Hazard Mitigation and Historic Preservation: How to Both Preserve and Protect

National Webinar Series
Focused on Smart Growth and Resiliency

Maryland Department of Planning in Partnership with Smart Growth Online

VISION
PLANNING & CONSULTING, LLC

June 26, 2018

Disaster Planning

- Disaster Preparedness Frameworks
- Emergency Operations Plans
- Continuity of Operations Plans
- Hazard Mitigation Plans
- Disaster Resistant University Plans
- Disaster Policies and Programs for State, Tribal and Local Governments
- Flood Mitigation Plans
- Business Continuity Planning
- Community Rating Systems (CRS) Applications
- Post-Disaster Studies
- Long-Term Recovery Plans
- Threat Hazard Identification and Risk Assessment (THIRAs)

FEMA NEWS PHOTO

Public Outreach

- Consensus /Capacity Building
- Multi-Party Facilitation
- Focus Groups/Charrettes
- Confidential Interviews
- Public Workshops
- Technical Workshops
- Needs Assessments
- Community Preference Surveys
- Website Development
- Public Outreach Campaigns
- Documentaries, Newspaper Articles, Social Media, Posters

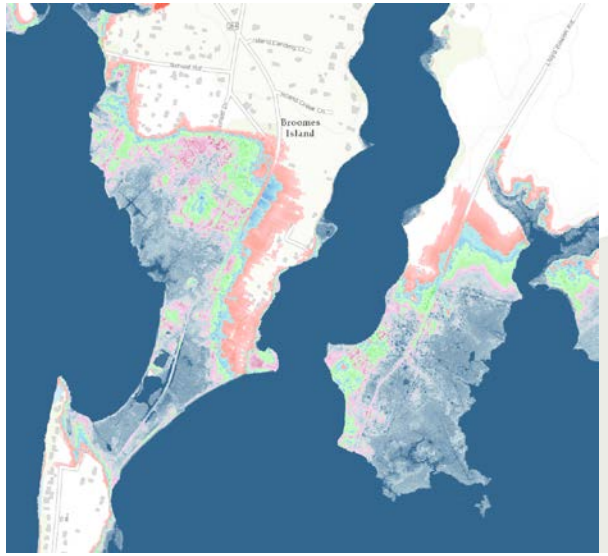
FEMA NEWS PHOTO

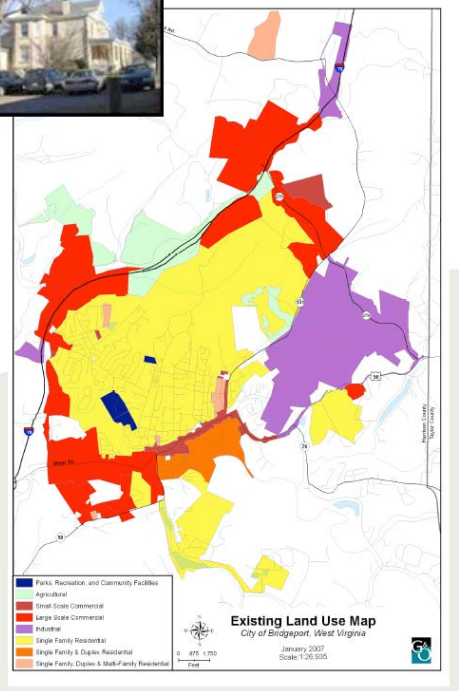
Grants Management

- Technical Assistance
- Grant Writing
- Grant Administration
- Grant Consulting
- Data Analytics
- Grants Modernization
- Web Solutions
- Data Standardization

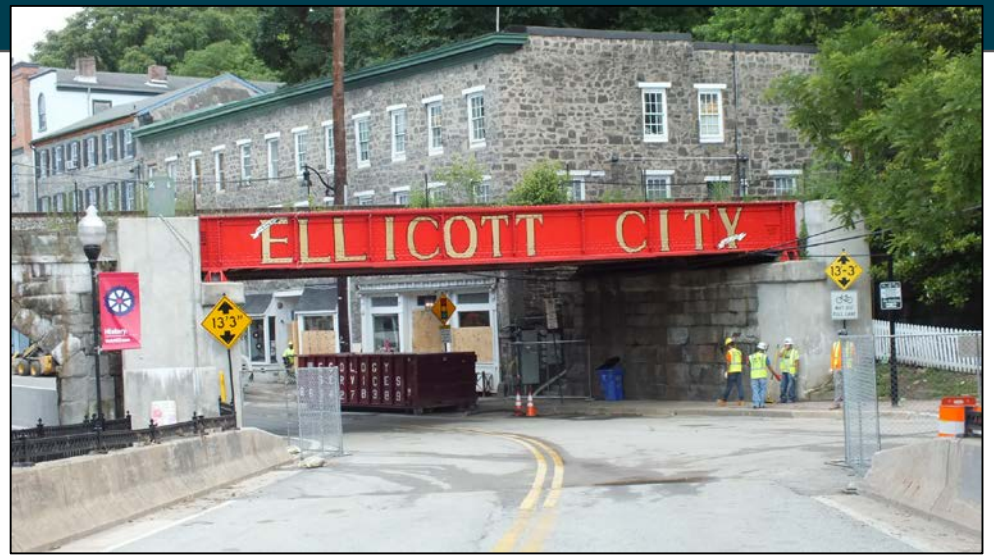
Community Planning

- Long-term Resiliency Plans
- Sustainable Development Strategies
- Smart Growth Strategies
- Comprehensive Plans
- Strategic Plans
- Neighborhood Revitalization Plans
- Community Development Plans
- Downtown Revitalization Plans
- Redevelopment Plans
- Master Plans

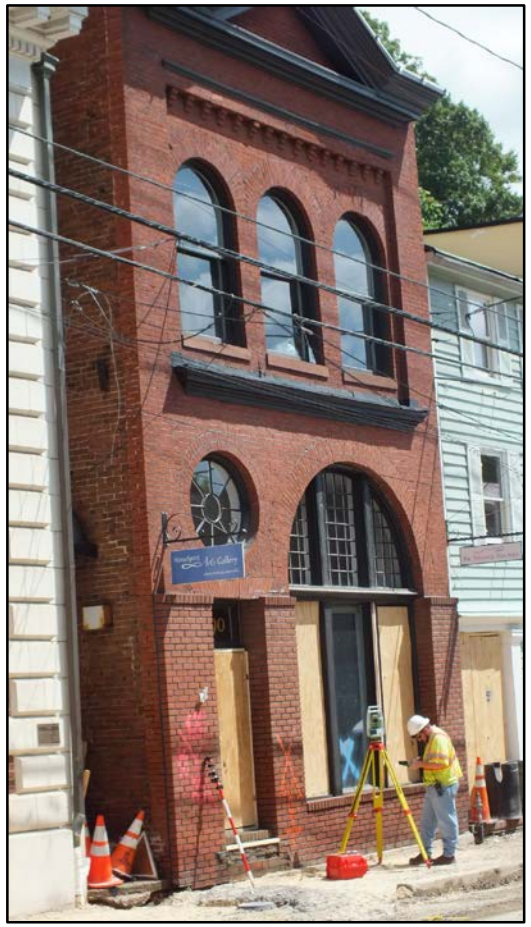




Ellicott City Flood



Historic and Cultural Resources



Questions to Ponder

- What happens to historic properties that cannot be moved or modified to protect them from the next disaster?
- How do we protect these resources?
- Is it better to alter a building's character-defining features and protect it than to risk losing it entirely?
- What are the best options that cause the least harm or alteration?
- Are Mitigation and Preservation both possible?
- Is there a compromise that allows for preserving and protecting?

Original Ellicott City Courthouse – Collapsed & Completely Destroyed in the May 2018 Flood

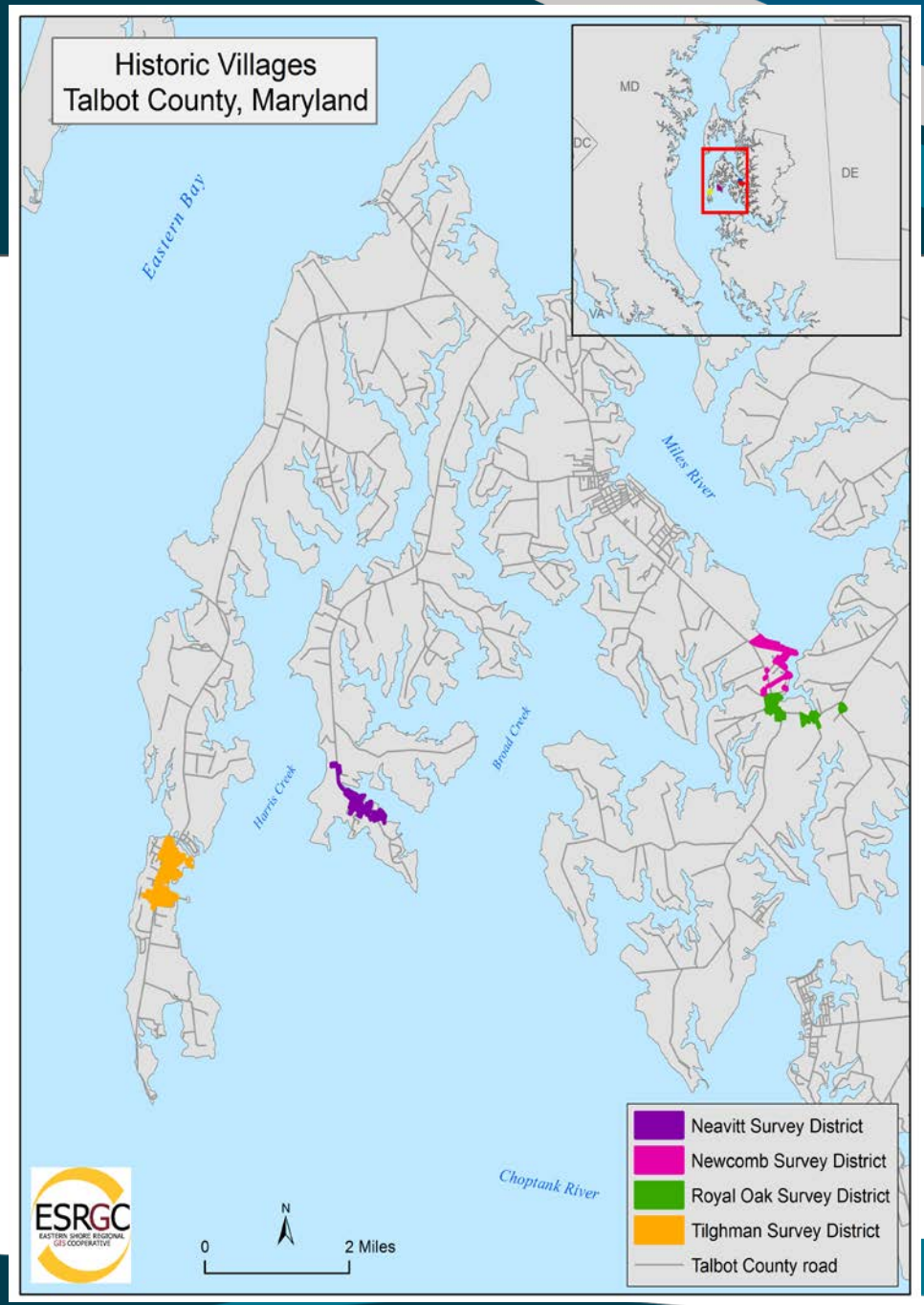
Case Study 1: Talbot County, Maryland

Villages:

- Neavitt
- Newcomb
- Royal Oak
- Tilghman

Focus areas:

- Sea Level Rise
- Flood Occurrence Intervals



Case Study 2: Commonwealth of Pennsylvania

Counties:

- Bedford
- Cameron
- Monroe
- Philadelphia

Focus areas:

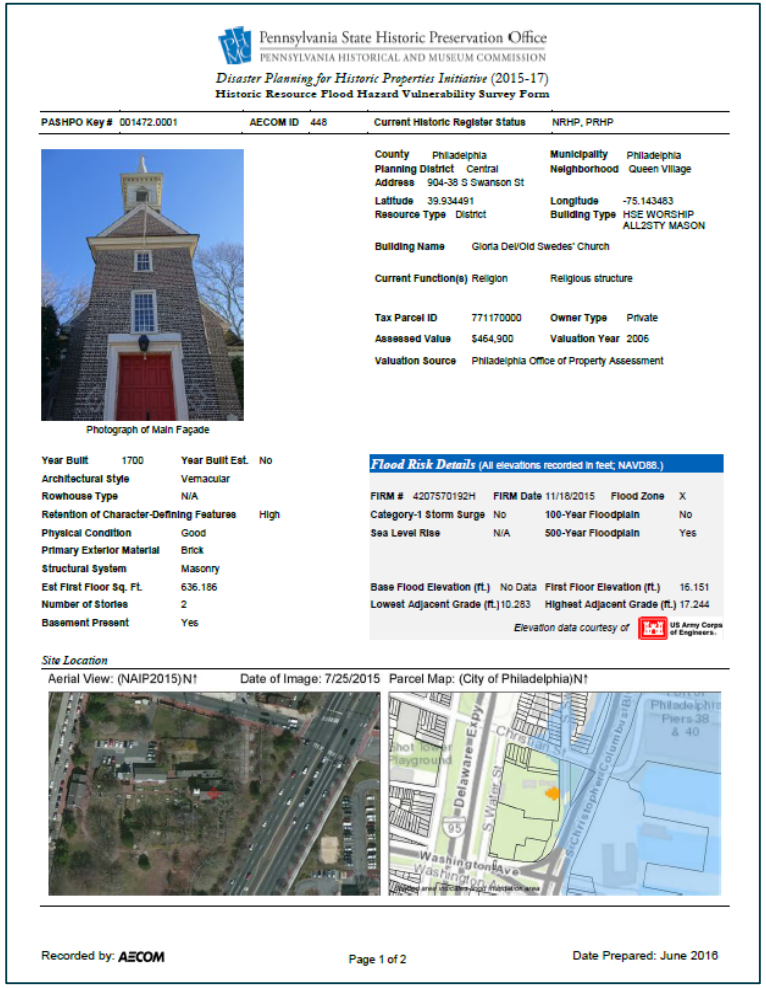
- Flooding
- Wind events
- Winter Storms
- Hurricane/ Tropical Storms

Background

Phase I

- Purpose
- Accomplishments
- Funding

**All Phase 1 forms, photos, and activities completed by *AECOM* for *PA SHPO* (2015) – Disaster Planning for Historic Properties – Phase I



Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
Disaster Planning for Historic Properties Initiative (2015-17)
Historic Resource Flood Hazard Vulnerability Survey Form

PASHPO Key # 001472.0001 | AECOM ID 448 | Current Historic Register Status NRHP, PRHP

Photograph of Main Façade

County Philadelphia | Municipality Philadelphia
Planning District Central | Neighborhood Queen Village
Address 904-38 S Swanson St
Latitude 39.934491 | Longitude -75.143483
Resource Type District | Building Type HSE WORSHIP ALL2STY MASON
Building Name Gloria Dei/Old Swedes' Church
Current Function(s) Religion | Religious structure
Tax Parcel ID 771170000 | Owner Type Private
Assessed Value $464,900 | Valuation Year 2006
Valuation Source Philadelphia Office of Property Assessment

Year Built 1700 | Year Built Est. No
Architectural Style Vernacular
Rowhouse Type N/A
Retention of Character-Defining Features High
Physical Condition Good
Primary Exterior Material Brick
Structural System Masonry
Est First Floor Sq. Ft. 636.186
Number of Stories 2
Basement Present Yes

Flood Risk Details (All elevations recorded in feet; NAVD88.)

FIRM # 4207570192H | FIRM Date 11/18/2015 | Flood Zone X
Category-1 Storm Surge No | 100-Year Floodplain No
Sea Level Rise N/A | 500-Year Floodplain Yes
Base Flood Elevation (ft.) No Data | First Floor Elevation (ft.) 16.151
Lowest Adjacent Grade (ft.) 10.283 | Highest Adjacent Grade (ft.) 17.244
Elevation data courtesy of US Army Corps of Engineers.

Site Location

Aerial View: (NAIP2015)N↑ | Date of Image: 7/25/2015 | Parcel Map: (City of Philadelphia)N↑

Recorded by: AECOM | Page 1 of 2 | Date Prepared: June 2016

**Phase 1 Historic Resources Flood Hazard Vulnerability Form and Phase 1 photos by *AECOM* for *PA SHPO (2015)*

Key Players

County/City Government Staff

- Office of Emergency Management
- Planning and Zoning
- Historical Commissions
- GIS Offices

Consultants

- Vision Planning and Consulting
- Architectural Historians
- Indiana University of Pennsylvania
- Salisbury University

SHPO Offices

- PA SHPO
- Maryland Historic Trust (MHT)

Communities

- General Public
- Stakeholder Groups

Agencies

- National Park Service
- Pennsylvania Emergency Management Agency
- Maryland Emergency Management Agency

Disaster Planning Process for Historic Properties

- Step 1: Perform Engagement and Outreach Efforts
- Step 2: Understand the County Historic Context
- Step 3: Perform Flood Risk Analysis
- Step 4: Perform Building Survey/Architectural Analysis
- Step 5: Develop Preservation-based Hazard Mitigation Actions

**All Phase 1 photos by *AECOM* for *PA SHPO (2015)*

Step 1: Public Engagement Strategy

Audience Tiers:

- Tier 1: Government agencies staff - Planning and Zoning, Emergency Services, etc., and elected officials (Mayor, City Council)
- Tier 2: Organized/affiliated Groups - Homeowner's associations, chambers of commerce, civic membership groups, ad hoc committees, fraternal organizations, senior groups, social clubs, etc.
- Tier 3: Citizens - General public (not in any organized group)

Media Resources

- Facebook, Twitter, Blog,
- Email
- Newspaper, radio, and television

Step 2: Historic Context

Where are the oldest settlements located?

How does water help trade and industry?

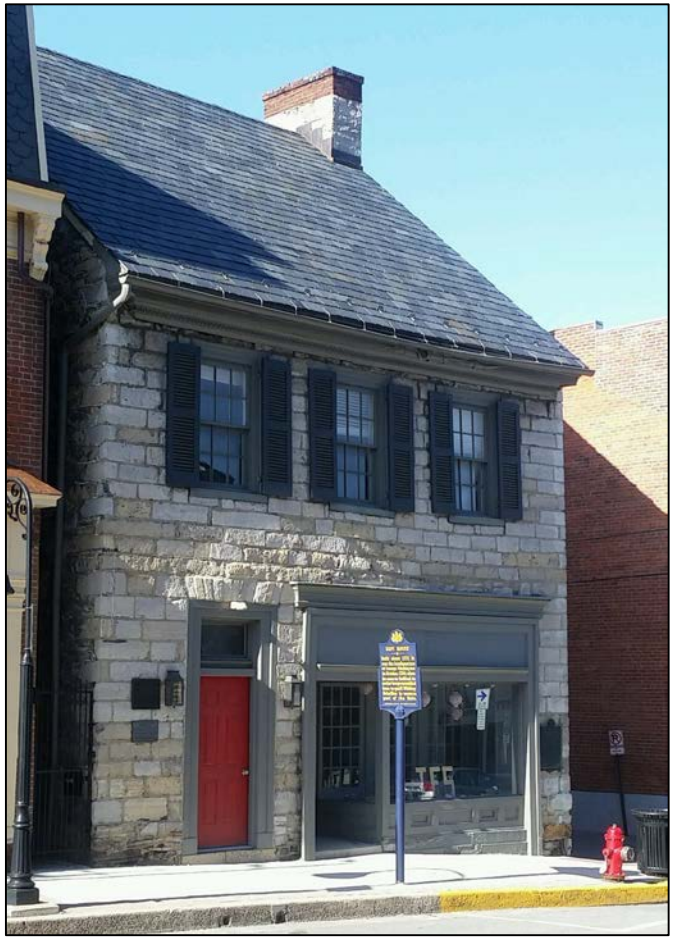
What about flooding?

Thomas Holme's Map of the Improved Part of the Province of Pennsylvania, 1695

18th Century

Nawgels Mill - Bedford County

**Mill photo courtesy of *AECOM* for *PA SHPO* (2015)



Espy House - Bedford County

19th Century

Coke Oven – Cameron County

Jackson Mill – Bedford County

Pump House - Philadelphia

**All Phase 1 photos courtesy of *AECOM* for *PA SHPO* (2015)

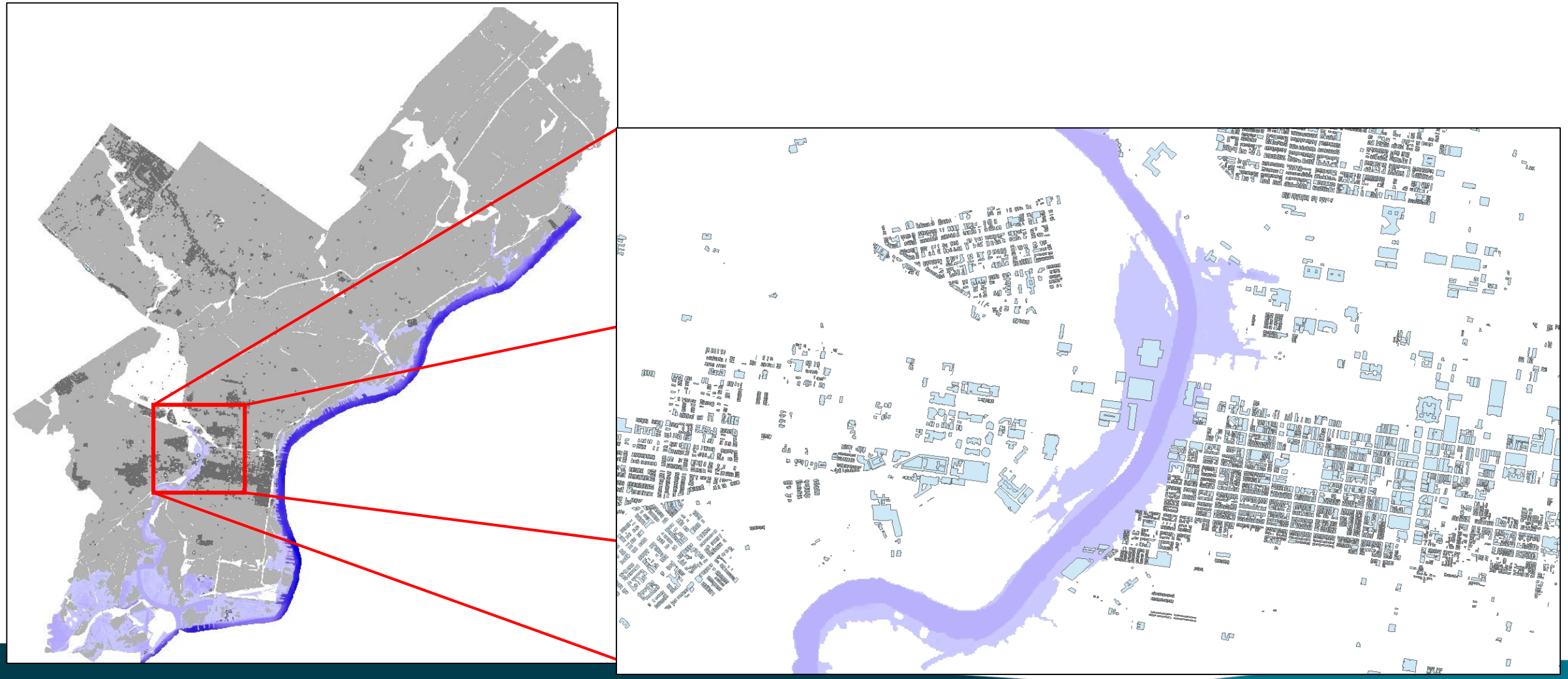
Early 20th Century

Shawnee Inn (Historic Name is Buckwood Inn) – Monroe County

Sylvania Complex – Cameron County

**All Phase 1 photos courtesy of *AECOM* for *PA SHPO* (2015)

Flood Risk Analysis - Determination of Historically-Significant Structures in the 100-Year Floodplain



Flood Risk Analysis

**Base photo courtesy of *AECOM* for *PA SHPO* (2015)

Maximum Flood Depth

Methodology

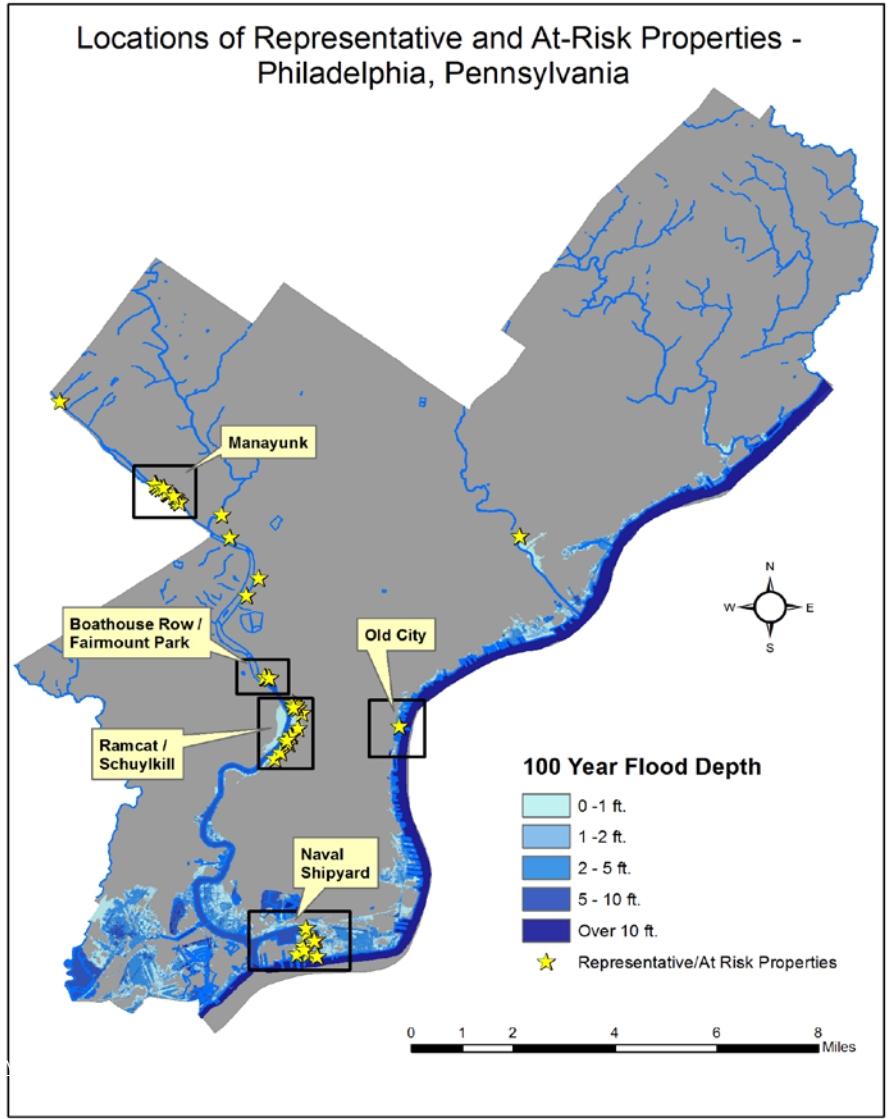
- Flooding of buildings' first finished floors established by subtracting recorded foundation heights from maximum flood depths.

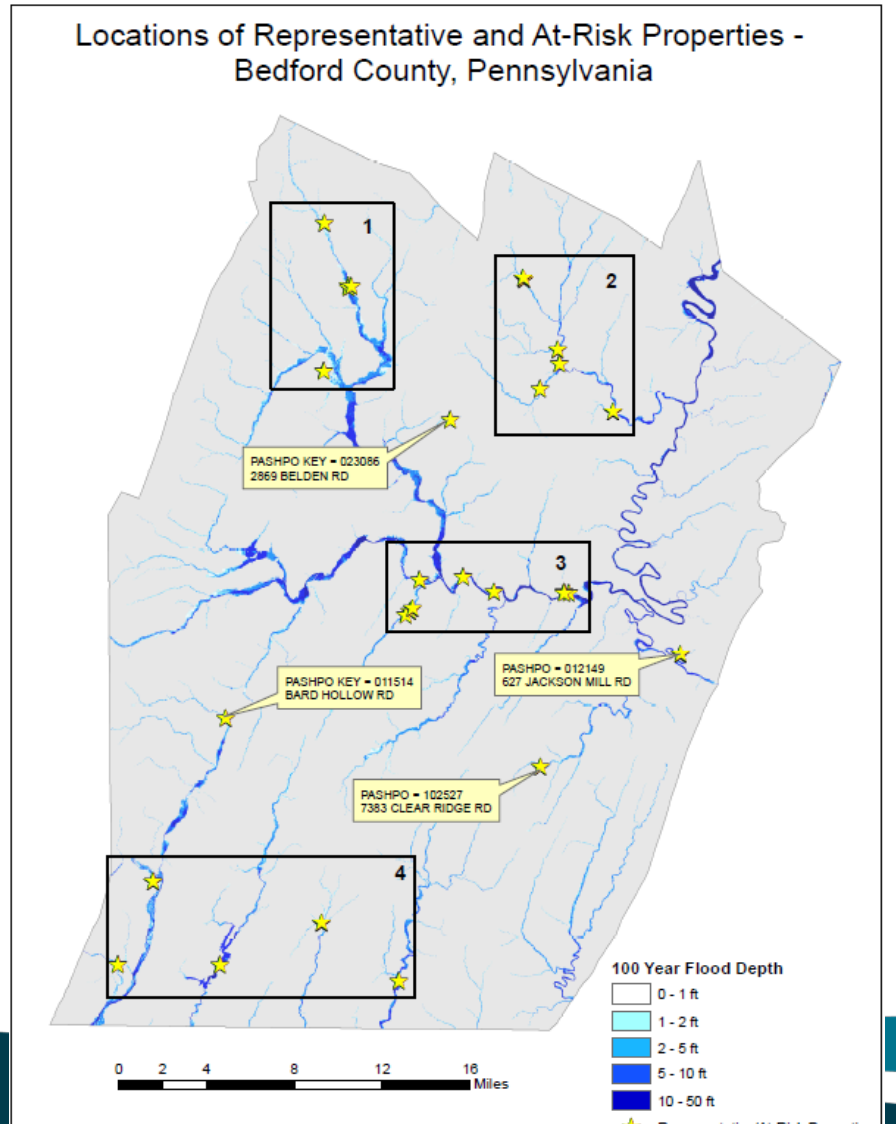
  (First Floor Elevation – Base Flood Elevation = Estimated Flood Depth)

- Land elevations were adjusted using USACE SLC values to simulate forecast changes to base water levels for the 2050 and 2100 scenarios.*

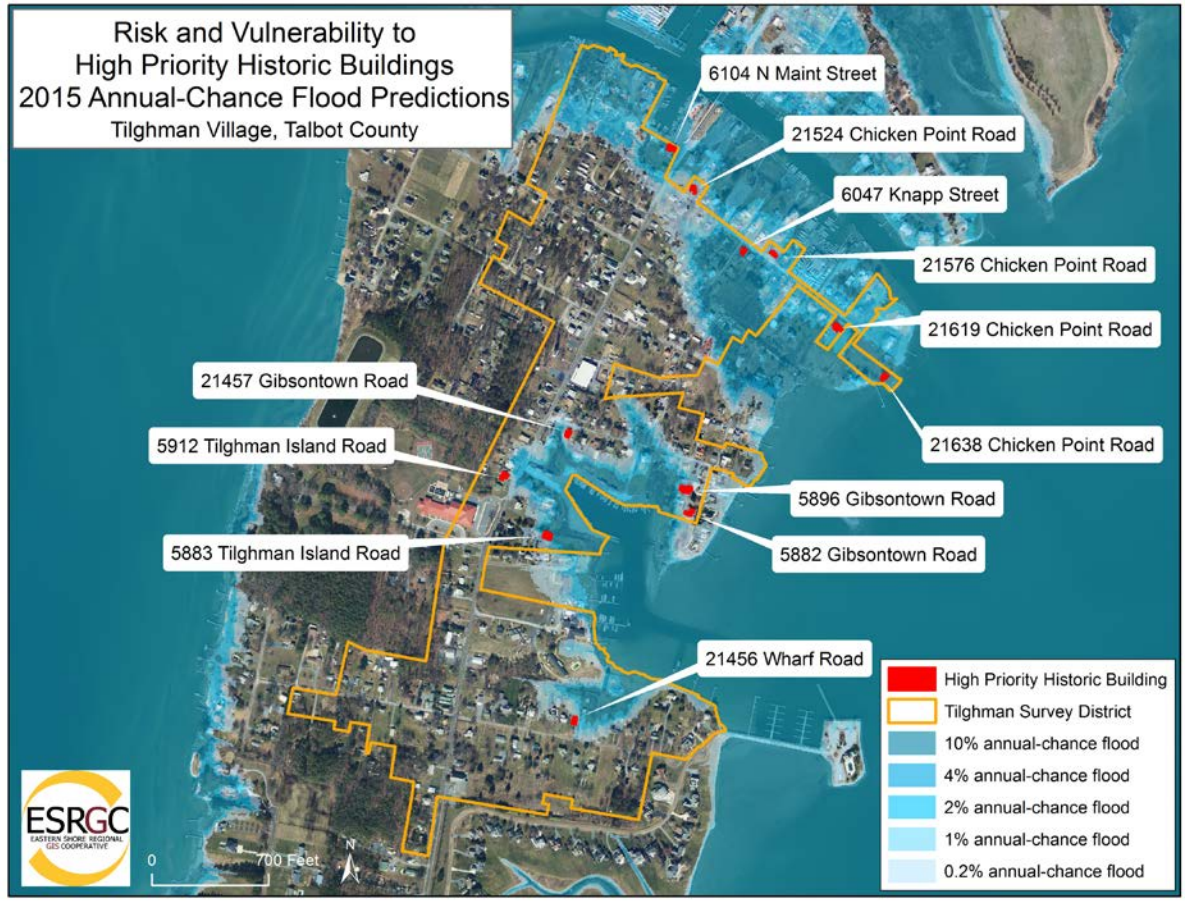
*For Talbot County

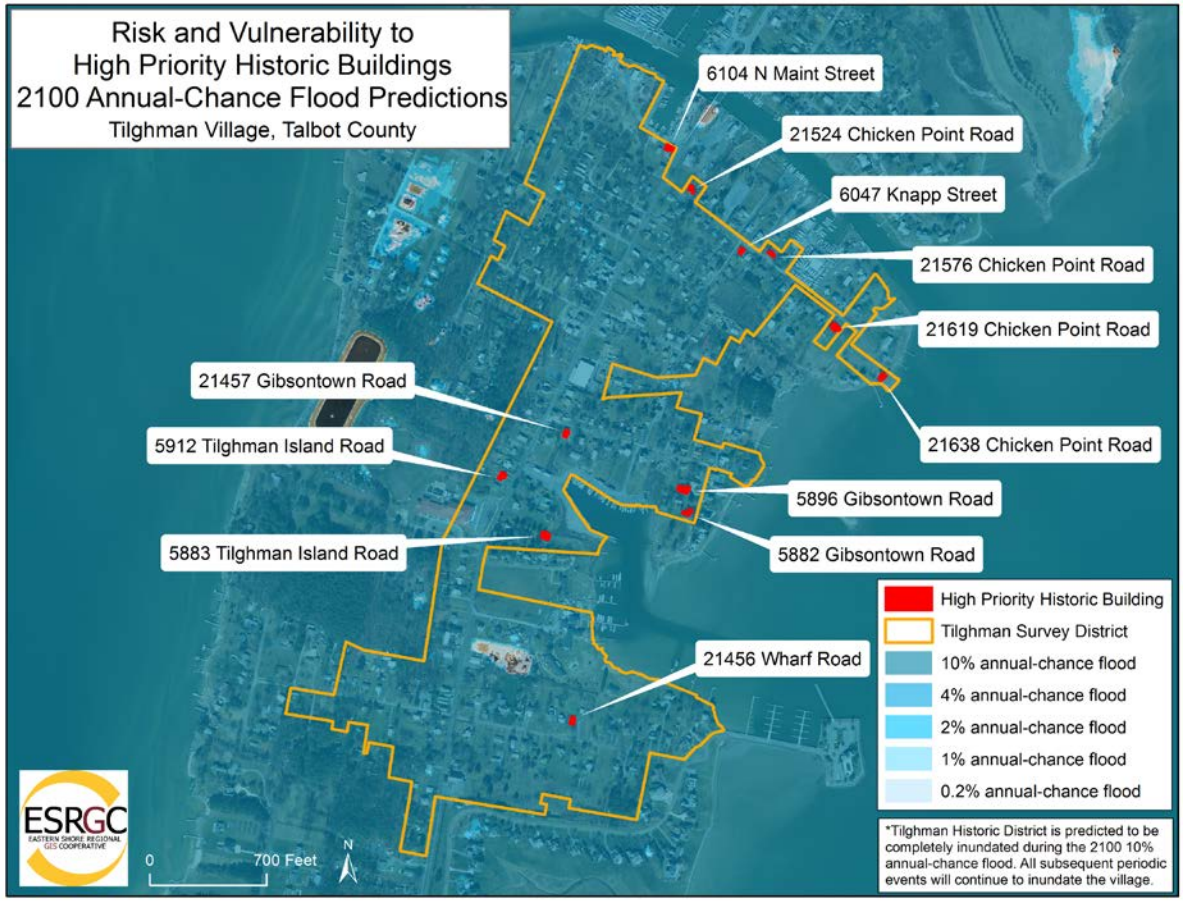
Flood Vulnerability



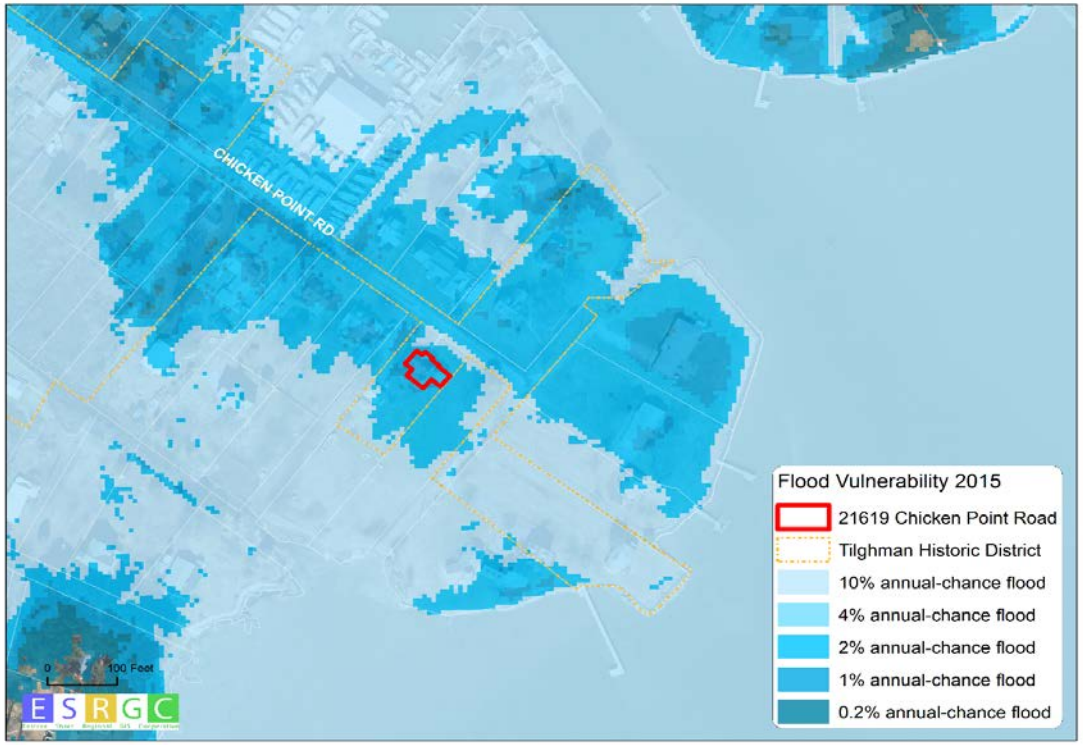


Flood Vulnerability (Talbot County)





Flood Vulnerability



2015	No Event	1% Annual-Chance Flood	0.2% Annual-Chance Flood
Maximum stillwater depth (feet) at structure's first finished floor*	0.0	0.29	1.19
Building first floor flooding damage rate	0.0	19.17	22.58
Dollar damage experienced	$0	$21,238.14	$25,014.21

2050	No Event	1% Annual-Chance Flood	0.2% Annual-Chance Flood
Maximum stillwater depth (feet) at structure's first finished floor*	0.0	2.4	3.3
Building first floor flooding damage rate	0.0	26.21	28.6
Dollar damage experienced	$0	$29,036.25	$31,693.23

Step 4: Building Survey and Architectural Analysis

**All photos by *PA SHPO* (2018)

Goal: Identify mitigation measures for a representative sampling of resources that could then be applied to similar properties as might be needed in response to damage caused by flooding.

Property Selection Criteria:

1. Location
2. Vulnerability
3. Structure Type/Typology
4. Specific building styles or components/characteristics
5. Representative of important historic theme

Building Styles

Log Construction

Beaux Arts

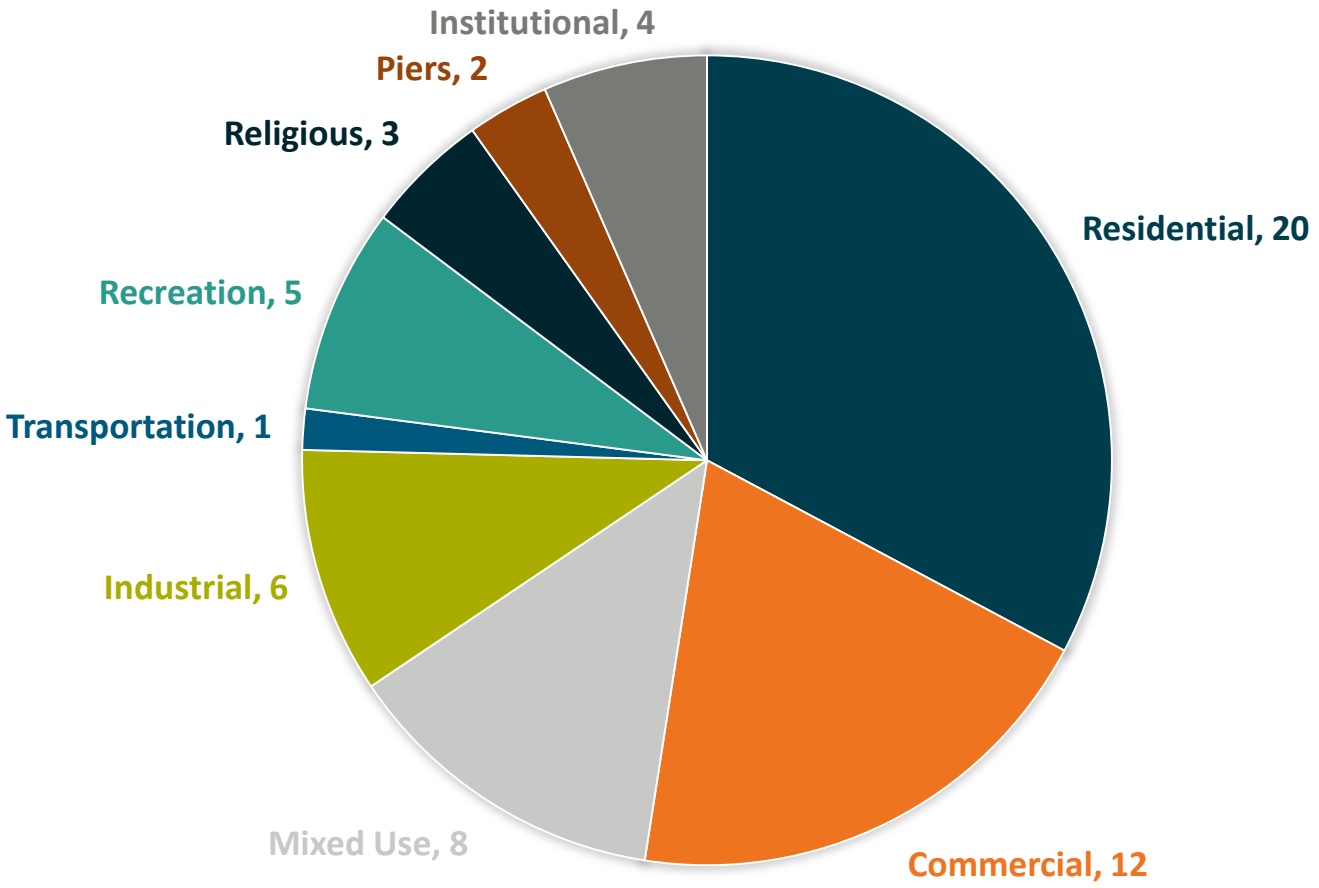
Second Empire

Vernacular

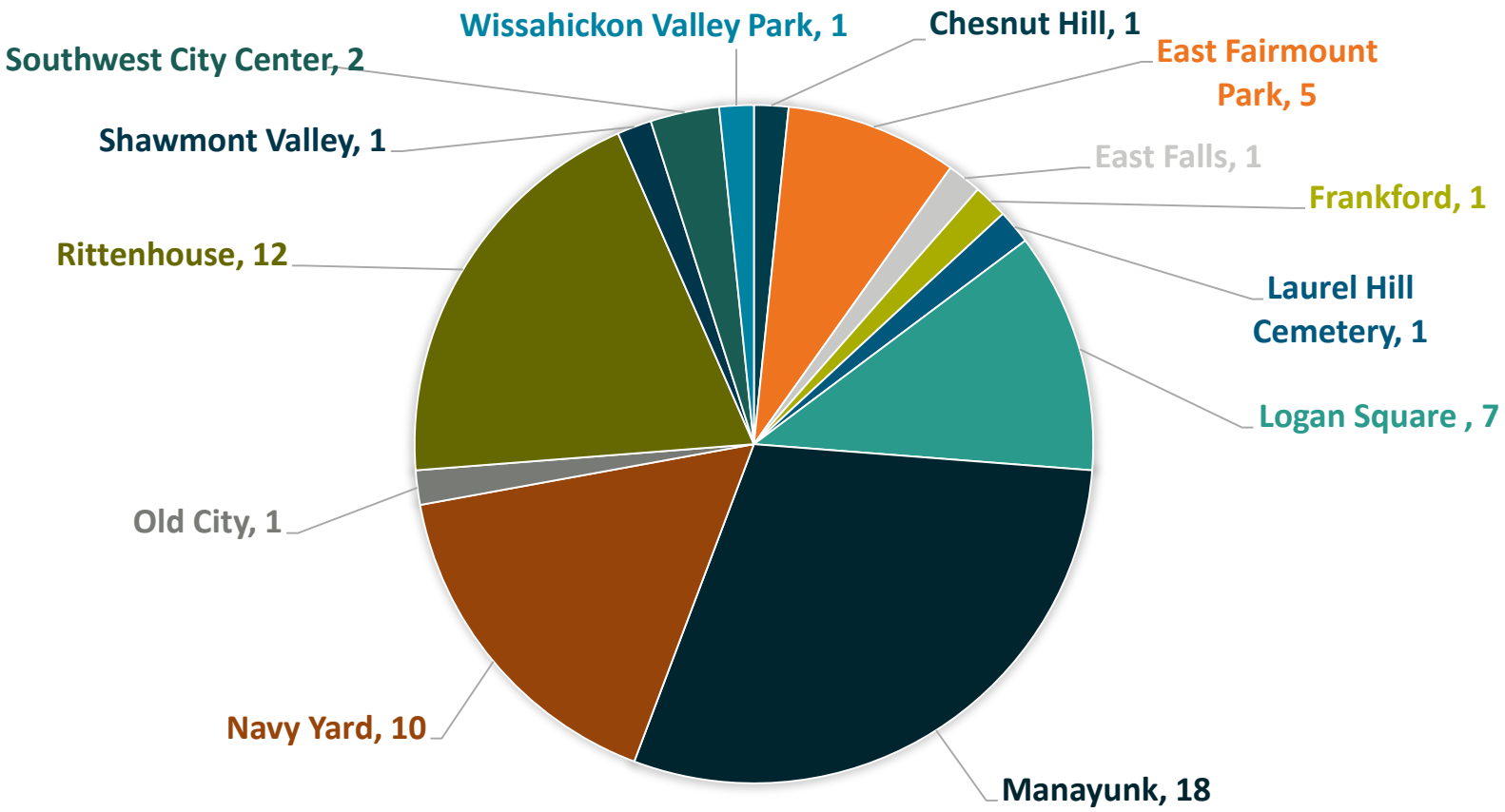
- Federal
- Greek Revival
- Italianate
- Late Victorian
- Georgian Revival
- Colonial Revival
- Tudor Revival
- Beaux Arts
- Shingle
- Classical Revival
- Bungalow
- Art Deco
- Second Empire
- Log Construction
- Vernacular
- Romanesque Revival

**All Phase 1 photos courtesy of *AECOM* for *PA SHPO* (2015)

Philadelphia Property Selections – by building type



Philadelphia Property Selections – by neighborhood



Step 5: Mitigation Strategy Development

Historic Resource Goals

1. Protect each community's historic character and economic vitality from flooding impacts by minimizing loss to structures and buildings, cost to stakeholders, and impact on the economy.

2. Ensure flood mitigation goals for historic properties are consistent with other Philadelphia plans by encouraging integration between local hazard mitigation plans and the historic and cultural resources component plans.

3. Encourage Philadelphia and its communities to become more proactive and less reactive regarding the preservation of historic resources in hazard areas.

**All Phase 1 photos courtesy of *AECOM* for *PA SHPO* (2015)

Plan Integration

Plans Reviewed

Two Plans and Ordinances reviewed for integration.

- Comprehensive Plan
- Floodplain Ordinance
- Historic Preservation Plan (if available)

Sample recommendations:

1. Provide information to City/County residents regarding disaster planning and management, including owners of historic properties that are vulnerable to hazards.
2. Limit any new excavations next to historic foundations to avoid undermining the structural stability of the building or adjacent historic buildings.
3. Retrofit housing to improve energy efficiency while ensuring any alterations to historic houses are consistent with the Secretary of the Interior's Historic Preservation Guidelines.

Sample Mitigation Actions

Temporary

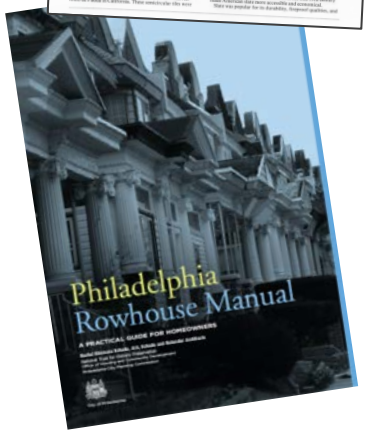
- Pre-fit closures
- Sandbagging
- Temporary floodwalls

Permanent

- Building elevation
- Utility elevation
- Dry/Wet floodproofing

Mitigation Actions:
Historic Preservation Technical Resources

Federal and State Guidelines & Resources

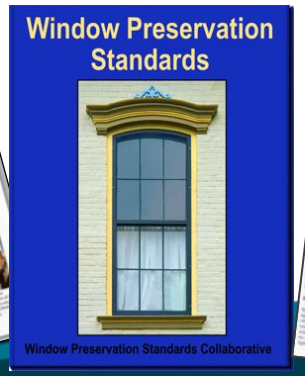


Pennsylvania Historical & Museum Commission Resources

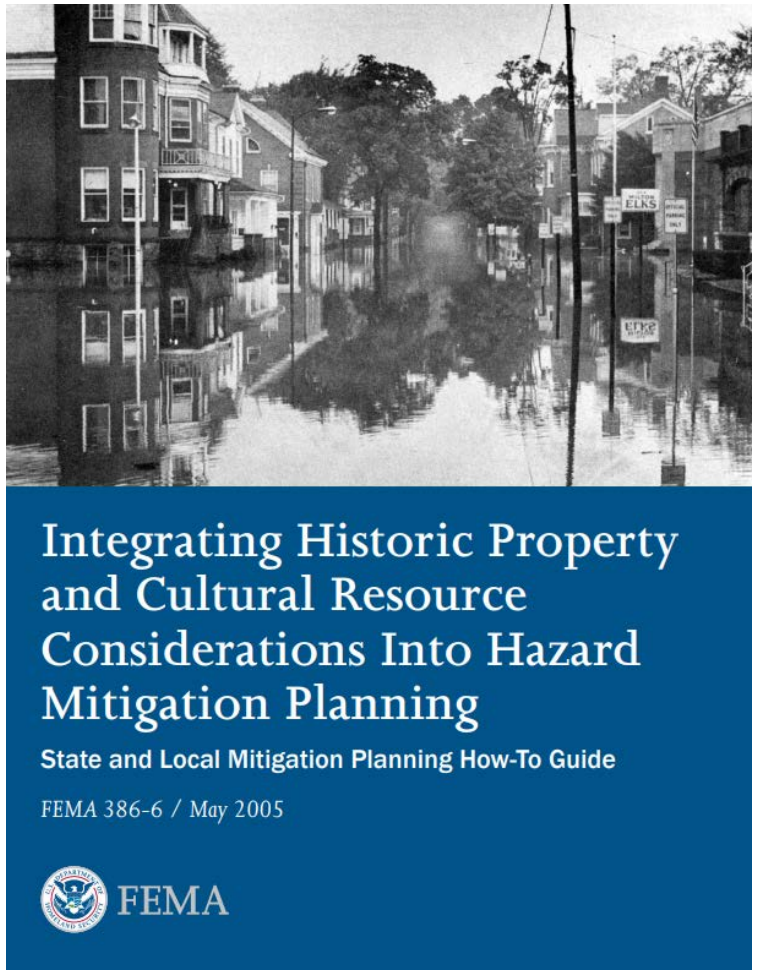
- PHMC disaster planning resources
- Consultation with PHMC Staff
- Historic District guides
- Philadelphia Rowhouse Manual: https://www.phila.gov/CityPlanning/resources/Publications/RowhouseManual_Final.pdf
- Consultation with PHC Staff
- Other Resources: http://www.phila.gov/historical/aboutus/Pages/Resources.aspx

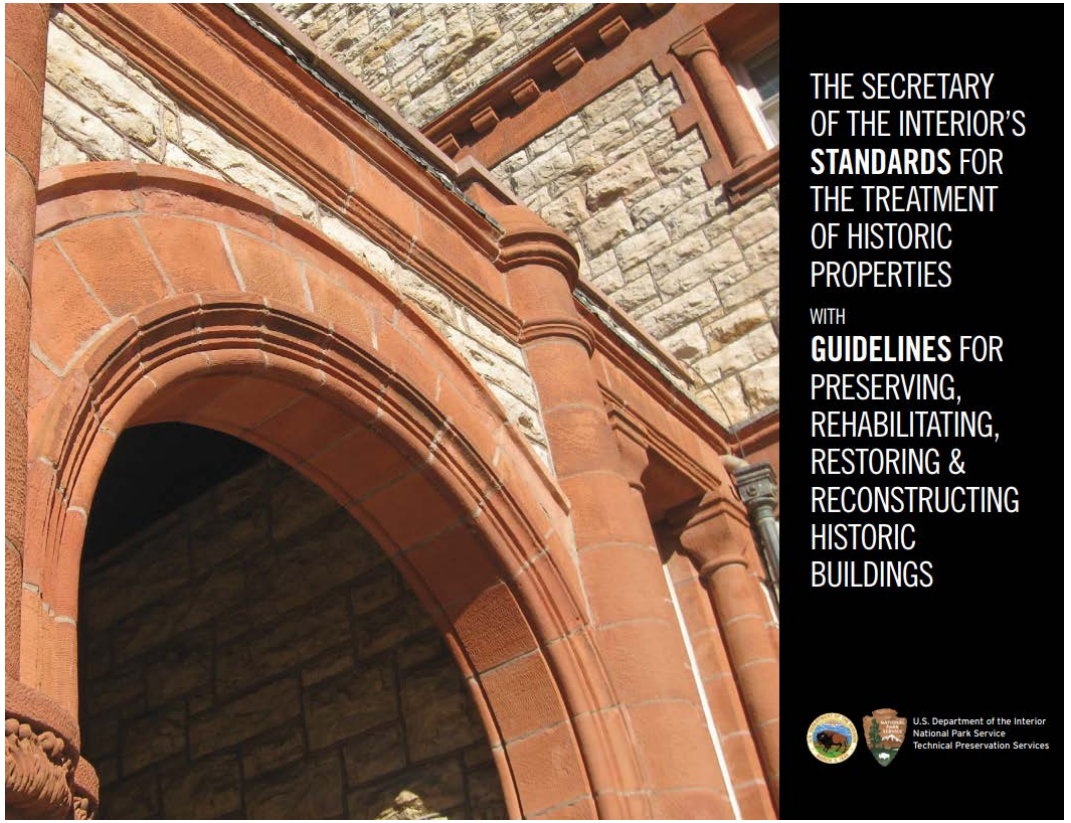
National Park Service and Federal Resources

- National Park Service Preservation Briefs
- NPS Preservation Tech Notes
- Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings
- Preservation Alliance for Greater Philadelphia
- Preservation Pennsylvania
- National Trust for Historic Preservation



Mitigation Actions: Historic Preservation Technical Resources





Questions to Ponder

- What happens to historic properties that cannot be moved or modified to protect them from the next disaster?

  A plan for preservation-based mitigation solutions should be developed.

- How do we protect these resources?

  Through dedicated planning efforts, and preservation-sensitive mitigation actions.

- Are Mitigation and Preservation both possible?

  Yes, with the right amount of planning and the involvement of specialists and professionals.

Questions to Ponder

- Is there a compromise that allows for preserving and protecting?

  Yes, if the recommended mitigation actions do not disturb the historic integrity of the resource.

- Is it better to alter a building's character-defining features and protect it than to risk losing it entirely?

  This is a question every property owner will need to ask themselves.

- What are the best options that cause the least harm or alteration?

  Temporary actions, and actions that do not touch the resource are always preferred. However each resource needs to evaluated on a case-by-case basis.

Q&A

At VPC

We...

Identify sound approaches to address future vulnerabilities.

Develop tailored public outreach campaigns.

Engage and educate community stakeholders.

Prepare emergency management related materials.

Provide technical assistance to communities.

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