

Disaster Planning for Historic Properties

Integrating Hazard Mitigation and
Historic Preservation in Pennsylvania



2015 Annual Conference

Westin Convention Center

1000 Penn Avenue, Pittsburgh

Sunday, October 18, 2015



STATE HISTORIC PRESERVATION OFFICE

The role of the SHPO is to identify and protect the architectural and archaeological resources of Pennsylvania. Our responsibility is to work with individuals, communities, local governments, and state and federal agencies to educate Pennsylvanians about our heritage and its value, to build better communities through preservation tools and strategies, to provide strong leadership, both individually and through partnerships, and to ensure the preservation of Pennsylvania's heritage.



Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE

Mission Statement

“To maintain our sense of place and quality of life, we must commit ourselves to making historic and cultural preservation an integral, indispensable part of living and working here. Lancaster County’s greatest assets are its historic buildings, landscapes, and cultural traditions – without them, the county loses its identity, and a part of America’s heritage goes with it.”

“Cultural and historical resources are an integral part of the overall quality of life in the county.”

“Historic preservation is an important element in the planning process because it ensures the legacy of not only the county’s but the nation’s, history for present and future generations. Preserving our historic resources is crucial to sustaining the quality of life that county residents enjoy.”

‘Historic resources are a vital part of the county’s character, contribute to the county’s appeal as a tourism destination, and thus play an important role in the economy.’

‘Lehigh and Northampton counties have a wealth of historic buildings, structures, sites and districts that...add to the beauty and attractiveness of the region, increase understanding and appreciation of our heritage, and improve the quality of life. Many significant historical features are of value to the local economy because they are tourist attractions.’

“As many of Huntingdon County’s communities are settled along rivers and creeks, flooding continues to be a threat to these historic towns, settlements, and other archaeological resources. Hazard mitigation planning should integrate these historic resources in the regular plan and plan updates.”



Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE

Town of Bloomsburg, Columbia County
Damaged by Tropical Storm Lee Flooding, 2011

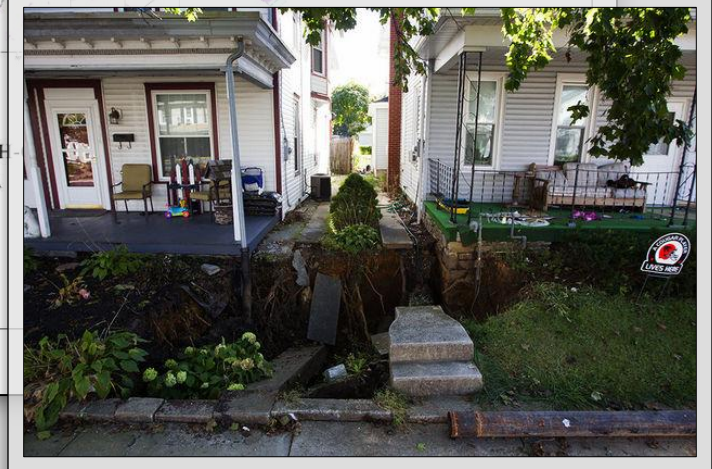
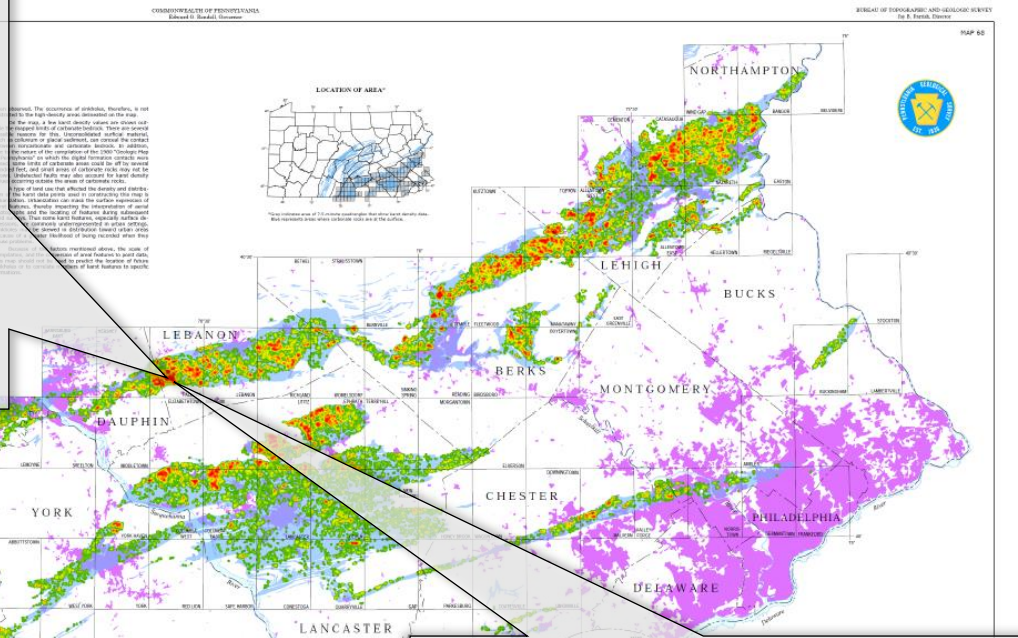





Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE

Philip Seidel Forge, Lower Alsace Township, Berks County
Destroyed by Fire, 2015



A satellite image of Hurricane Sandy, showing a large, swirling cloud system over the Atlantic Ocean. The hurricane's eye is visible in the upper right quadrant. The surrounding clouds are dense and white, contrasting with the dark blue of the ocean. The landmasses of North and Central America are visible in shades of green and brown.

Hurricane Sandy

October 29, 2012



Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE



Disaster Relief Appropriations Act of 2013

U.S. Department of the Interior, National Park Service

Emergency Supplemental Historic Preservation Fund

\$1.5 million Grant Awarded to PHMC in 2014 is funding:

Disaster *Recovery* and *Planning* for Historic Properties

- Awarding *subgrants* to private property owners and nonprofit organizations for reimbursing the costs of repairing National Register-eligible or listed historic properties damaged by Hurricane Sandy
- Undertaking municipal and county *hazard mitigation planning* to incorporate and prioritize historic properties
- Developing *model guidance* and hazard mitigation *demonstration projects* related to historic properties
- Providing *training and educational programs* on disaster-related topics



Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE



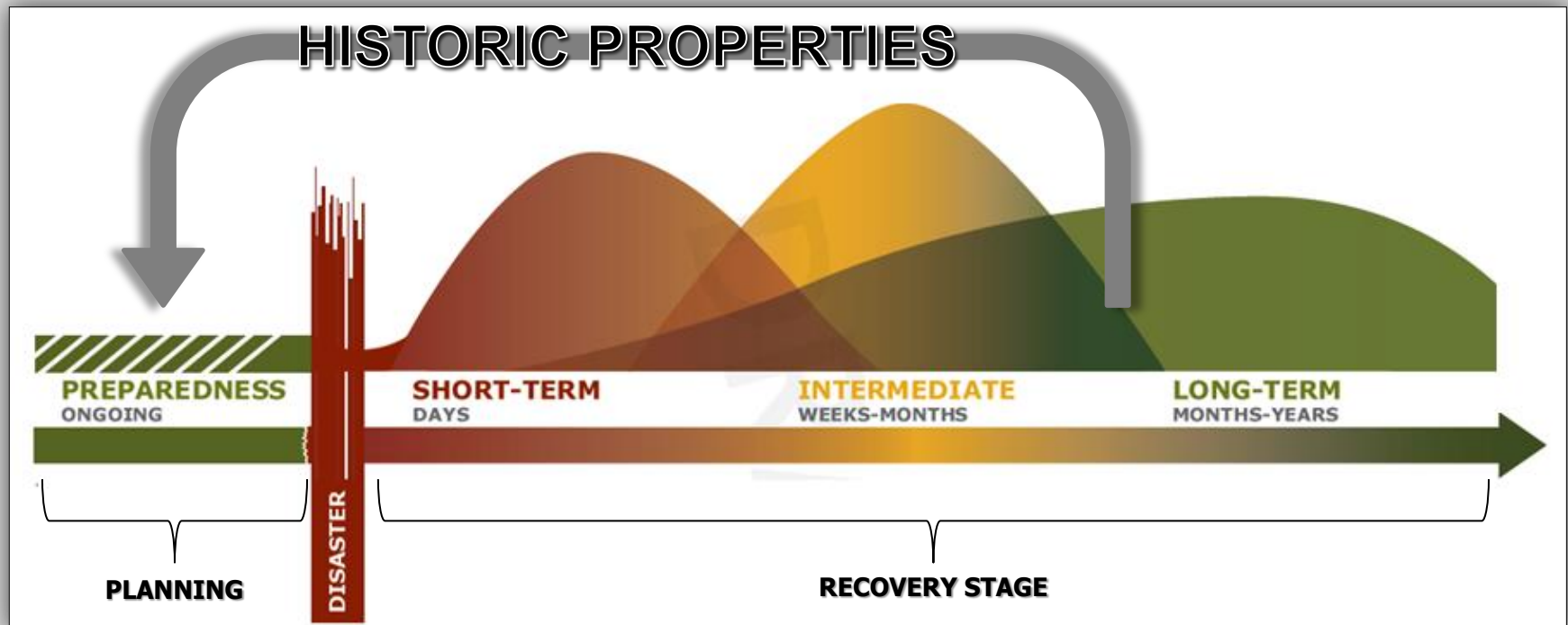
Planning for Future Disasters

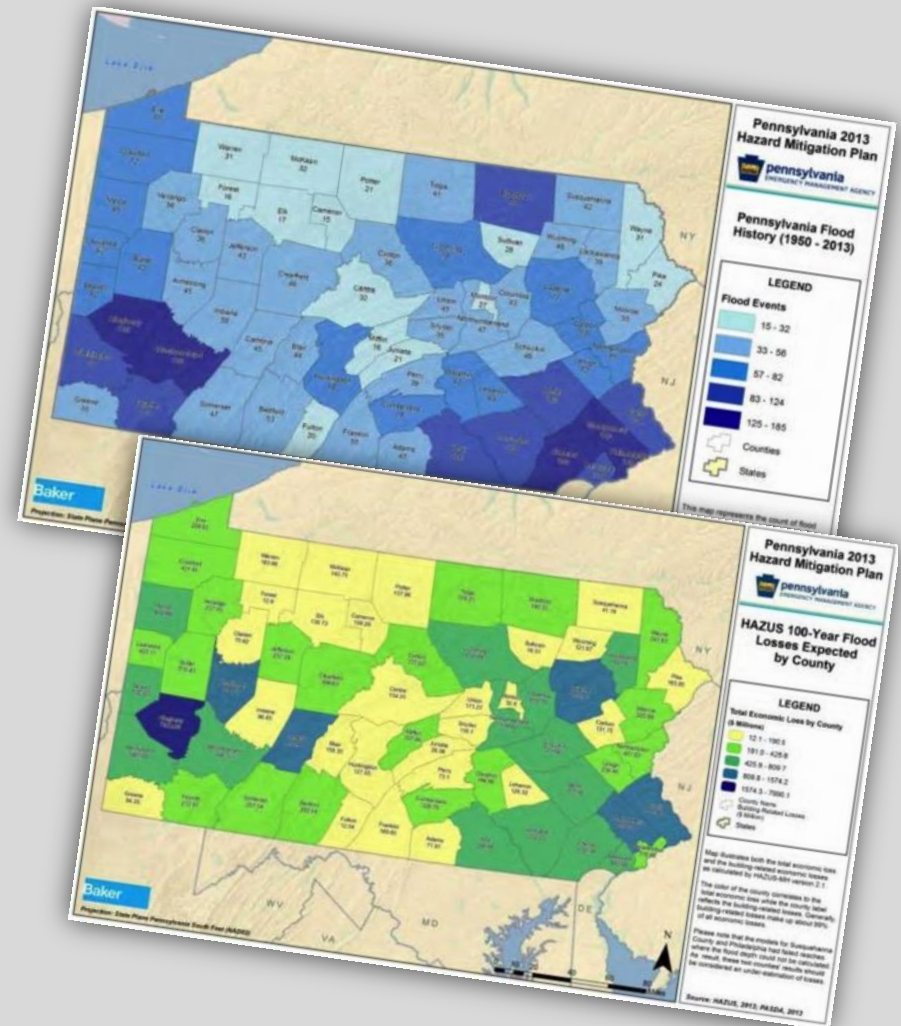


Pennsylvania
Historical & Museum
Commission

® STATE HISTORIC PRESERVATION OFFICE

Prioritizing Historic Properties within the Disaster Cycle





Disaster Mitigation Act of 2000



- Federal legislation amended the Robert T. Stafford Relief and Emergency Assistance Act
- Requires local jurisdictions to have hazard mitigation plans to be eligible for federal assistance following a disaster event
- **Emphasizes public participation** and coordination among state and local agencies
- **Encourages communities to continuously strive to improve their plans and resulting mitigation actions**
- The **integration of historic properties** into comprehensive mitigation planning is **critical to the spirit and intent of DMA 2000**



McConnell's Mill and Covered Bridge
Slippery Rock Township, Lawrence County

Why Prioritize and Plan for Historic Properties?

- They inform citizens of their unique local heritage, their cultural identity, and the origins of their community
- They are the foundations of our communities' built environment and they provide that familiar "sense of place"
- They are very often valuable economic assets and tourism attractions

Constitution of the Commonwealth of Pennsylvania

Article I, §27. The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's ... resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

PHMC | State Historic Preservation Office

Disaster Planning for Historic Properties Initiative

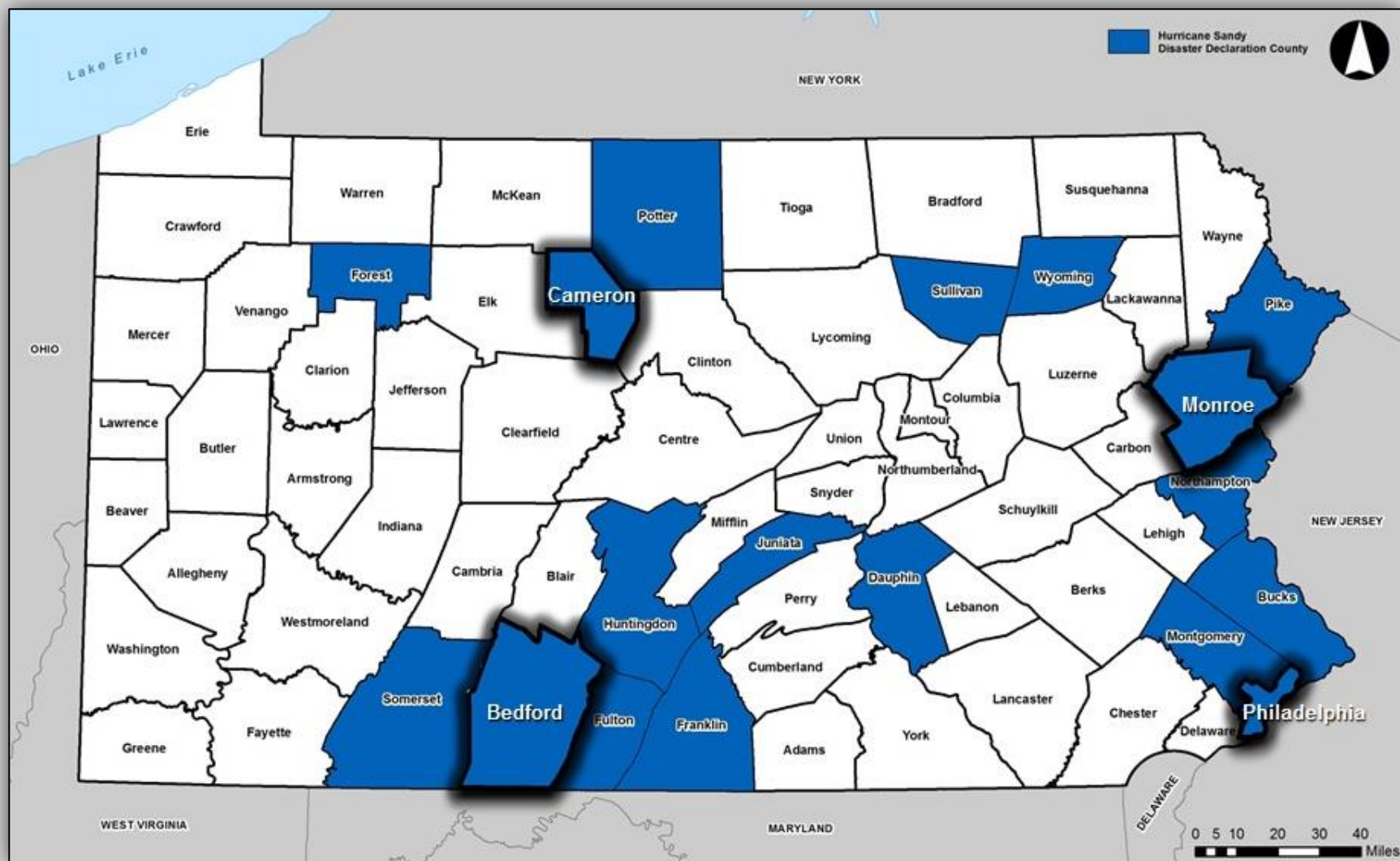
2015-2017

Phase I:

Identifying selected counties' most hazard-prone historic properties through a carefully defined reconnaissance-level survey and recording hazard-specific information for vulnerability assessments

Phase II:

Developing strategies to protect these local historic assets during, and in the aftermath of, future natural disasters and integrating those strategies into select counties' FEMA-approved hazard mitigation plans





Saint Peters Village
Warwick Township, Chester County

“Historic Properties”

For local planning purposes, these may be defined as:

- **Contributing to the community’s character**
 - Ex: Local landmarks, residential neighborhoods
- **Important economic development assets**
 - Ex: Tourism destinations, downtown/village commercial districts, industrial buildings
- **Meeting other local planning goals**
 - Ex: County Comprehensive Plan (Municipalities Planning Code’s “plan for historic preservation” requirement)

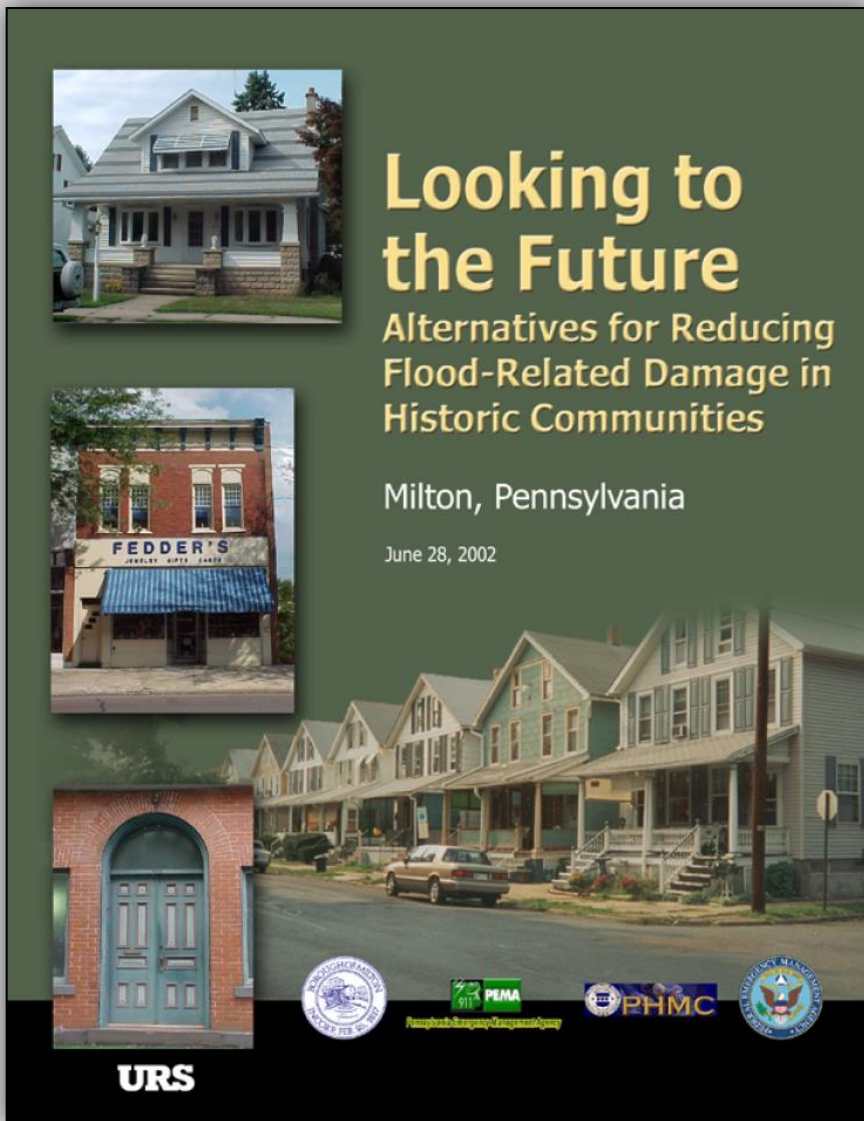


Hans Herr House
West Lampeter Township, Lancaster County

“Historic Properties”

For federal and state law compliance purposes, these are more specifically defined as:

- Eligible for, or listed in, the National Register of Historic Places
- Various types
 - Buildings
 - Structures
 - Objects
 - Sites
 - Districts
- Archaeological sites



Integrating Historic Preservation & Hazard Mitigation: Pennsylvania's Guidance

- Developed a planning process to be used by Milton, Northumberland County, in future flood mitigation projects with the following goals:
 - Use the least intrusive techniques for the most historic buildings
 - Use a variety of techniques for different buildings
 - Eliminate as much risk as possible

- Only focused on flood hazards; not comprehensive in hazard scope
 - Still very relevant and a good model



Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005



Integrating Historic Preservation & Hazard Mitigation: The Federal Guidance

- **State and Local Mitigation Planning How-To Guide (FEMA 386-6)**
 - Published by Federal Emergency Management Agency in 2005
 - Based largely on Pennsylvania's 2002 Guidance *Looking to the Future: Alternatives for Reducing Flood Damage in Historic Communities* (PHMC/PEMA/FEMA/Borough of Milton, 2002)
- **Comprehensive in its scope and covers a variety of hazards beyond flooding**



Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

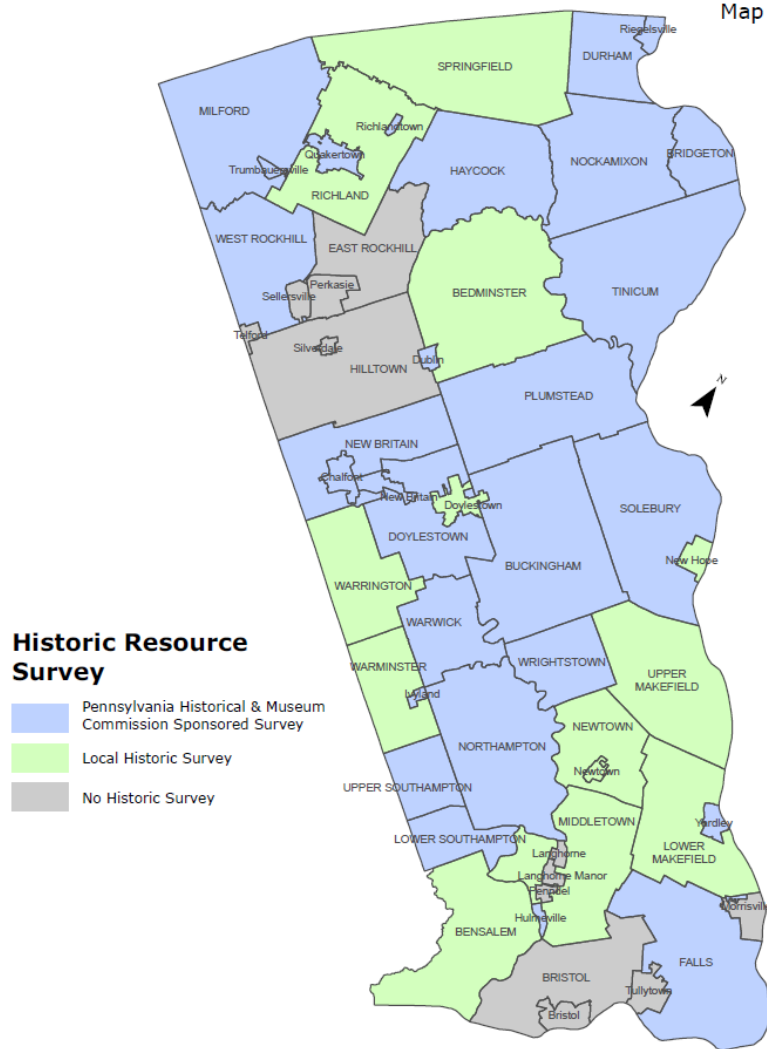
FEMA 386-6 / May 2005



Phase 1: Organize Resources

1. **Assess the level of awareness and support** for protecting your community's historic properties, **and identify resources** for mitigating hazards to historic properties
2. **Build the planning team:** identify and recruit historic preservation experts
3. **Engage the public** during key points in the hazard mitigation planning process

Map 10



Phase 1: Organize Resources

Assess Awareness and Support for Protecting your Community's Historic Properties—and Identify Resources

- What preservation efforts are currently underway in the community, and by whom?
- Does the community have a historic preservation plan or an historic district ordinance?
 - Comprehensive Plan “Historic Preservation Element”
- What are the obstacles to historic property preservation in the community?
- Identify resources (funding opportunities)
 - PHMC Keystone Preservation Grant Program
 - FEMA Pre-Disaster Mitigation Grant Program



Phase 1: Organize Resources

Build a Complete & Balanced Planning Team

- Historic preservation/heritage planners
- Preservation architects
- State, regional, and local historical societies
- Local, State, and Federal agencies that specialize in historic preservation and emergency management
 - PA Historic Preservation Office
 - PEMA
 - FEMA (HM, EHP Divisions)
- Businesses and Development Organizations for Historic Districts
 - “Main Street” organizations
 - Agricultural Preservation organizations
- Academia



Phase 1: Organize Resources

Engage the Public at Key Stages

- At “kick-off” to provide information about the planning process
- To understand what historic properties the community values
- At the conclusion of the risk assessment to report on findings
- During the development of goals and mitigation strategies/actions
- Throughout implementation of the plan



Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

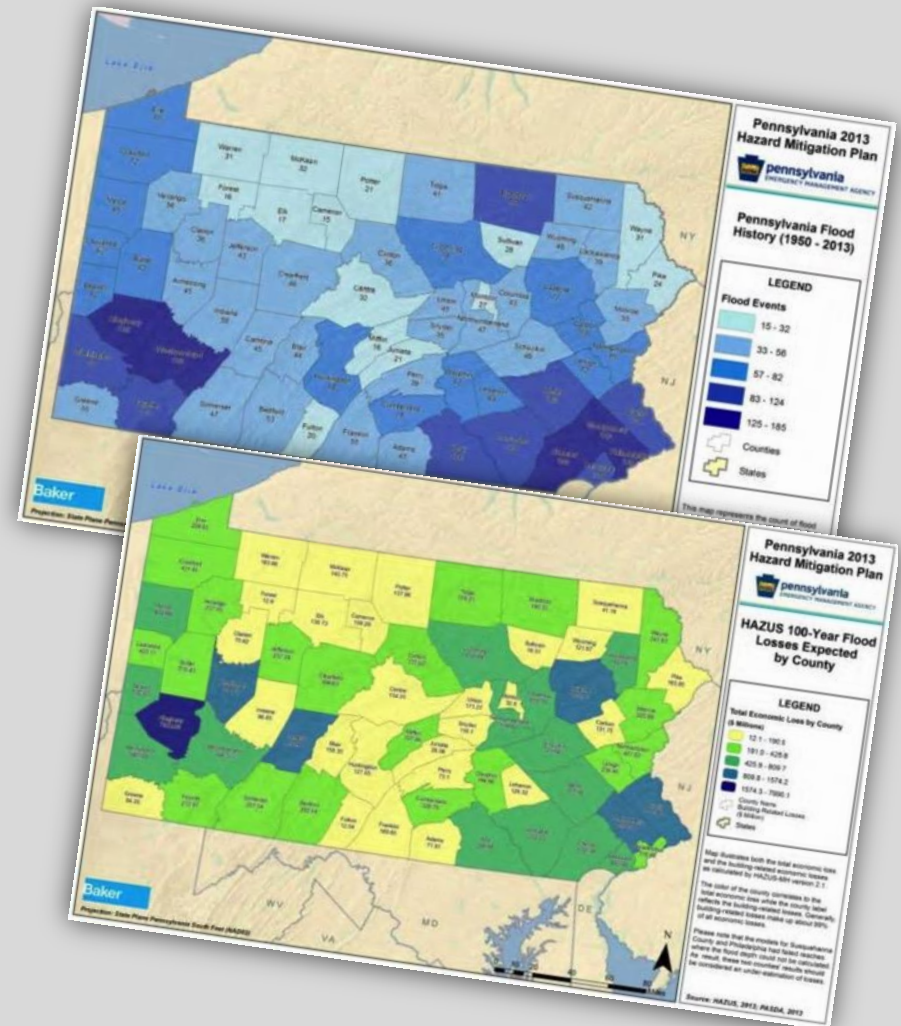
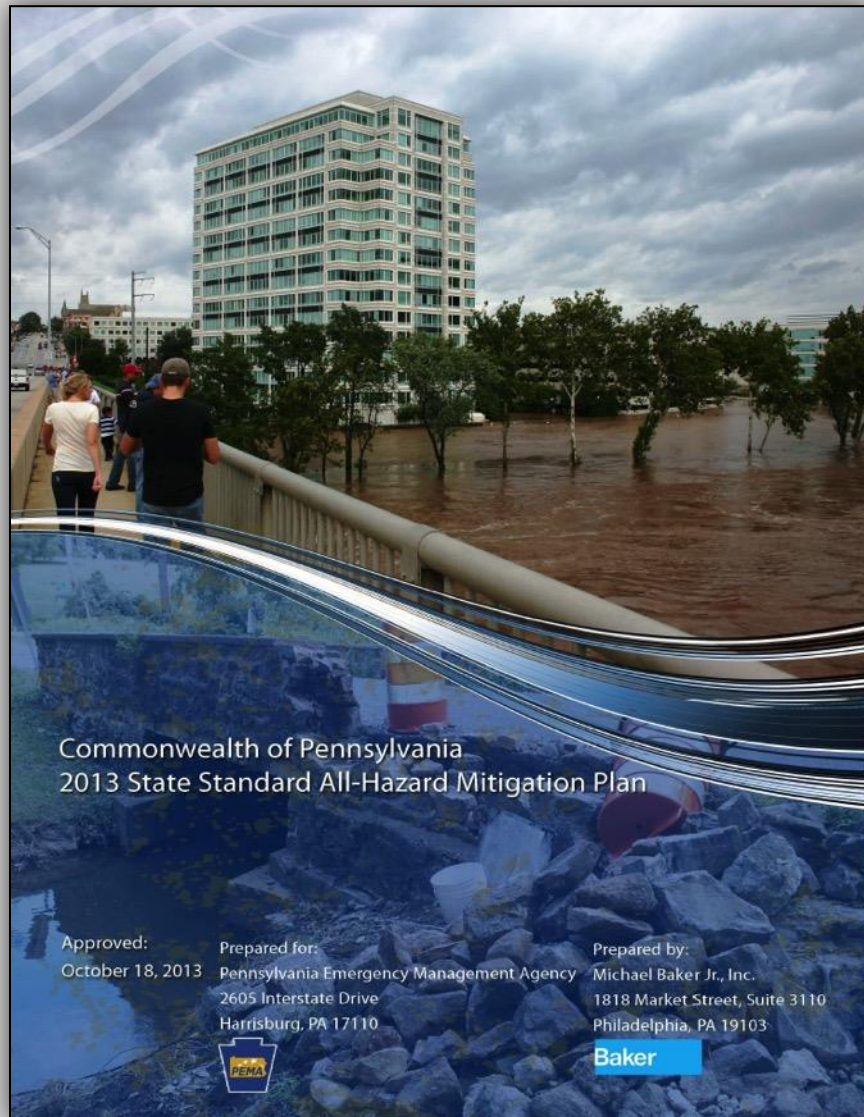
FEMA 386-6 / May 2005



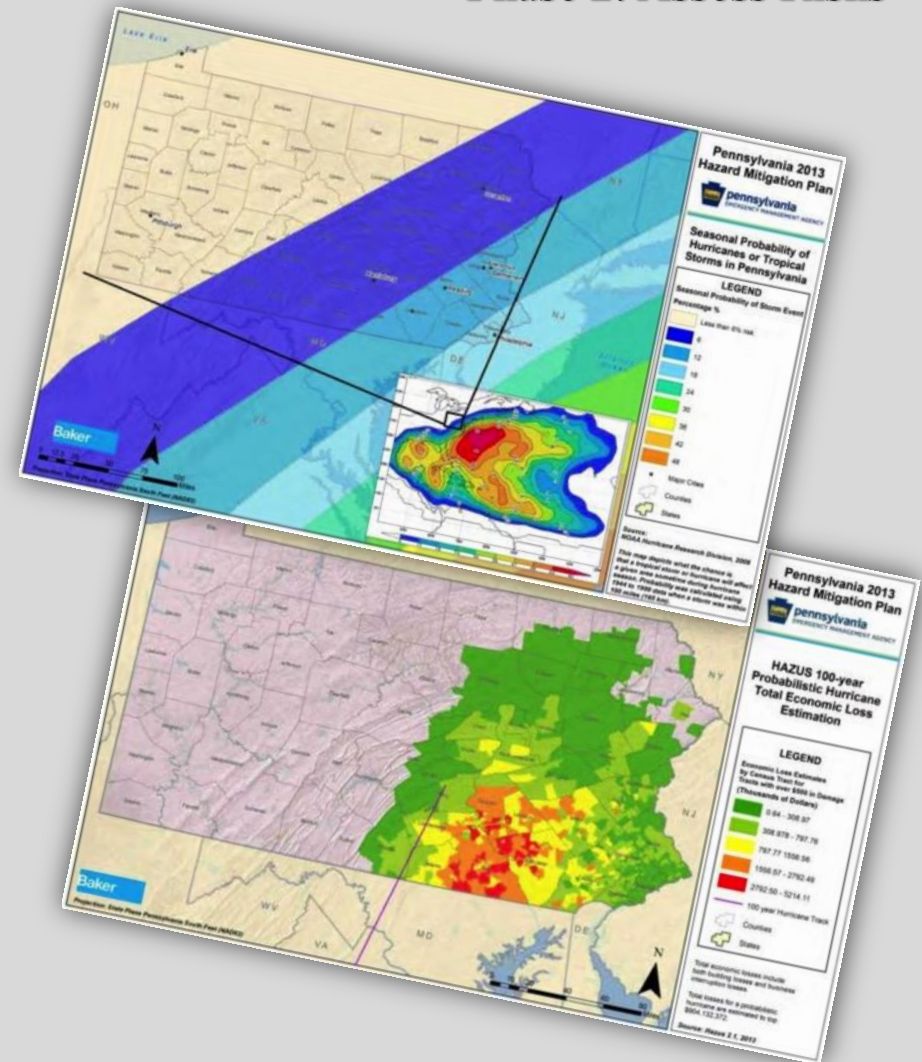
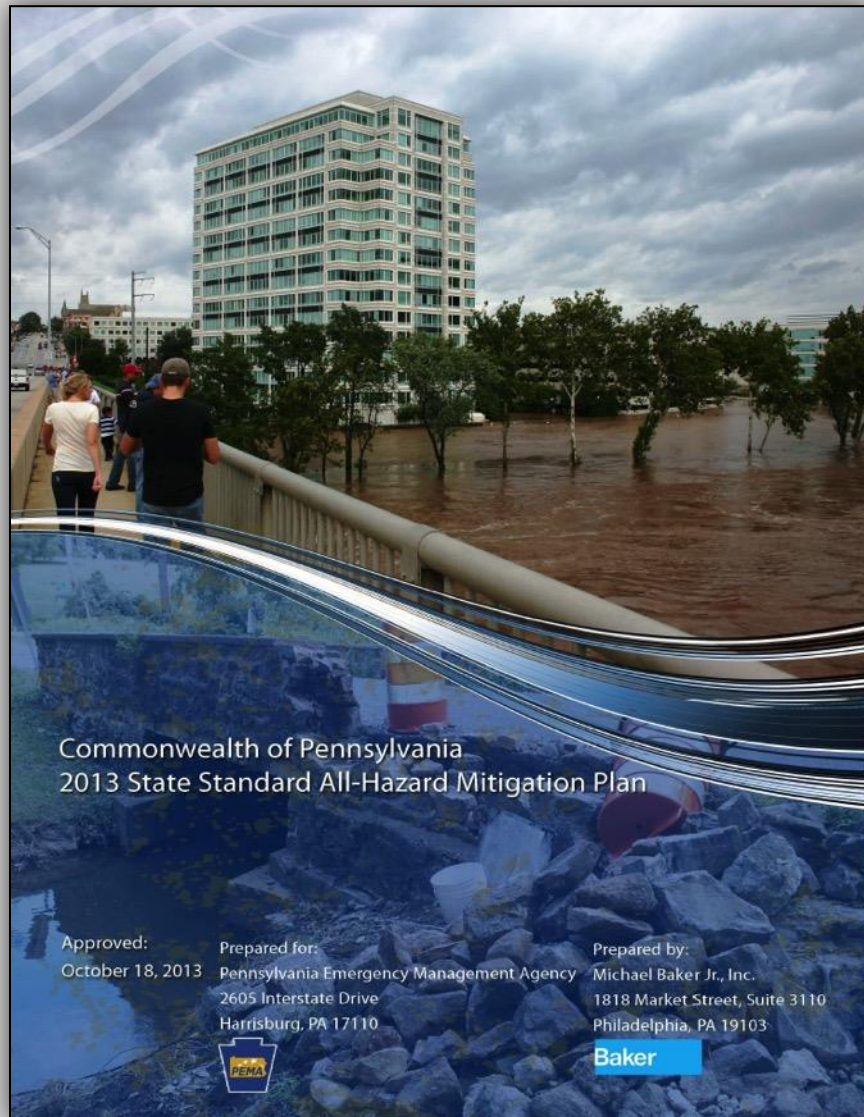
Phase 2: Assess Risks

1. **Identify hazards** that are likely to affect your community
2. Profile hazards to **determine hazard-prone areas** and the magnitude of each hazard
3. **Inventory historic properties** vulnerable to likely hazards **by conducting field (re)survey for unknown resources and geospatial analysis of known resources**
 - Assess vulnerabilities
 - Establish a hierarchy of community-driven preservation priorities
4. **Estimate** the associated amount of **potential losses to historic properties (\$)**

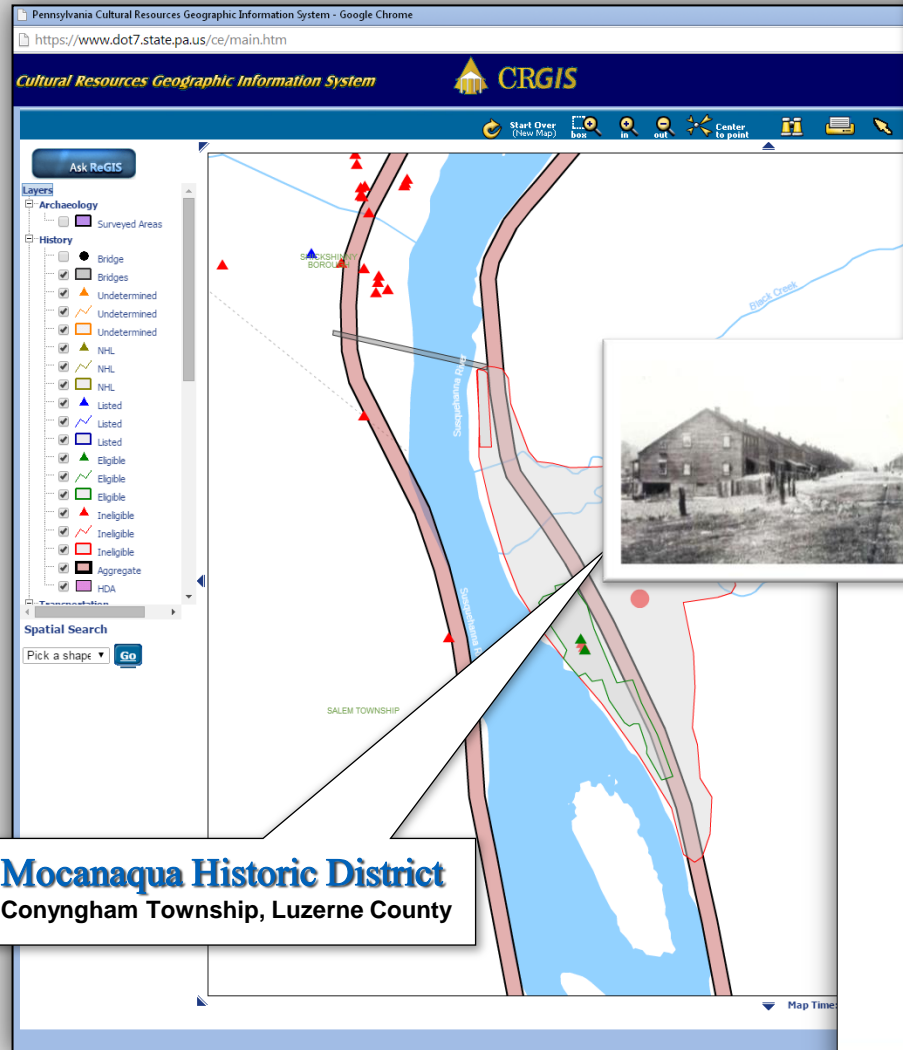
Phase 2: Assess Risks



Phase 2: Assess Risks



Phase 2: Assess Risks



CRGIS Reports - Google Chrome
https://www.dot7.state.pa.us/ce/Application/ASPNET/Report/Reports.aspx?R=1088&T=KEYNO&O=200810&O=A

CRGIS Quick Print

Sub Report Print Close

Historic Resource Information

- Identification**
 - Key #: 200810
 - Property Name: West End Coal Company Worker Housing: Italy Street Historic District
 - Resource Type: District
 - Survey Code: ER #: 2014-0847-079, 2013-6026-079, 2001-6025-079
 - Tax Credit #:
 - Location: Luzerne: Conyngham Township; Address: Italy St. Mocanaqua, PA
 - Coordinates:
 - USGS Quadrangle:
 - Tax Parcel:
 - Status: NR Status: SHPO: Eligible; Contributor:
- Historic Function**
 - Domestic: Single Dwelling House
 - Current Function: No Data Present
- Inventory Items**
 - View report for: 79-81 Italy St
 - View report for: Elberta House
 - View report for: West End Coal Company Worker Housing: Italy Street Historic District
- Ancillary Features**
 - No Data Present
- Associated Resources**
 - No Data Present
- Administrative Actions**
 - 05/08/2014: Date Record Added
 - 01/01/2013: Other Agency: Eligible
 - 01/01/2001: Other Agency: Eligible
- National Register Information**
 - No Data Present
- Links**
 - No Data Present
- Comments**
 - No Data Present

Inventory Information

- Identification**
 - Property Name: West End Coal Company Worker Housing: Italy Street Historic District
 - Resource Type: District
 - Survey Code:
 - Tax Credit #:
 - Location: Address: Mocanaqua, PA; Italy St
 - Location:
 - Tax Parcel:
 - Status:
 - Contributors: Owner: Mixed Public and Private
 - Related Program(s): Condition: Unreported
 - Historic Information: No Data Present
 - Physical Description: No Data Present
 - Historic Function: No Data Present
 - Current Function: No Data Present
 - Ancillary Features: No Data Present
 - Comments: No Data Present

Welcome to Pennsylvania's Cultural Resources Geographic Information System

CRGIS is a map-based inventory of the historic and archaeological sites and surveys stored in the files of the Bureau for Historic Preservation (BHP). The Pennsylvania Historical and Museum Commission (PHMC) has been collecting information concerning archaeological sites and historic resources for the greater part of a century. Currently there are 30,000 archaeological sites and 500,000 historic properties in these files. Access to these paper records is free and open to the public by request of the staff office in Harrisburg. CRGIS is a means of accessing some of these data without a trip to Harrisburg. Web access to all of the historic resource data is open to the public. Access to archaeological site locations and detailed site information is restricted and password protected and will be granted to qualified individuals on a need to know basis. Two levels of restricted access are available: one for planning professionals and one for archaeological professionals. Visit the Register section of our web site to register for a password. The "Ask ReGIS" function will allow you to query the underlying databases in a variety of ways to look for sites that are of interest to you.

CRGIS is an ongoing initiative, and tables and associated data will undergo staged enhancements and constant updating. Users are encouraged to notify CRGIS about additions or corrections that may be needed by using the "Feedback" function of the "Ask ReGIS" page. Please include references or other documentation for changes or additions. New sites will be added when received. Please refer to our Register section for more information on submitting resources for inclusion in the CRGIS.

CRGIS is a partnership between the Pennsylvania Historical and Museum Commission (PHMC) and the Pennsylvania Department of Transportation (PennDOT) with financial support from the Federal Highway Administration, the Baltimore District of the United States Army Corps of Engineers, and the Pennsylvania Department of Environmental Protection.

Copyright 2013 & CRGIS



Pennsylvania Historical and Museum Commission
State Historic Preservation Office

Disaster Planning for Historic Properties Initiative, 2015-2017
Special Reconnaissance Survey Form

BHP Key # 00000001 Inventory ID # 000001 Current NR Status Contributes to Listed HD Last Survey Date 01/01/1982



Photograph of Main Façade Camera Direction East

Architectural Style Italianate/Queen Anne

Detection of Character-Defining Features

Physical Condition Excellent

Exterior Wall Material(s) Brick

Roof Material(s) Composition Shingle Asphalt Shingle

Roof Type Multi-gable

Foundation Material Stone Basement? Yes

No. of Stories 2.5 Total Sq. Ft. 1,093 Sq. Ft. Est.?

Width in Bays 6 Depth (ft.) 30 Depth Est.?

Outbuildings? (If yes, identify in below section.) No

County Northumberland Municipality Name Milton
Address 419-421 N Front Street Owner Type Private
Latitude 41.024924 Longitude -76.854713
Resource Type Building Building Type Duplex
Setting Town/neighborhood No. of Resources 1
Historic Name(s) N/A
Historic Function(s) Domestic Single Dwelling
Current Name(s) N/A
Current Function(s) Domestic Single Dwelling
Tax Parcel ID(s) 031-01-001-200 031-01-001-201

Building Assessed Value \$81,818 Valuation Year 2012

Valuation Source Northumberland County Tax Assessment Office

Year Built 1870 Year Built Estimated? Yes

Flood Risk Details (All elevations recorded in feet, NAVD83)

FIRM # 42097C0115D FIRM Date 07/16/2008
Flood Zone AE 100-Year Floodplain? Yes
Base Flood Elevation (ft.) 465.0 500-Year Floodplain? No
First Floor Elevation (ft.) 467.3 FFE Estimated? No
Low Opening Elevation (ft.) 459.4 LO Est.? No LO Type Window
Lowest Adjacent Grade (ft.) 457.3 LAG Estimated? No

Description of Significant Architectural or Character-Defining Features (Please also identify/describe any contributing outbuildings here.)

Decorative brick details including corner groins, window hoods, and segmental arches; stone foundation; very elaborate wood front porch w/pierced and carved columns and capitals, brackets, cornice, etc.

Aerial View (Google Maps, N1)

Year of Image 2014

USGS Topo. Map (N1)

Quad. Name Milton



Recorded by: [Firm Name]

Page 1 of 2

Survey Date: [Date]

Phase 2: Assess Risks

Inventory Historic Properties

- Document properties as comprehensively as possible and record:
 - Primary building materials and structural system
 - Current physical condition
 - Building features that may be susceptible to local hazards
 - Character-defining architectural details
 - Market and Assessed Value (\$)
 - Hazard-specific information
 - Ex: Building elevation in flood-prone areas



Pennsylvania
Historical & Museum
Commission

STATE HISTORIC PRESERVATION OFFICE


Field Survey to Document Hazard-Prone Historic Properties

PHMC's Hazard-Specific Historic Resource Survey Form

Phase 2: Assess Risks

Building Data Requirements by Hazard

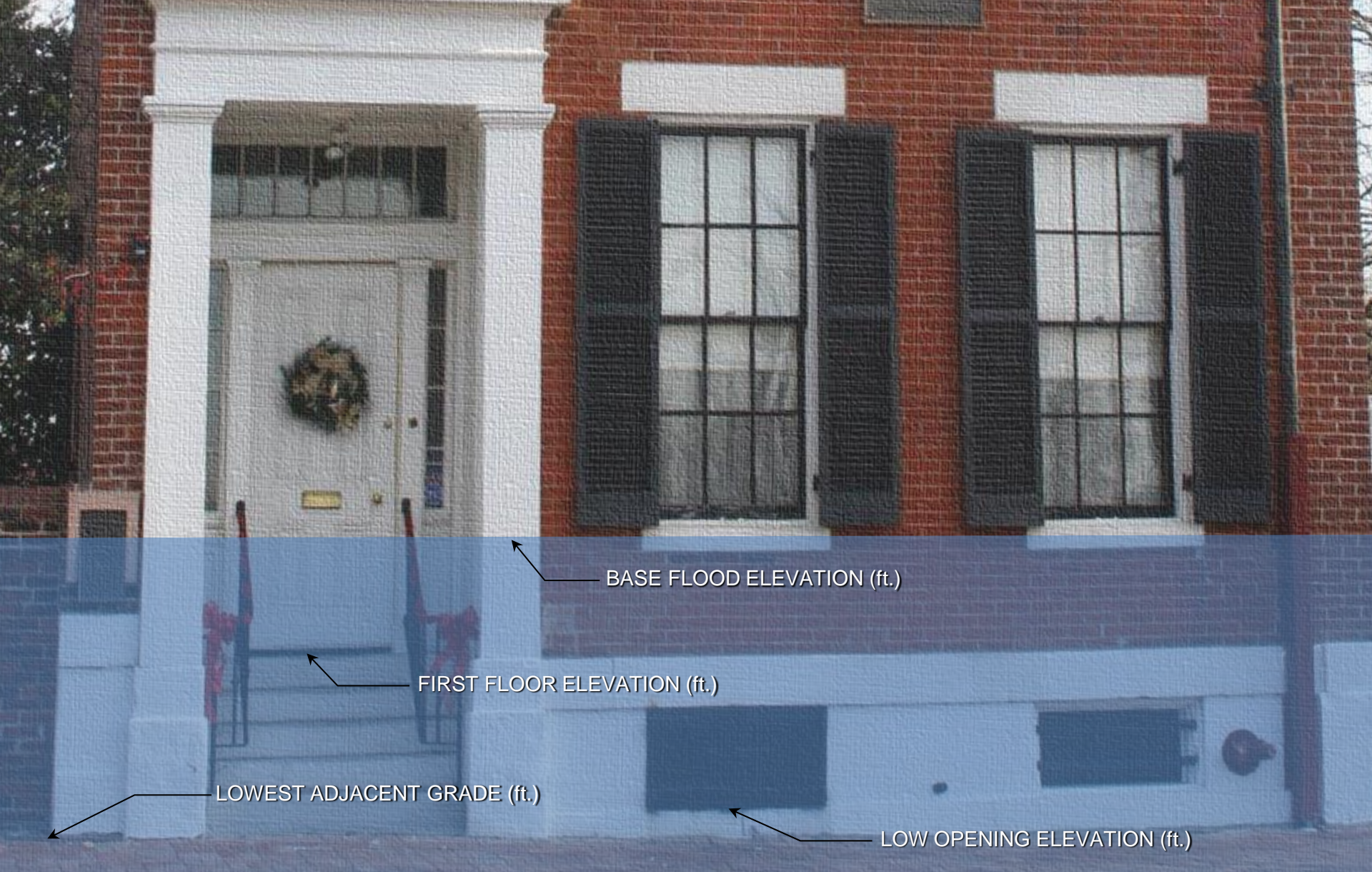
Building Characteristics	Flood	Earthquake	Tsunami	Tornado	Coastal Storm	Landslide	Wildfire
Building Type/Type of Foundation	■	■	■		■		
Building Code Design Level/Date of Construction	■	■	■	■	■		■
Roof Material				■	■		■
Roof Construction				■	■		■
Vegetation							■
Topography	■				■	■	■
Distance from the Hazard Zone	■		■		■	■	■

U.S. DEPARTMENT OF HOMELAND SECURITY Federal Emergency Management Agency National Flood Insurance Program		ELEVATION CERTIFICATE		OMB No. 1660-0008 Expires February 28, 2009	
Important: Read the instructions on pages 1-8.					
SECTION A - PROPERTY INFORMATION				For Insurance Company Use:	
A1. Building Owner's Name Daniel Hawthorne				Policy Number	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 6700 Long Bottom Road				Company NAIC Number	
City Pasadena State Md ZIP Code 21122					
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.) Map 455 Grid Z3 Parcel 716					
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) <u>Residential</u>					
A5. Latitude/Longitude: Lat. <u>E 39° 07' 30"</u> Long. <u>N 78° 27' 18"</u> Horizontal Datum: <input type="checkbox"/> NAD 1927 <input checked="" type="checkbox"/> NAD 1983					
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.					
A7. Building Diagram Number <u>8</u>					
A8. For a building with a crawl space or enclosure(s), provide: a) Square footage of crawl space or enclosure(s) <u>1280</u> sq ft b) No. of permanent flood openings in the crawl space or enclosure(s) walls within 1.0 foot above adjacent grade <u>None</u> c) Total net area of flood openings in A8.b <u>None</u> sq in			A9. For a building with an attached garage, provide: a) Square footage of attached garage <u>N/A</u> sq ft b) No. of permanent flood openings in the attached garage walls within 1.0 foot above adjacent grade <u>N/A</u> c) Total net area of flood openings in A9.b <u>N/A</u> sq in		
SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION					
B1. NFIP Community Name & Community Number 240008-0014C		B2. County Name Anne Arundel		B3. State Maryland	
B4. Map/Panel Number 14	B5. Suffix C	B6. FIRM Index Date -----	B7. FIRM Panel Effective/Revised Date 5/2/83	B8. Flood Zone(s) A8	B9. Base Flood Elevation(s) (Zone AO, use base flood depth) El. 8
B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9. <input type="checkbox"/> FIS Profile <input checked="" type="checkbox"/> FIRM <input type="checkbox"/> Community Determined <input type="checkbox"/> Other (Describe) _____					
B11. Indicate elevation datum used for BFE in item B9: <input type="checkbox"/> NGVD 1929 <input checked="" type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other (Describe) _____					
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Designation Date _____ <input type="checkbox"/> CBRS <input type="checkbox"/> OPA					
SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)					
C1. Building elevations are based on: <input type="checkbox"/> Construction Drawings* <input type="checkbox"/> Building Under Construction* <input checked="" type="checkbox"/> Finished Construction *A new Elevation Certificate will be required when construction of the building is complete.					
C2. Elevations - Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, ARIA, ARIA/E, ARIA/A1-A30, ARIA/AH, ARIA/AO. Complete items C2.a-g below according to the building diagram specified in item A7. Benchmark Utilized <u>GPS</u> Vertical Datum <u>NGVD 1988</u> Conversion/Comments _____					
Check the measurement used.					
a) Top of bottom floor (including basement, crawl space, or enclosure floor), <u>7.3</u> <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) b) Top of the next higher floor, <u>118</u> <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) c) Bottom of the lowest horizontal structural member (V Zones only), <u>NA</u> <input type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) d) Attached garage (top of slab), <u>NA</u> <input type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment in Comments), <u>NA</u> <input type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) f) Lowest adjacent (finished) grade (LAG), <u>7.3</u> <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only) g) Highest adjacent (finished) grade (HAG), <u>8.2</u> <input checked="" type="checkbox"/> feet <input type="checkbox"/> meters (Puerto Rico only)					
SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION					
This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.					
<input type="checkbox"/> Check here if comments are provided on back of form.					
Name of Licensed Surveyor Certifier's Name <u>Property Line Surveyor</u> Title 8422 Bellona Lane Suite 300 Address (Signature of License Surveyor) Signature		Maryland License Number License Number <u>Ruxton Design Corporation</u> Company Name Towson Maryland 21204 City State Zip Code Date 11/12/08 Telephone 410-823-5000			
FEMA Form 81-31, February 2006					

Phase 2: Assess Risks

Collect Building Elevation Information

- Many buildings constructed before 1975 (most historic buildings) do not have flood Elevation Certificates
- “Pre-FIRM” building: A building for which construction or substantial improvement occurred on or before December 31, 1974, or before the effective date of an initial Flood Insurance Rate Map (FIRM).
- Elevation Certificates:
 - Help property owners demonstrate compliance with local floodplain ordinances
 - Provide the information necessary for insurers to determine proper flood insurance rates

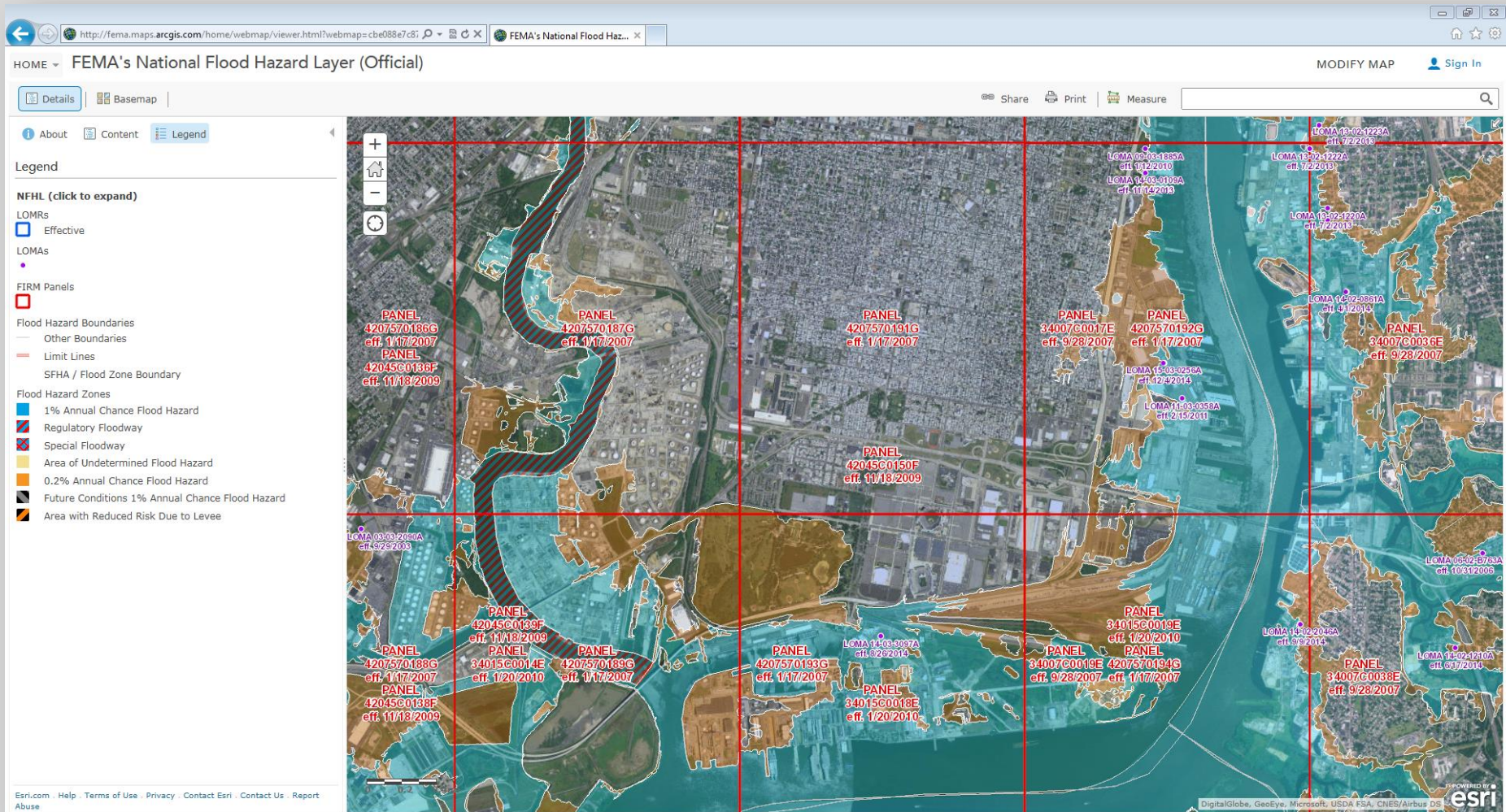


Pennsylvania
Historical & Museum
Commission

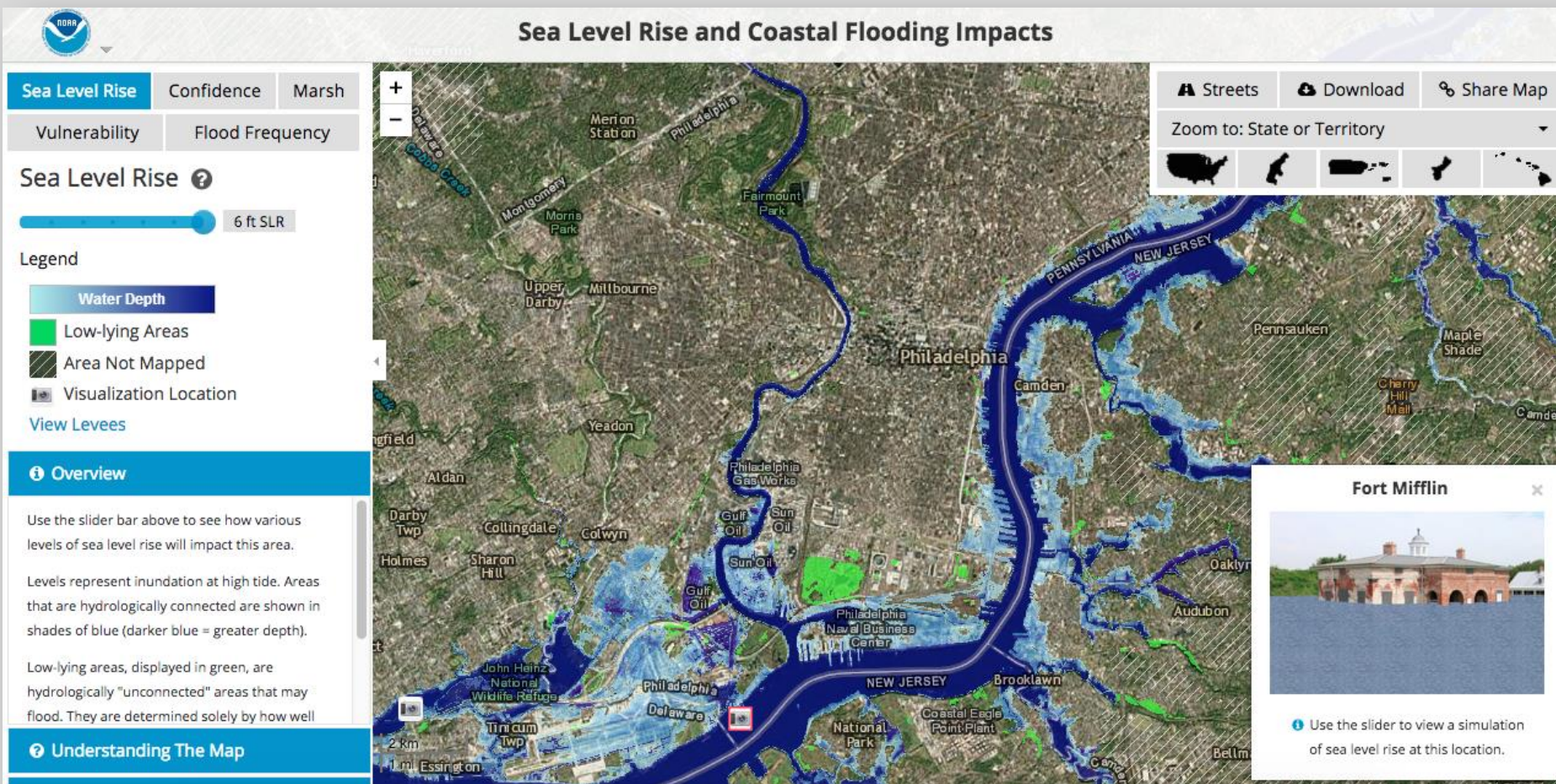
® STATE HISTORIC PRESERVATION OFFICE

Collecting Building Elevation Data for Historic (Pre-FIRM) Buildings
PHMC's Hazard-Specific Historic Resource Survey Form

Phase 2: Assess Risks



Phase 2: Assess Risks



Phase 2: Assess Risks

Storm Surge Inundation (SLOSH Maximum of Maximums)

This web map displays a seamless national map of near worst case storm surge flooding (inundation) scenarios using the National Weather Service (NWS) SLOSH model maximum of maximums (MOMs) product for different hurricane wind categories at a high tide



Category 1

Category 2

Category 3

Category 4

Category 5

Category 4 Storm Surge Inundation (SLOSH Maximum of Maximums)

With this education and awareness tool, anyone living in hurricane-prone coastal areas along the U.S. East and Gulf Coasts can now evaluate their own unique risk to storm surge. This map makes it clear that storm surge is

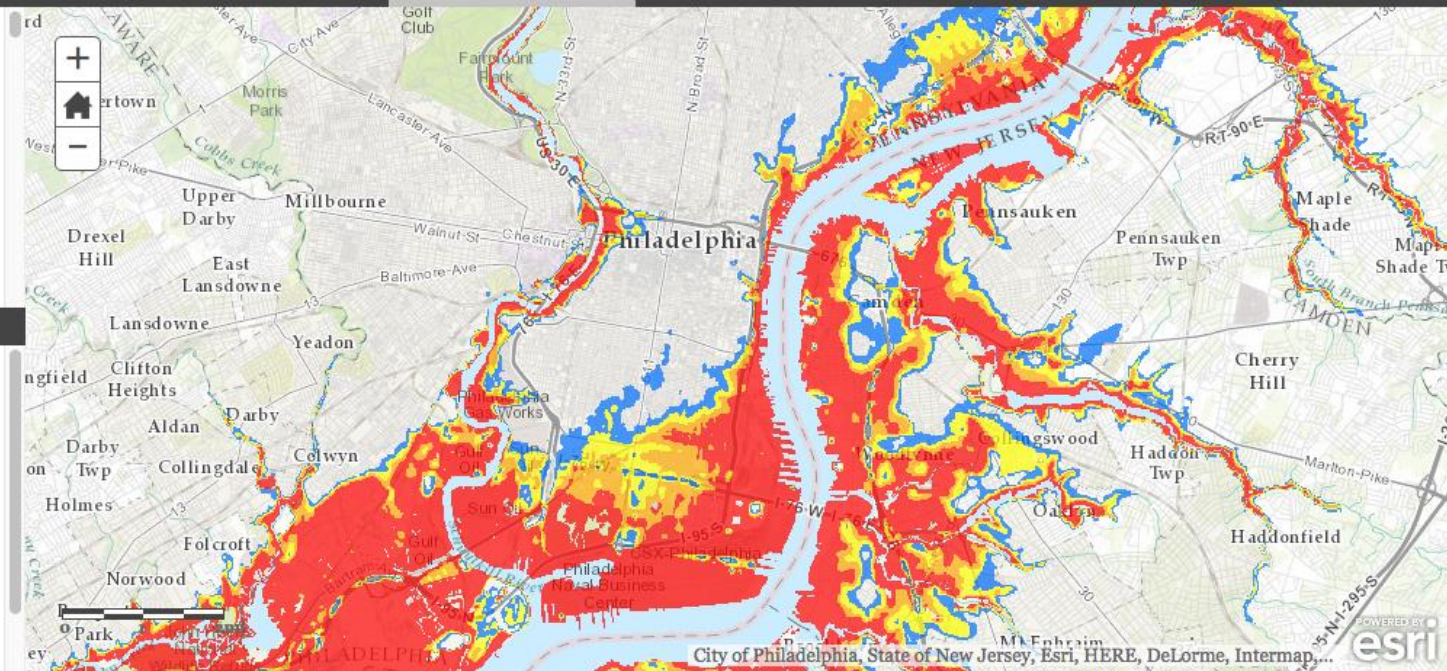
LEGEND

Category 4 (SLOSH MOMs) Storm Surge Inundation

Inundation Depth

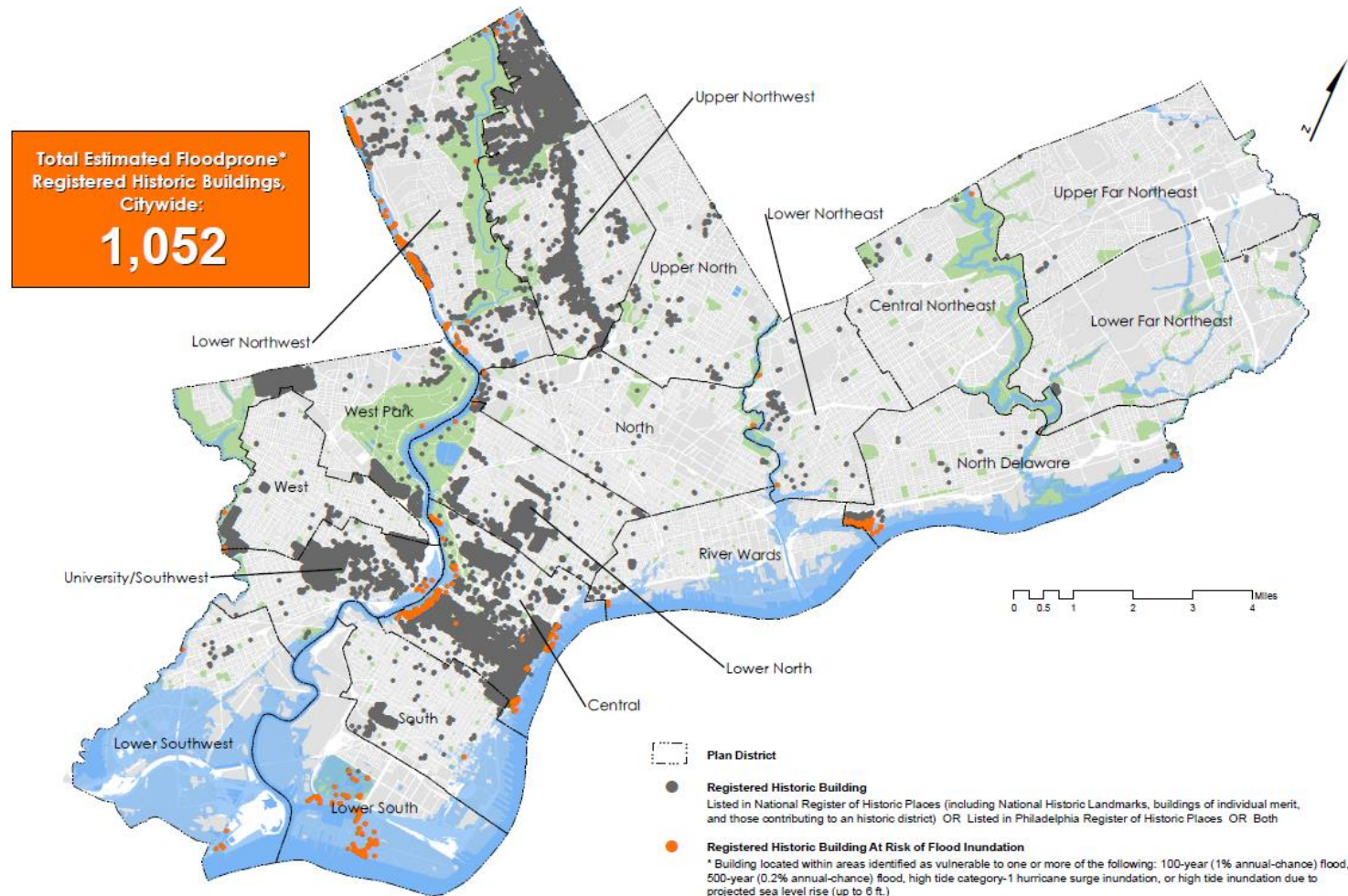
- Up to 3 feet above ground
- Greater than 3 feet above ground
- Greater than 6 feet above ground
- Greater than 9 feet above ground

Levee Areas - Consult Local Officials For Flood Risk



Phase 2: Assess Risks

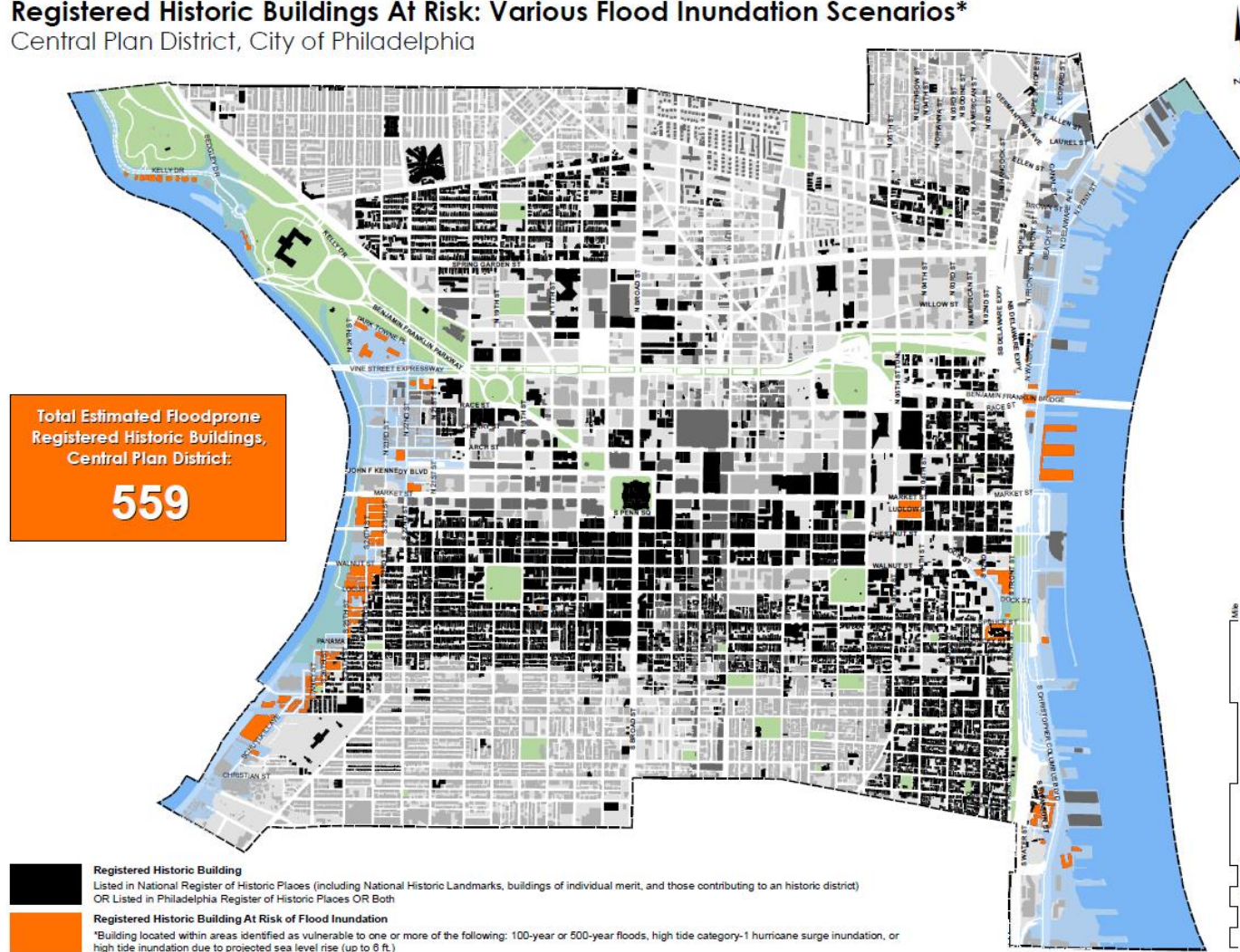
Registered Historic Buildings at Risk: Various Flood Inundation Scenarios City of Philadelphia



Phase 2: Assess Risks

Registered Historic Buildings At Risk: Various Flood Inundation Scenarios*

Central Plan District, City of Philadelphia



Phase 2: Assess Risks

Table 1. Estimated total number of historic buildings* in each of the various identified flood hazard areas in Philadelphia (citywide).

Estimated Number of Historic Buildings in...	Historic Building Designation Type			
	National Historic Landmark (NHL) Listed Buildings*	National Register Listed Historic Buildings*	Philadelphia Register Listed/ Locally Designated Historic Buildings*	TOTAL Historic Buildings** (NHL-Listed* OR Listed in National Register* OR Listed in Philadelphia Register*)
...100-Year Flood Inundation Areas ^{a***}	15	412	164	481
...500-Year Flood Inundation Areas ^{a***}	20	914	444	1,036
...Category-1 Hurricane Surge Inundation Areas ^{b***}	0	34	38	50
...+2 ft. Sea Level Rise Inundation Areas ^{c***}	1	20	23	31
...+4 ft. Sea Level Rise Inundation Areas ^{c***}	1	69	26	80
...+6 ft. Sea Level Rise Inundation Areas ^{c***}	3	133	32	150

*Including buildings of individual merit and buildings contributing to an historic district.

**Buildings may have more than one type of historical designation. For example, a building may be listed in the National Register of Historic Places and may also be listed locally in the Philadelphia Register of Historic Places.

***Buildings may be located within more than one type of flood inundation area. For example, a building may be vulnerable to inundation from a 100-year flood as well as from more regular flooding from high tides due to projected sea level rise.

^a As identified by National Flood Insurance Program (NFIP) of the Federal Emergency Management Agency.

^b As identified by the "Sea, Lake, and Overland Surge from Hurricanes" (SLOSH) model of the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service.

^c As identified by the "Sea Level Rise Impacts" model of the NOAA's Coastal Services Center.





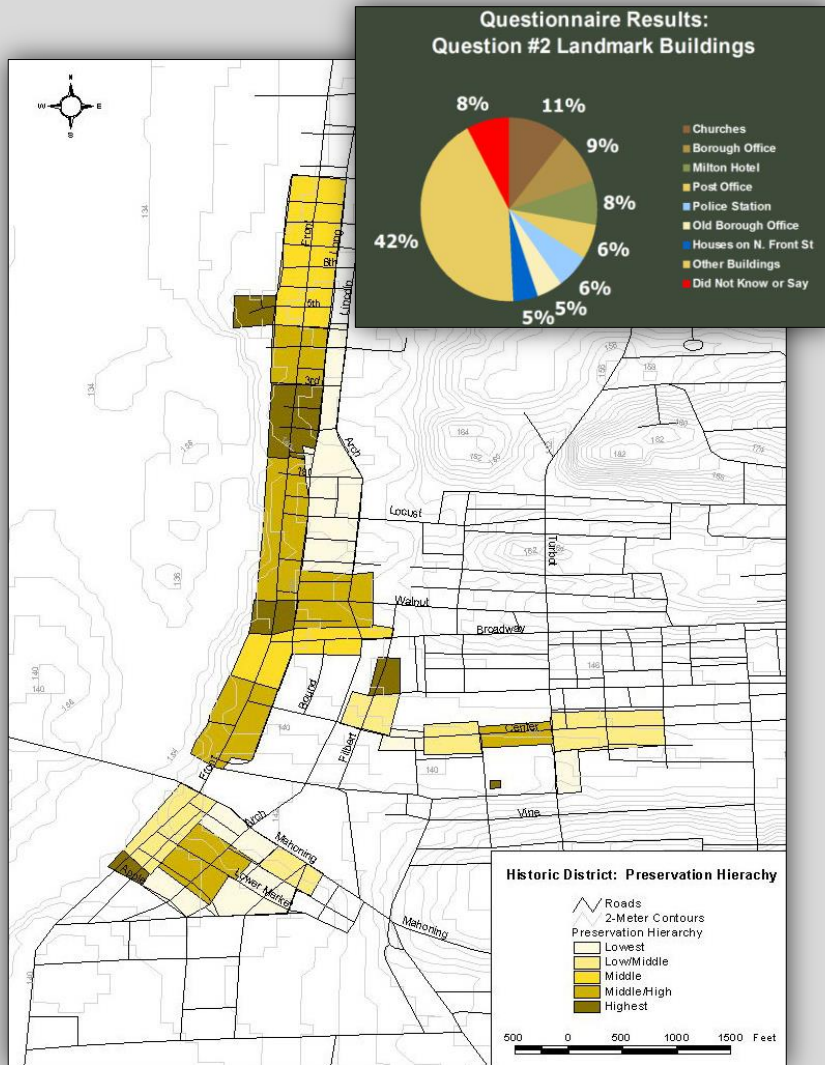












Phase 2: Assess Risks

Establish a Preservation “Hierarchy”

- **Prioritize historic properties for mitigation**
 - Which properties would the community miss most if destroyed by disaster?
 - Public input is critical to identifying and prioritizing these properties
- **Hierarchy of historic properties will inform mitigation action priorities in Phase 3**
- **Variables that may influence preservation priorities:**
 - Public sentiment
 - Economic importance
 - Level of historical/cultural significance
 - Integrity



Phase 2: Assess Risks

Estimate Historic Building Replacement Costs

- Difficult to place a dollar value on elaborate and unique craftsmanship of historic buildings, but these estimations are **necessary to understand cost-effectiveness of various hazard mitigation alternatives**
- Modern-day industry standards (RSMeans) for construction costs recommended—**PLUS a multiplier (20% to 25%) for historic buildings**
- Qualified preservation architect or historic building rehabilitation contractor can assist with these estimations



Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005



Phase 3: Develop a Mitigation Plan

1. **Develop mitigation goals and objectives for your historic properties** based on your community's preservation priorities/hierarchy
2. **Identify, evaluate, and prioritize actions**
3. Prepare an **implementation strategy**
4. **Document the mitigation planning process and public input**

Phase 3: Develop a Mitigation Plan

Alternatives to Demolition and Relocation

- Pennsylvania's early settlement patterns have resulted in many flood-prone historic communities
- Acquisition/demolition most commonly funded flood mitigation technique for repetitive loss properties
- What alternatives may minimize risk without compromising the integrity and historic fabric of your community?





Phase 3: Develop a Mitigation Plan

Identify appropriate and cost-effective mitigation actions

- Consider the impacts of actions on historic buildings
 - Appearance
 - Setting
 - Scale
- Benefit-Cost Analysis (BCA)
 - How does the cost of implementation compare to the amount of damage it would prevent?

Flooding and Historic Buildings



This guidance is designed to assist those who live in, own or manage historic buildings that are threatened by flooding. Advice is provided on preventative measures as well as on the inspection, conservation and repair of historic buildings after flooding.

www.english-heritage.org.uk/flooding-and-historic-buildings



Disaster Mitigation for Historic Structures: Protection Strategies

PREPARED BY 1000 FRIENDS OF FLORIDA
FLORIDA DEPARTMENT OF STATE, DIVISION OF HISTORICAL RESOURCES; FLORIDA DIVISION OF EMERGENCY MANAGEMENT

Elevation Design Guidelines

For Historic Homes in the Mississippi Gulf Coast Region



Risk Reduction vs. Level of Impact to Historic Properties

Flood Mitigation Alternative	Reduction of Risk	Level of Impact to Historic Properties
Acquisition & Demolition	High	High
Relocation	High	Medium to High
Elevation	Medium	Medium
Dry Floodproofing	Low to Medium	Low to Medium
Wet Floodproofing	Low	Low
Stream Channel Improvements	Low	High (for Archaeological Resources)
Levees & Floodwalls	Medium	Medium



Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005



Phase 4: Implement the Plan and Monitor Progress

1. **Required regulatory review**
 - Section 106 of the NHPA
 - Pennsylvania History Code
2. **Apply for grants to implement historic property actions**
3. **Update your historic property inventory data**
 - Submit data request to SHPO for CRGIS updates every 5 years
1. **Evaluate and update your plan**
 - FEMA requires every 5 years
 - Consult PEMA Standard Operating Guide for new historic/cultural resource checklist items

Disaster Planning for Historic Properties

Integrating Hazard Mitigation and Historic Preservation in Pennsylvania

Questions?

Disaster Planning for Historic Properties

Integrating Hazard Mitigation and Historic Preservation in Pennsylvania

Thank You

Jeremy R. Young

Disaster Planning Project Manager
PHMC | State Historic Preservation Office
717.787.0771
jereyoung@pa.gov