – Bridal showers
  – Funerals
  – Family reunions
  – Testing by the school district
Gays Mills Mercantile Center

- 80 percent full
- Businesses include:
  - Newspaper office
  - Hair/nail salon
  - Barber
  - Thrift shop
  - Insurance office
  - Realtor offices
  - Food Pantry
Gays Mills Market Place

- Grocery store
- Gas station
- 3 business partnered to create one sustainable business (2 flood relocated business)
Green Building

• Geo-Thermal at Community Commerce
• Insulated Concrete Forms at Mercantile
• Solar Hot Water Heaters at Multi-Family Units
• LED Street Lights
Funding Sources
2007 through 2017

Community Development Block Grant – Emergency Assistance Program (Department of Administration) - Funded Residential Rehab, Residential Acquisitions and Removal, Land Acquisition, Infrastructure, Community Commerce Center, EMS Building, Business Assistance, and Administration

Wisconsin Emergency Management/Dept. of Health – Funded the position of Flood Recovery Manager for one year

Community Development Block Grant – 8 Apartment Units with partner

Community Development Block Grant – 7 Apartment Units with partner & Rental Elevations

Economic Development Administration– Funded Mercantile (Business Incubator), Commercial Kitchen & Equipment, Administration, Infrastructure, Geo-Thermal, 3 year Central Business District Manager position
Funding Sources
2007 through 2017 (Continued)

USDA/Rural Development Grant – Funded Water and Sewer Infrastructure and Public Works Building

USDA/Rural Development Grant/Rural Business Enterprise Grant – Funded Land Acquisition Site C

Hazard Mitigation Grant Program/FEMA & Wisconsin Emergency Management – 4 Grants Funded for Acquisitions and Removal of Residential Homes and Elevation/Flood Proofing Residential Homes

Department of Natural Resources – 4 Grants Funded Acquisition and Removal of Residential Homes and Elevation/Flood Proofing Residential Homes

Redevelopment Authority – Created in order to carry more debt capacity, Loan for portion of Community Commerce Center
Results of Funding Sources
2007 through 2017

- 57 Acquisitions and Removal of Structures
- New Infrastructure
- 14 Homes Rebuilt in Site A
- 2 Homes Re-purchased within Village
- 15 Multi-Family Units in Site A
- 19 Elevations and Flood proofing's
- Mercantile Building with 13 commercial spaces
- Community Commerce Center
- Public Works Building
- EMS Building
- 6 Businesses Relocated
- Relocation project costs over $20,000,000
The Future

• Bring in more businesses
• Continue to build more housing, including higher-income housing for business employees
• Sustain growth in population and incubator businesses
• Growth of the village not just important for us, but also:
  – Neighboring towns
  – County
  – School
  – Public works
  – Police and safety
Working with Local Fire and Rescue EMS Departments

• Establish emergency action plans
• Keep records of who is doing what and when
  – Sign-in sheets
  – Equipment costs
  – Hourly wages
  – Bylaws (Prior to Disaster)
  – Agency rules
Find the Right People

- Village staff have increased work to do during times of need
- Hire someone to help plan and implement anything specific to flood projects
Build Relationships with Agencies

• Groups include:
  – Fire Dept./EMS
  – County Emergency
  – Salvation Army
  – Red Cross

• Services:
  – Shelter
  – Food/Water
  – Clothing/Toiletries
Record Keeping

- Varies by agency
- Know what to keep and for how long
- Organize and store necessary documents
Classifications

• Gays Mills experienced back-to-back greater than 500-year flood events in 2007/2008
  – 100-year flood
    • 1% probability of occurring in any given year
  – 500-year flood
    • 0.2% probability of occurring in any given year

• These are important to know because they:
  – Determine how high homes must be elevated
  – How much and types of funding available
Planning Ahead

• Go SLOW
  – Quick action is often emotional for citizens – let them mourn and process
  – Plan, review, plan, review, plan, review
  – Seek input from nearby communities and organizations

• Future budgets should include increased expenses for when things are no longer under warranty
DOES ANYONE HAVE ANY QUESTIONS?

Village of Gays Mills Long-Term Community Recovery Plan

www.gaysmillswi.com

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