Cayuga County Flood Risk Review Meeting

July 24, 2017
Agenda

- The value of updated flood maps for your community
- Review updated flood-risk data and important next steps in the Risk MAP process
- Increasing mitigation opportunities in your community
- Working session to review maps
Cayuga County
The Value of Updated Flood Maps for your Community
Why Are We Here?

The Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) are being updated for your community.
Flood Maps Impact Important Decisions

<table>
<thead>
<tr>
<th>To Identify and Assess the Flood Risk</th>
<th>To Establish Rates for Flood Insurance</th>
<th>To Determine Local Land Use</th>
<th>To Inform Engineers and Developers</th>
<th>To Equip Emergency Managers</th>
</tr>
</thead>
</table>
### Why Update your Flood Maps?

**CAYUGA COUNTY: SNAPSHOT**

<table>
<thead>
<tr>
<th>COMMUNITY</th>
<th>POPULATION</th>
<th>NFIP POLICIES</th>
<th>NFIP CLAIMS</th>
<th>FEMA CLAIMS PAID</th>
<th>CAV/CAC DATES</th>
<th>HAZARD MITIGATION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>VILLAGE OF FAIR HAVEN</td>
<td>745</td>
<td>9</td>
<td>N/A</td>
<td>$0</td>
<td>CAV: 10/13/2016 CAC: N/A</td>
<td>Approved*</td>
</tr>
<tr>
<td>TOWN OF STERLING</td>
<td>3,040</td>
<td>2</td>
<td>N/A</td>
<td>$0</td>
<td>CAV: N/A CAC: 5/13/1994</td>
<td>Approved*</td>
</tr>
</tbody>
</table>

*Plan set to expire in 2019*
Preliminary Work Map vs. FIS/FIRM

WORK MAPS WILL NOT AFFECT FLOOD INSURANCE REQUIREMENTS OR COSTS
Modeling the Special Flood Hazard Area (SFHA)

VE, AE, and AO Zones are “100-year floodplain” with a 1-percent-annual-chance of flood

- Insurance is **required** if you have a federally backed mortgage or received federal disaster assistance
- Informs building code standards
Your Role

Local Officials, Floodplain Administrators and Staff

- Provide technical review of preliminary data
- Submit questions and comments to FEMA
- Share new flood risk info with property owners and stakeholders
- Identify mitigation needs and priorities
- Update local plans, codes, and ordinances
Cayuga County
The Risk MAP Process and Scope
Flooding produced by heavy rain, flash floods, landslides, and/or snowmelt has caused road closures, evacuations, and millions of dollars in property damage in Cayuga County communities since 1972.

Lake Ontario should have an updated, detailed study due to the high rate of coastal erosion.
**Project Timeline and Schedule**

**Discovery Meeting**
- 2014
  - **Flood Risk Review Meeting**
    - **July 24, 2017**

**Preliminary Date**
- TBD
  - **CCO Meeting & Open House**
    - TBD

**Appeal Period**
- TBD
  - **End of Appeal Period**
    - TBD

**FEMA issues LFD**
- TBD
  - **Effective Date**
    - 2019-2020

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**“Letter of Final Determination”**
To communities and publishes the BFEs in the Federal Register.

Communities have 6 months to adopt the study before the data becomes “effective”. Failure to adopt results in suspension from NFIP.
Study Area

Cayuga County
- 2 Coastal Communities
- 8.5 miles of shoreline (Lake Ontario)
- Coastal Storm Flooding update
- 2014 FEMA Lake Ontario LiDAR
Five Report sections
• Short-term Water Levels
• Long-term Water Levels
• Statistical Analysis
• Storm Surge model Setup and Validation
• Storm Production

Report can be found at www.greatlakescoast.org
### Effective vs. New Coastal Study

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Topographic data</td>
<td>2001 Cayuga County LiDAR</td>
<td>2014 FEMA Lake Ontario LiDAR</td>
</tr>
<tr>
<td>Stillwater Elevation (SWEL)</td>
<td>Gage Frequency Analysis (USACE 1988)</td>
<td>Lake Ontario Storm Surge Model– 2012</td>
</tr>
<tr>
<td>Modeled transects</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Wave setup</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Wave runup</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Limit of Moderate Wave Action (LiMWA)</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Study Approach

• Regional Study Approach
  - Water level and wave analysis
  - Improvement over community-county
  - Reduces number of boundary conditions
  - Greater consistency in assumptions

• Local/County Level Activities
  - Mapping level tasks performed at county level
  - Nearshore wave transformations
  - Wave runup
  - Overland wave propagation
Light Detection and Ranging (LiDAR)

Terrain Dataset
Used for modeling & mapping

LiDAR Data Sources
2014 FEMA Lake Ontario LiDAR
2011 USACE/JALBTCX Great Lakes Topo/Bathy LiDAR
2007 USACE NCMP Topo/Bathy LiDAR
2001 USACE Detroit District Topo/Bathy LiDAR
Cayuga County Transects

- Lake Ontario
  - Effective – 248.9 feet NAVD 88
  - Revised – 248 – 261 feet NAVD 88
# Field Reconnaissance

**Cayuga County, NY**  
**Transect:** TR02  
**Review Location:** 02_1  
**Team:** Joel Plummer & Lisa Turcios  
**Date:** 6/22/2015  
**Time:** 3:14:00 PM

<table>
<thead>
<tr>
<th>Location Description</th>
<th>W Bay Rd at West Barrier Bar County Park. At lake shoreline.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude, Longitude</td>
<td>N43°20'43&quot;, W76°42'48&quot;</td>
</tr>
<tr>
<td>Building Description</td>
<td>Marina building on south side of road, 1 row(s), Open Space Ratio 90%</td>
</tr>
<tr>
<td>Vegetation Description</td>
<td>Trees, immediately behind beach, Diameter 8 in, Height 40 ft, Spacing 20 ft</td>
</tr>
<tr>
<td>Marsh Description</td>
<td>N/A</td>
</tr>
<tr>
<td>Coast Description</td>
<td>Gravel. Gravel beach of 80 feet wide covered by variable sized pebbles ranging from 1/2 cm to 8 cm. Transitions to small grassy swale.</td>
</tr>
<tr>
<td>PFD</td>
<td>No</td>
</tr>
<tr>
<td>Fetch Description</td>
<td>Open</td>
</tr>
</tbody>
</table>

![Description: shoreline, trees
Lat/Lon: N43°20'43", W76°42'48"
][Image 1]

![Description: shoreline
Lat/Lon: N43°20'44", W76°42'46"
][Image 2]

![Description: shoreline
Lat/Lon: N43°20'46", W76°42'46"
][Image 3]
Coastal Base Flood Elevation
USACE CSHORE model

- Applies real physics
- Near-shore wave processes
- Cross-shore and along shore sediment transport
- Requires sediment grain size

Erosion in the Great Lakes
U.S. Geological Survey (USGS) Study

Combination of sensors:

• Record water levels at 14 locations along Lake Ontario.
• Drones will supplement high-resolution elevation maps and documentation of flooding extents and coastal impacts.
Coastal Erosion and Scour

The two most damaging aspects of coastal flooding for coastal buildings.

- Erosion should be considered in determining foundation depths and heights.
- Nature and extent of soil loss expected around a building is critical.
- A slab is not a substitute for adequate embedment.
Detailed Coastal Mapping – Wave Runup

Wave runup depth ≥ 3 feet

Wave runup depth < 3 feet

100-year stillwater elevation

100-year wave runup elevation = BFE

100-year wave crest elevation

Inland extent of wave runup

Datum (e.g., NGVD, NAVD)
Wave Runup

• Rush of water that extends inland when waves come ashore
• These elevations may be higher than the stillwater elevations developed as part of the storm surge analysis
• First time wave effects have been mapped for this area
Overtopping Rate Considerations for Establishing Flood Insurance Rate Zones

Ponding Considerations

- Areas were AE not present beyond slope break
- Duration of overtopping
- Topography
- Drainage landward of the overtopped barrier
LiMWA sits inside of a Zone AE

- Triangles point to higher waves
  - Indicates where wave height exceeds 1.5ft

- Also referred to as Coastal A Zone
Development Requirements

**A Zones**

- Slab-on-grade / Slab-on-fill
- Fully-enclosed foundation wall (flood openings required)
- Open foundation on piers, posts, piles, or columns
  - Top of lowest floor elevated to or above the BFE
  - AO Zone – elevate to or above flood depth number or 2 feet above HAG

**V Zones**

- Open foundation on columns or piles
- Free of obstruction or use of breakaway walls/lattice work
- Parking, access, and storage
- Designed by a registered design professional
- Bottom of lowest horizontal structural member to or above BFE
Increase Mitigation Opportunities
Goal: Stronger and Safer Communities

RiskMAP: Increasing Resilience Together

**Goals**
- Deliver High-Quality Risk Data
- Increase Awareness of Flood Risk
- Promote Community Mitigation Actions

**Products**
- Intuitive Flood Maps
- Credible data: reliable, accurate, watershed-based
- Illustrations of Flood Depths
- Valuable Flood Risk Assessments
- Tools to understand how flood risk has changed
- Continuous engagement with communities
- Enable communities to communicate flood risk to constituents

**Processes**
- MITIGATION PLANNING
  - Enhance delivery of Risk MAP Products
  - Collaborate across all levels of government

**Reduce Risk to Lives and Property**
- Support that allows communities to identify and risks and promote:
  - Community resiliency
  - Sustainability
  - Reduced need for federal disaster assistance
Proposed Mitigation Actions

From the 2013 Hazard Mitigation Plan

• Bank stabilization, gravel bar removal, debris clearing, and erosion control measures will be put in place to combat wave/wind action on the coast and debris jams in creeks.

• Multiple municipalities aim to conduct and facilitate community education outreach.

• Continue to meet and/or exceed NFIP standards and criteria through ordinances and zoning restrictions.

• Stormwater drainage systems will be improved.
Grants Overview

- **Grants available AFTER a disaster**
  - Hazard Mitigation Grant Program (HMGP)

- **Grants available BEFORE a disaster**
  - Pre-Disaster Mitigation (PDM) Program
  - Flood Mitigation Assistance (FMA) Program

- **FEMA awards grants to States, tribes, and territories**
  - Communities contact State Hazard Mitigation Office (SHMO) if interested in applying for HMA
NFIP Community Rating System Program Basics & Benefits

www.CRSResources.org

National Flood Insurance Program
Community Rating System

A Strategic Plan for the
Community Rating System
Fiscal Years 2008–2013

2008

FEMA

RiskMAP
Increasing Resilience Together
CRS Community Requirements

- Be in full compliance with the NFIP
- Implement activities
- Maintain Elevation Certificates
- Verification visit every 3 to 5 years
- Recertify each year
- Must meet Class prerequisites
  - Repetitive loss (Class 9)
  - BCEGS 5/5 or better (Class 6)
  - BCEGS 4/4 or better; 1 foot of freeboard and more (Class 4)
Elements of a comprehensive community floodplain management program
Work Session: Review floodplain mapping and flood risk products for validity. Ask questions!
Workmap Data Viewer
Questions about Maps?

Welcome to the Great Lakes Coastal Flood Study website at greatlakescoast.org. This is the official public website for FEMA’s comprehensive storm and wind study of the Great Lakes basin for the purpose of updating the coastal flood hazard information and Flood Insurance Rate Maps (FIRM) for Great Lakes coastal communities. This is the main page of the website and contains the most recent content posted to the site. Use the menu at the left to visit pages with additional content pertaining to the Great Lakes Coastal Flood Study.

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Working Together to Build a Stronger and More Resilient Cayuga County