Historic Coastal Communities and Flood Hazard:

A Preliminary Evaluation of Impacts to Historic Properties

Browning's Beach Historic District after Hurricane Sandy, South Kingstown, R.I., photo credit: G. Alderwick 2013

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for
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Introduction

This report is the result of initial research on the potential impacts of flood regulations to historic properties in coastal Rhode Island, undertaken during the spring and summer of 2015 by Youngken Associates under a consulting services contract with the City of Newport. The project was funded with a Certified Local Government grant to the City from the Rhode Island Historical Preservation and Heritage Commission (RIHPHC). The project included the following twenty-one communities:

Barrington	Little Compton	Portsmouth
Bristol	Middletown	Providence
Charlestown	Narragansett	South Kingstown
Cranston	New Shoreham	Tiverton
East Greenwich	Newport	Warren
East Providence	North Kingstown	Warwick
Jamestown	Pawtucket	Westerly

The project was intended to address a number of key questions:

1) How many Rhode Island coastal historic properties are affected by flood regulations?
2) What is the value of property that may be impacted by flood regulations in Newport?
3) Are there key coastal historic properties and districts that may be impacted by flood regulations?
4) What is the current regulatory climate for coastal flood hazards?
5) Is there useful information from case study review?
6) Are there examples of cities and towns in Rhode Island with flood regulation programs, and what has their experience been?
7) What resources are available for further study?

To this end, Youngken Associates assessed the number and nature of the historic properties within coastal flood hazard areas in Rhode Island, as mapped by the Federal Emergency Management Agency (FEMA). Research also delved into the current regulatory climate of building code requirements for flood hazard areas as well as floodplain management, as prescribed by FEMA and the National Flood

Insurance Program (NFIP), with a particular focus on Rhode Island. Case studies from several locations within Rhode Island and other coastal states were identified, to illustrate the complex issues facing historic resources in flood zones and to present a range of approaches to improving flood resiliency. The research did not address future sea level rise or current or future riverine flooding in non-tidal areas. Some preliminary recommendations for future action are provided in the executive summary of this report.

The authors would like to thank Ted Sanderson and Joanna Doherty of the RIHPHC and Sarah Atkins of the City of Newport for their review of these materials. Melissa Barker of the City of Newport compiled the data used to calculate the number of historic properties by coastal community that are affected by flood hazard regulations.

In addition, Jack Evans, of NewPort Architecture, LLC, provided valuable insight. Helen Johnson and Bill Hanley of the City of Newport; Diane Williamson and Richard Pimenta of the Town of Bristol; and Jay Parker and Marilyn Shellman of the Town of Westerly were extremely helpful in providing local municipal perspectives. Jessica Stimson of the Rhode Island Emergency Management Agency (RIEMA) and Douglas Platt of Selective Insurance answered key questions about credits for the Community Rating System (CRS) and the future of flood insurance rate impacts.

Executive Summary

The following is a list of findings and recommendations based upon the scope of this study:

1) The regulatory climate for diminishing the risk (and cost) of property damage and related personal liability from coastal flooding has become increasingly complex since the National Flood Insurance Program (NFIP) was enacted by Congress in 1968. Initially, the program sought to ensure that affected property owners could be compensated (insured) for losses and were able to rebuild following catastrophic events. The alternative would have been business failures and abandonment of extremely valuable and lucrative coastal property, causing community economic distress and failure, from which many communities would be unable to recover. Congress sought to create a balanced system that would provide federal insurance backing, while at the same time stimulating corrective floodplain management, flood-resilient new construction, and flood hazard mitigation, both post- and pre-disaster. The Federal Emergency Management Agency (FEMA) was set up to undertake program implementation. State affiliate offices were established to undertake the program objectives at the state and local community level; the Rhode Island Emergency Management Agency (RIEMA) is Rhode Island's affiliated program. In cities and towns that have implemented FEMA approved floodplain management programs, property owners qualify for federal flood insurance and reduced rates.

2) On the heels of huge flood-related catastrophic losses across the country, members of Congress and their constituents have become increasingly concerned that the program has not functioned as originally envisioned. Development has continued in flood-prone areas, particularly scenic coastal areas. Such property has become increasingly valuable and development is difficult to redirect to less desirable locations. Insurance payouts are ever-increasing due to increasingly expensive storm and flood damage repair costs. Significantly, the courts have not allowed communities to "take" legal lots of record without just compensation for their value as building lots, although some communities have successfully argued that loss of a coastal building site for a dwelling or commercial use does not mean loss of all beneficial use. Still, communities, for the most part, have not been able to redirect development away from dangerous floodplains, if already platted into building lots. However, new subdivisions or newly-created lots can be governed by floodplain zoning and hence can be regulated so that new buildings are located out

of danger. These land development-related regulations should also consider future sea level rise caused by climate change.

3) Federal flood legislation affects state and local zoning and building activities. The goal of such legislation is to construct new buildings and retrofit old building stock to be more resilient to flooding to cut down on damage costs.

4) Under the newest federal legislation and current building and zoning codes in Rhode Island cities and towns, historic buildings are essentially exempt from the strict application of flood-related construction codes. However, the exemption applies only if the building or structure retains its historical and architectural integrity and its National Register or historical designation status is not jeopardized. Owners of historic buildings in harm's way should endeavor to make their properties more flood resilient to the degree that the historical and architectural integrity is not compromised. In this way, property owners may be able to stabilize their flood insurance rates and may realize a reduction over what they would be paying if they did nothing to reduce flood-related damage risk. There are many examples of how historic buildings can be made to be more resilient without losing their historical integrity.

5) This report does not evaluate future flood-related risks posed by sea level rise. It does, however, provide insight into issues connected with the current (2015) level of flooding experienced by coastal towns in Rhode Island. Sea level rise will add to the geographic area and number of resources affected over time. It is anticipated that for those areas already affected by coastal flood hazard zones as mapped by FEMA (known as Flood Insurance Rate Maps [FIRM]), base flood elevations will increase in height and the boundaries of the various mapped flood hazard zones will move inland, affecting additional historic properties as a result. (Barrett)

6) In the future, despite recent (2014) federal legislation to curb rate increases for flood insurance, owners and investors of pre-FIRM (pre-1968) buildings, including National Register-listed or eligible historic buildings, are likely to face some degree of flood insurance cost escalation if they make no attempt to make their buildings more resilient to flood damage. How much stabilization of rates and what degree of increase in premiums remains unclear. However, it appears that retrofitting for flood resilience would likely offer some protection from escalating

insurance costs and should be pursued. Obtaining an insurance certificate of compliance with the flood codes would be the goal. (Platt)

7) Based upon an inventory compiled by Melissa Barker, the Geographic Information System (GIS) Coordinator for the City of Newport, it is estimated that just under 2,000 National Register of Historic Places-listed or potentially eligible historic resources in Rhode Island's coastal towns are currently in harm's way of coastal flood damage. Significant concentrations of National Register-listed or eligible, coastal resources are located in Bristol, Cranston, East Greenwich, Newport, North Kingstown, Warren, Warwick, and Westerly. (Barker)

8) Overall, flood regulations provide a degree of protection for National Register-listed or eligible properties, however there are several areas of concern:

   - The specter of rising insurance rates for historic properties will undoubtedly spur property owners to either upgrade their buildings and structures to be more flood-resilient, or they could conceivably cause buildings to be demolished and replaced with new construction that fully meets the rigorous flood code requirements for a substantially reduced insurance rate. It is unclear at this time how future rates will be calculated for historic buildings that meet only some of the flood code requirements. There is little doubt, however, that those buildings that fully meet flood code requirements will have lower premiums than those that do not. If property owners choose to retain their historic buildings and fully meet flood code requirements, they may subject their buildings to upgrades that will compromise their historical and architectural integrity and diminish their community economic value.

   - Community officials, including planners, floodplain managers, building officials, and other review bodies, such as historic district commissions, will need more training on the application of the Secretary of the Interior's *Standards and Guidelines for the Treatment of Historic Properties* in gaining flood resiliency for historic properties without jeopardizing integrity. They will also need a deeper understanding of the historic resources within their communities in flood hazard areas in order to provide the appropriate level of assistance to property owners seeking guidance. Interviews with selected town staff in Bristol, Newport, and Westerly confirmed that training remains a

constant need in implementing a good program. Although there is a program for certification of floodplain managers, there currently is no training program addressing the protection of historic resources. Such training, if developed, should address the protection of individual resources as well as historic districts.

- In communities with local historical district zoning, local historic district commissions may be tasked with the review of flood resiliency upgrade projects undertaken within or outside of their overlay districts. Knowledge of how such projects can be undertaken without altering historical or architectural integrity would be beneficial. Rhode Island Historical Preservation and Heritage Commission (RIHPHC) training sessions in anticipation of such activity should be considered.

- The creation of flood-resiliency historic preservation standards and guidelines would serve two purposes: to assist local officials and boards in Rhode Island's flood-prone coastal areas and to educate owners and reviewers on best practices. Standards and guidelines could provide a menu of flood-resiliency treatments, such as elevating buildings, installation of flood (smart) vents, and the use of flood resilient building materials, and an evaluation of how such measures can either benefit or harm historic resources. There are models for such a publication, including the Mississippi Development Authority's *Elevation Design Guidelines for Historic Homes in the Mississippi Gulf Coast Region*. (Mississippi Development Authority)

- Coastal cities and towns should also embark on comprehensive floodplain management plans and implementation strategies, if they have not already done so. These plans should include historic preservation initiatives where appropriate and list goals and policies and implementation tasks and responsibilities. They should be integrated with community hazard mitigation plans and community comprehensive plans to be effective. Participation in the FEMA-sponsored Community Rating System (CRS) should be strongly encouraged. Under this program, these plans and historic preservation initiatives will provide additional credit points to reduce insurance rates. (FEMA FIA/15 2013)

Of the coastal communities reviewed in this report, Bristol, Charlestown, East Providence, Middletown, Narragansett, North Kingstown, Pawtucket, and Westerly are participating in the CRS program.

Chapter 1

An Overview of Historic Resources in Rhode Island's Coastal Communities

The following is a summary of the number of National Register-listed or eligible resources located in coastal and estuarine flood zones, as mapped by FEMA, in each of the municipalities included in this study. (Barker)

Municipality	**NR-listed or Eligible Resources**
Barrington	55
Bristol	194
Charlestown	9
Cranston	69
East Greenwich	35
East Providence	5
Jamestown	24
Little Compton	12
Middletown	4
Narragansett	23
New Shoreham	27
Newport	548
North Kingstown	294
Pawtucket	11
Portsmouth	6
Providence	40
South Kingstown	100
Tiverton	16
Warren	223
Warwick	98
Westerly	178
TOTAL	**1971**

Note: This table does not necessarily include resources designated as historic by a Certified Local Government (CLG), which may then be exempt from the flood code requirements. Because of the nature of the GIS data upon which this table is based, it may include non-historic buildings and structures that are present within listed archaeological districts (for example South Kingstown).

Newport, Rhode Island: Value of Historic Resources Affected by Flood Regulations

As an exercise to approximate the value of historic properties that are located within FEMA flood zones and therefore could be affected by flood regulations, the assessed value of such properties in Newport was analyzed. The total value of historic properties in Newport located within FEMA flood zones is $432,406,310. (Barker) A similar analysis could be performed for other coastal communities in Rhode Island.

Key Historic Resources Affected by Flood Regulations

The resources in the previous table include historic buildings and sites that are of particular significance to the local community and/or the state. These include the following (grouped by municipality):

Bristol: Thames Street waterfront area. Key buildings include the Namquit Mill, Usher's Warehouse/Potter's Wharf area and the DeWolf warehouse buildings, the Naval Reserve Armory, and Cranston Worsted Mills, the Pokanoket Mill and a number of 18th- and 19th-century residential buildings.

Cranston: Pawtuxet Village, Edgewood

East Greenwich: The Harbor District including King Street environs, east of the Railroad Bridge.

Newport: Middle and Lower Thames Street, the Bowen's Wharf area, Seaman's Church Institute, the Point district. Key buildings within these areas include the Brick Market, Perry Mill, the R.I. National Guard Armory, Hunter House, John Dennis House, Villa Edna/King Covell House, Thomas Robinson House, the Francis Malbone House and restored 18th-and 19th-century properties owned by the Newport Restoration Foundation, including the Samuel Whitehorne House.

North Kingstown: Wickford Village: Main Street, Brown Street

Warren: Harbor front, Water Street area

Warwick: Pawtuxet Village, Apponaug Village, Buttonwoods

Westerly: Watch Hill Historic District harbor front, including Bay Street; Weekapaug, Weekapaug Inn

Chapter 2

Current Federal Flood Regulations and Historic Properties

The National Flood Insurance Program

The National Flood Insurance Program (NFIP) was established in 1968 in reaction to severe losses caused by storm damage and flooding. The NFIP attempts to 1) provide flood insurance to property owners in flood prone areas who would otherwise not be insurable and hence would not rebuild economically valuable assets, and 2) guide future development away from flood prone areas. This bifurcated approach has proved, however, inadequate to deal with the problem. Development has continued in flood-prone areas, especially in desirable coastal areas, regardless of disincentives and progressive planning. As climate change progresses, more severe weather patterns continue to develop, and the costs associated with flood damage escalate, the program teeters on insolvency.

Also in 1968, Congress established the Federal Emergency Management Agency (FEMA) to administer the NFIP and to provide assistance and guidance to communities on flood hazard mitigation. A responsibility of FEMA is the detailed mapping of flood hazard areas in each community. The maps of flood hazard areas, also known by the acronym "FIRM" for Flood Insurance Rate Maps, delineate several categories of flood hazard superimposed upon aerial photographs. The categories include coastal velocity (VE) zones exposed to the open ocean and storm surf, and coastal flood (A) zones, which are generally in more protected harbors, embayments, and tidal rivers. FEMA is required to periodically supply updated FIRMs for communities participating in the NFIP. FIRMs have been generated for all Rhode Island communities and are usually available on town and city websites. The FIRMs are used to determine insurance eligibility and rates. They are also used to determine which properties are subject to the flood building code.

Participation in the NFIP is voluntary. By choosing to participate, communities are able to provide flood insurance for constituents who might otherwise be unable to secure insurance. In exchange, the community must undertake floodplain management and planning, including the adoption of strict building codes (see discussion, below). Recently a number of Rhode Island coastal communities have sought inclusion in a higher level of participation in the NFIP, the Community-Rated-System or CRS. CRS communities must take on more rigorous floodplain management, including extensive and specific master planning for flood prone areas; strict adherence to flood codes with elimination of virtually all

variances, waivers, and exceptions for new construction and non-historic buildings; the employment of certified floodplain managers; educational programs to inform property owners of flood hazards; and annual reporting on the effectiveness of their programs. (FEMA #573) In exchange, property owners in CRS communities can receive substantial additional discounts in flood insurance. For example, the Town of Bristol is currently a CRS program member achieving a 10% reduction in flood insurance premiums for Bristol property owners. There are CRS communities in other states receiving up to 45% reductions. (Stimson) (FEMA #573)

Due to the cost of the program, the NFIP has recently been targeted for reform. In 2012 Congress passed legislation known as the Biggert-Waters Flood Insurance Reform Act of 2012 (Biggert-Waters) in an attempt to correct deficiencies in the NFIP. This legislation created substantial phased-in increases in flood insurance rates across the board, eliminating "subsidies" or preferred (reduced) rates for all pre-FIRM buildings and structures, including historic structures. New rates could be substantially higher than previous. (Gray)

The potential for such substantial rate increases created a backlash, however, and in 2014 Congress passed legislation known as "Grimm-Waters," or the Homeowner Flood Insurance Affordability Act, which essentially rolled back insurance rate increases deleting many of the onerous and dramatic insurance rate increase provisions of the 2012 law. Grimm-Waters did not, however, roll back insurance rate increases for second homes or businesses. These are subject to rate increases of 25% annually to full actuarial rates based upon risk of flood damage as well as an additional $250 annual surcharge. Under Grimm-Waters primary homes will have to come up to full risk rates, but at a more gradual annual rate increase than in Biggert-Waters. Significantly all policy holders must be advised of their future full actuarial rate obligation. This will cause many property owners to seriously consider actions they could take to reduce their annual flood insurance premiums. (Gray)

Most experts in the field advise that substantial rate increases are inevitable considering the plight of the NFIP. The NFIP must be made solvent and operational. This means that for affected historic buildings and structures, while Grimm-Waters may have eased the immediate concern for affordable flood insurance premiums, the future will likely bring increased premiums to match flood damage risk and these may or may not be affordable for properties that do not meet full flood code requirements. Consequently, owners of historic properties in flood zones may choose to implement more extensive

flood-mitigation measures that could threaten the resource's integrity or may even choose to demolish historic buildings rather than pay the flood insurance premium.

The NFIP and the Building Code

As noted above, communities that participate in the NFIP must undertake floodplain management and planning activities, including adopting strict building code requirements (usually based upon state and international building code models). Such building codes address 1) the flood-proofing of buildings and structures located within designated floodplains and built prior to the 1968 law (known as pre-FIRM), 2) buildings and development constructed since 1968, and 3) new construction and development. Such regulation comes in the form of floodplain zoning overlay districts conforming to the FIRMs, which require code compliance and set standards for site plan and development design, including setbacks, buffer/exclusion zones, appropriate use, and density. Cities and towns that do not adhere to the NFIP program requirements risk being excluded from participation in the program, in which case the preferred flood insurance would no longer be available to residents within the community.

The requirement to meet flood code requirements is triggered by the "substantial improvement" threshold, also known as the "50% rule." The following scenarios qualify as "substantial improvement:"

- An owner or developer seeks to rehabilitate an existing property that has sustained damage valued at greater than 50% of its market value,
- An owner or developer seeks to rehabilitate an existing property at a cost greater than 50% of its market value (not including the value of the land),
- An owner or developer seeks to change the use of a property, or build a new building.

The NFIP specifies that communities adopt minimum flood-related building codes requiring that new residential development and substantially improved dwellings and housing structures be elevated so that the lowest occupied (residential) floor is at or above the base flood elevation (BFE) determined for the site. The BFE is generally determined by FEMA, but can also be refined by a qualified engineer and certified with an "elevation certificate."

New or "substantial improvement" projects involving commercial buildings in AE flood zones can face substantial flood code requirements. A building with a commercial ground floor that opens to pedestrian sidewalks is prohibited from having commercial use below the BFE, unless the space is dry

flood-proofed, a costly renovation. The space can be used for parking, access to the upper floors, or for limited storage without dry flood-proofing.

Significantly, the NFIP provides an exclusion or variance from meeting flood code requirements for historic properties. The NFIP defines historic properties as follows:

1) "Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a (National Register) registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either
   (a) By an approved state program as determined by the Secretary of the Interior (e.g. Certified Local Governments [CLGs]), or
   (b) Directly by the Secretary of the Interior in States without approved programs."

(FEMA P-467-2)

Under the NFIP, communities have the option of addressing the flood code at historic properties in one of two ways: by excluding historic properties through definition – i.e., the substantial improvement threshold does not apply to such properties as defined – or by granting variances. (FEMA P-467-2) Most communities in Rhode Island have adopted the variance provision, which may require owners of historic properties to undertake some flood damage control or flood-resiliency measures. In obtaining a variance, a project at a commercial building, for example, might be required to include wet flood-proofing measures, such as utilizing smart vents to equalize hydrostatic pressure and/or using flood-resilient floor and wall materials. However, if a property owner proceeds with changes so damaging to the historical and architectural integrity of the property that it will no longer meet the National Register listing criteria, he/she risks being forced to meet the full requirements of the flood code, at considerable expense. Fortunately the variance procedure and approvals are designed to prevent such an event from happening. (FEMA P-467-2)

The variance procedure involves a review of the project by the local Building Board of Appeals to determine if the owner/applicant is making a bona fide attempt to provide flood proofing or resiliency to the degree possible, without jeopardizing the property's historical and architectural integrity. In Rhode Island, Certified Local Governments (CLGs) may use their professional preservation staff or their historic district commissions to determine the project's impact on the property's integrity. Communities without CLG status may consult with the Rhode Island Historical Preservation and Heritage Commission (the state historic preservation office). CLG communities may also designate local historic resources and districts, which in turn may then be exempt from the flood code requirements through a variance process.

For now, historic properties in Rhode Island are generally not required to meet stringent flood code requirements, usually through the issuance of a variance from the local Building Board of Appeals. This may change in the future. Significantly, the 2008 guidance published in *FEMA P-467-2* states:

> "Although the NFIP provides relief to historic structures from having to comply with NFIP floodplain management requirements for new construction, communities and owners of historic structures should give consideration to mitigation measures that can reduce the impacts of flooding on historic structures located in Special Flood Hazard Areas. Mitigation measures to minimize future flood damages should be considered when historic structures are rehabilitated or are repaired following a flood or other hazard event…." (page 2 of *FEMA P-467-2*)

The implementation of such measures at historic properties presents challenges, but, if done sensitively, may help to protect the property and may drive down the cost of insurance premiums for property owners.

Chapter 3

Flood-Proofing and Flood Resiliency at Historic Properties

The NFIP promotes a variety of flood-proofing measures that, when implemented at historic properties, may be designed to meet the *Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties.* The *Secretary's Standards* are widely accepted as the benchmark for the preservation, rehabilitation and restoration of historic properties. They are regularly employed by the RIHPHC in reviewing projects, and are often adopted by local historic district commissions, as well.

So-called "wet" flood-proofing measures promoted by the NFIP, which may be successfully implemented at historic properties, include the following:

- repairs to foundations
- elevation of first-floor level heights, as long as doing so does not detract from the property's historical or architectural integrity
- allowing water to pass through the lower floor(s) of the building, by installing "smart" vents in the building's exterior and interior walls and doors, at the basement and/or first-floor levels, to equalize hydrostatic pressure during flooding; this may involve the creation of new crawl spaces and the installation of back-flow valves on sewer, septic, and drainage pipes
- filling of cellars to the ground level with soil to prevent substantial accumulation and pooling of water within the foundation walls. Such filling would result in the creation of a crawl space, instead of a cellar. Smart vents would be installed in the above ground cellar walls.
- installation of flood-resilient interior materials in areas below the BFE
- relocation of all utilities (HVAC, electrical, plumbing) above the BFE (FEMA P-467-2)

Many of these adaptations can be accomplished while retaining historical and architectural integrity, through review by the RIHPHC, or by local preservation staff and historic district commissions through the variance process with the local Building Board of Appeals.

Research conducted for this study suggests that in Rhode Island, flood impacts will be felt particularly keenly in harbor front commercial districts. Significant examples of such districts are found in Bristol, East Greenwich, Pawtuxet Village in Cranston and Warwick, Newport, Warren, and Watch Hill in Westerly. In such areas, there is potential for new infill construction and "substantial improvements" to

non-historic buildings that would interrupt the pedestrian streetscape with non-commercial ground floors and ramps to higher floor levels. Dry flood-proofing methods might also be employed, which can result in significant alteration, particularly in non-masonry buildings. (Tomassini, Evans). Districts without adequate design review regulatory controls are most at-risk for these sorts of unsympathetic alterations. With the exception of Newport's lower Thames Street and Warren's harbor front, the districts reviewed in this study have design controls in place. They may not, however, have specific standards and guidelines for wet and dry flood-proofing options.

Case Studies

Two recent projects in Westerly – which does not have a local historic district commission – illustrate one coastal community's struggle to understand the relationship between historic buildings and flood regulations. A third project in Newport, which does have a local historic district commission, illustrates that City's approach. All three projects required review at the local level by the communities' Building Boards of Appeals. Examples from Annapolis and Mississippi demonstrate measures being adopted elsewhere to address the flood resiliency of historic properties.

Ram Point Carriage House, Westerly

Ram Point Carriage House on Watch Hill Road in Westerly sits on a 6-acre peninsula of land jutting northward into the tidal Pawcatuck River. Nearby is the mouth of the river at Little Narragansett Bay and Fisher's Island Sound. An early 20th century, 2-story, gambrel-roofed, Colonial Revival structure, the carriage house originally provided living quarters for staff as well as carriage storage space and a horse stall/tack room. The carriage storage space was in the ground floor not far above current sea level. The building lies within an AE special coastal flood hazard zone. The town building and zoning officials advised that since the carriage storage space had never been used as inhabitable space, a reuse for living area, which the owner desired, would require meeting the flood code requirements. The owner asked whether or not the carriage house could possibly be eligible for listing in the National Register of Historic Places and thus exempt from having to meet stringent flood codes. The carriage house is part of a larger estate that includes a residence, boat house, playhouse, potting shed, well house and other outbuildings, all connected by shoreline paths and a tree-lined entry driveway.

Ram Point Carriage House, before renovations, RCY 2013

Ram Point Carriage House, after renovations, RCY 2015

In this case, before granting town approval, the building official and zoning officer determined that a letter from the state historic preservation office (the Rhode Island Historical Preservation and Heritage Commission [RIHPHC]) regarding the property's National Register status would be required before proceeding with a hearing. The owner hired a preservation planner to initiate the nomination process, RIHPHC staff were consulted, and Ram Point was presented to the State Review Board for a preliminary review of its National Register eligibility. The State Review Board determined that the property is a good candidate for National Register listing. RIHPHC staff prepared a letter for the property owner indicating Ram Point's potential eligibility for listing, with the carriage house as a contributing component.

The RIHPHC staff architect was then able to review architectural plans and specifications to determine whether or not the project would meet the *Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties.* Flood resiliency was enhanced by elevating the interior space of the carriage storage area by approximately 2 feet within the structure, and locating electrical utilities above the BFE. A letter was issued by the RIHPHC to the Town and owner stating that the project would not have an adverse impact upon the National Register eligibility of the property. Based upon the preliminary determination of eligibility and the staff architect's review comments, the Town's Building Board of Appeals was able to grant a variance (with conditions) for the project.

In this case, the Town relied heavily upon the RIHPHC to provide expert testimony (via letter) that 1) the property was eligible for the National Register of Historic Place and thus exempt from the flood code requirements and 2) the project, which involved some flood resiliency measures, met the *Secretary's Standards* and would not jeopardize the historic integrity of the building. The owner is obtaining National Register listing of the property.

Lanphear Livery Stable, Westerly

The restoration and rehabilitation of the Lanphear Livery Stable in the village of Watch Hill, a Westerly shoreline community, is a much larger and more complex project than the Ram Point Carriage House. Here a non-profit owner is bringing back to life a condemned but rare, early-20th-century, historic service building for mixed use, including retail commercial use on the ground level, with residential

apartments and an office space on the second and third floors. The building has a foot print of nearly 7,000 sq. ft. and was built in close proximity to the harbor shoreline in a coastal flood hazard AE zone. The base flood elevation is 9 feet with one foot of freeboard. Freeboard is usually provided in local ordinances as a 1-3 feet margin or hedge against future inundation conditions, either caused by a specific storm or sea level rise over time. Rhode Island communities require at least 1 foot of freeboard to be added to the BFE requirement. Many communities allow for up to 3 feet to be added as an exclusion to overall building height limits required by zoning. The building is listed in the National Register of Historic Places as a contributing resource in the Watch Hill Historic District.

Bay Street waterfront, looking east, RCY 2010

In this case, the Town of Westerly once again employed its Building Board of Appeals to grant a conditional variance for the project design, allowing commercial use of the ground floor and waivers of strict flood code requirements. The design includes several flood-resiliency measures known as wet flood-proofing, including flood (smart) vents and resilient floor and wall materials at the ground floor. In

addition, all utilities will be located above the BFE. The building foundation, badly deteriorated, is being replaced and the building elevation will be two feet above the current ground level (the maximum feasible given site constraints and the need to maintain the original footprint).

Lanphear Livery Stable, looking west, RCY 2015

RIHPHC architectural staff were consulted to determine whether the proposed alterations met the *Secretary's Standards*, in part because the project is receiving Hurricane Sandy relief funds for damage repair as well as state historic preservation tax credits. The RIHPHC therefore holds a historic preservation easement on the property. Given the scrutiny of the project by the RIHPHC and the level of work proposed for flood resiliency, the Town Building Board of Appeals readily granted a variance for the project, allowing ground level commercial use to once again be located in the building, while providing a degree of flood resiliency that is acceptable under historic preservation standards and guidelines.

70 Bridge Street, Newport

The property at 70 Bridge Street is located on a corner lot in Newport's historic Point District, a waterfront neighborhood within an AE flood zone. It is a densely-packed residential neighborhood of 18th and 19th century houses, many of which have been restored to a very high standard. Initially the owner of the house at 70 Bridge Street wanted to elevate the 18th-century, 2-story, wood-framed, clapboard-clad dwelling to 5 ft, in an effort to protect the property, attain some degree of flood resiliency, and lower flood insurance rates.

70 Bridge Street after rehabilitation with new raised foundation, looking west, RCY 2015

The five foot elevation request was well under the nine foot elevation that would have been required for a non-historic building to meet the flood code and the 12 foot BFE required for the area. Because the property is located within a local historic district, such a change required a (zoning) certificate of appropriateness from the Newport Historic District Commission (NHDC). The NHDC determined that elevating the building, which is directly on the street, to such a height (5 ft.) would be an adverse impact and would not be appropriate. They did indicate that a lesser degree of elevation might be considered, provided that nearby properties were researched to determine if the streetscape features generally uniform foundation heights, or if there was some variability. After determining that nearby foundations range from 2 ft to 4 ft in height, the NHDC approved raising the building to a new elevation of 3.9 ft and issued a certificate of appropriateness. In addition, 70 Bridge Street was not an original building on the street; it had been moved to its present location by Operation Clapboard in 1975 from the site of the Newport Marriot Hotel along with two other houses, which were combined to form the present structure. (Shevlin) The City of Newport Building Board of Appeals then granted a variance for the project. Because The City of Newport has local historic district zoning and has a local historic district commission, the RIHPHC was not consulted to review the project and determine whether it meets the *Secretary's Standards* (unlike in Westerly, which does not have local historic district zoning).

Bridge Street house, with existing raised foundation, looking west, RCY 2015

Annapolis, Maryland

Annapolis, Maryland, has taken the proactive step to develop a comprehensive flood management plan for the City's Dock and East Harbor waterfronts. Recognizing that projected sea level rise will have a significant adverse impact upon these vital areas of the local economy (based upon abundant historic resources and tourism), the city contracted with consultants to provide a reasonable estimate of sea level rise, review the current regulatory climate to ascertain how the City could accommodate such change, and produce recommendations for action. Included are the obvious, such as increasing the BFE elevation and recommendations for wet flood-proofing historic buildings. Also included, however, are specific recommendations for dry flood-proofing non-historic commercial buildings that are the subject of projects of *less than* substantial improvement value, or below the 50% rule threshold. In so doing, Annapolis is taking a more rigorous approach with a higher standard than the NFIP. In setting a higher bar, the community may be setting the stage for a higher CRS rating and greater reductions in insurance rate premiums for its property owners. (FEMA 573, FEMA FIA 15/2013) In recognition of its wealth of historic resources and their value to the local economy, Annapolis further acknowledges its sensitivity to meeting strict flood code requirements. The clear message is that communities should recognize the impact of sea level rise and immediately begin planning for accommodation and resiliency.

Mississippi

In the wake of catastrophic Hurricanes Katrina and Rita in 2005, the State of Mississippi Development Authority (MDA), the leading state economic development agency, published design guidelines for the elevation of historic properties in flood hazard zones. The MDA undertakes financial programs and assistance in the Gulf Coast Region to renovate historic dwellings for greater flood resiliency. "Design Guidelines for Historic Homes in the Mississippi Gulf Coast Region" (2006), is a step-by-step illustrated lesson plan on elevating historic dwellings in such a way as to not lose architectural or historical integrity and thereby satisfy FEMA requirements, including building code requirements. The manual also includes suggestions on filling larger lots to partially accommodate elevation change, a solution that may also be appropriate for unique coastal locations where there is not a concern about flood water displacement

and where historic buildings predominate. Such measures as filling are not advisable in riverine settings due to the displacement of flood waters onto adjoining properties.

The guidelines represent a broad aide program designed to assist property owners with necessary and costly home improvements for flood resiliency. Such programs may be necessary to achieve aggressive goals in a short time, goals that otherwise could not be achieved.

The guidelines were prepared in collaboration with other stakeholders including the Mississippi Department of Archives and History (the Mississippi SHPO) and local historic preservation commissions representing historic preservation interests in coastal Mississippi. Also participating were local building, zoning, and planning officials.

Chapter 4

Flood Management Programs: A Look at Three Rhode Island Municipalities

Flood management programs in the City of Newport and the towns of Bristol and Westerly were examined to compare how the three municipalities, each with important historic resources in coastal flood zones, address the requirements of the NFIP and building codes. Each municipality has a staff person well-versed in coastal flood issues who is responsible for implementation of the program. The municipalities' planning staffs are in the process of upgrading their respective Comprehensive Plans and wish to include appropriate language supporting the continuation and expansion of work in flood plain management. Each government wishes to fully participate in the NFIP's Community Rating System (CRS); Westerly and Bristol have succeeded and Bristol, as a result, has earned a substantial insurance rate reduction (10%) for its property owners. All three governments grant variances from the strict flood code requirements for historic buildings within their coastal zones. All three governments have a time frame for calculating the 50% rule threshold; both Newport and Westerly consider 12 months the appropriate base time frame for projects, while Bristol has set a much higher standard at 10 years by ordinance. In other words, in Bristol work undertaken within a 10 year time frame is additive toward the 50% rule, whereas in Newport and Westerly the additive time frame is merely 12 months. While the building and zoning officials have some discretion in calculating how a project ranks against the 50% rule, conceivably a project in Newport or Westerly could be cleverly phased in 12 month increments to avoid reaching the 50% rule threshold and thereby be exempt from meeting flood code requirements; not in Bristol.

Bristol, R.I. waterfront, looking south, RCY 2015

Bristol, R.I., Thames Street, looking southeast, RCY 2015

Bristol, R.I., Thames Street, looking northeast, RCY 2015

Newport has a record with the Rhode Island Emergency Management Agency (RIEMA) and FEMA of granting too many variances overall, while Bristol and Westerly do not. The Newport Building Board of Appeals has granted variances for non-historic building projects and also for new construction, much to the consternation of RIEMA and FEMA officials, thus jeopardizing its application for CRS status.

Recognizing that Lower Thames Street should be a pedestrian, main street experience, with commercial use of ground floor spaces, Newport has granted elevation and ground floor space variances for non-historic and new construction projects along Thames Street. The projects that have been developed have retained their ground floor spaces within the BFE. Variances have also been granted to exempt dry flood-proofing. In an attempt to bring the program into better alignment with the voluntary CRS standards, Newport is removing its local Building Board of Appeals from hearing flood code-related variances and is now scheduling such applications for the State Building Board of Appeals. This action significantly removes knowledgeable local decision-makers from the approval process. Luckily for Lower Thames Street a number of important infill buildings have been recently built and renovations of non-historic buildings have taken place. There are, however, several large undeveloped or underdeveloped parcels which will likely be built to meet strict flood code requirements. These new buildings will likely be elevated above the street level to meet BFE requirements. Local concern is that the desire for CRS status, coupled with review of variance applications by the State Board, may cause unsympathetic redevelopment, negating any CRS benefit in the long term, especially in a physical environment heavily patronized by tourists on foot. (Hanley)

Newport, R.I. Point District, Bridge Street, looking west, RCY 2015

Within Newport's Point District, with residential buildings and structures that date back to the early 18th century, there has been sporadic anxiety about potential flood insurance rate increases. Passage of the Biggert-Waters Act in 2012, along with other considerations, caused the owner of the house at 70 Bridge Street to seek to elevate the house five feet. Fortunately the Newport Historic District Commission had design review jurisdiction over the project and specified that only an elevation of 3.9 feet could be allowed, based upon other nearby properties and their raised basements. An elevation of building to the 12 ft. BFE would have been incongruous with the historic setting and would have adversely affected the building's architectural and historical integrity. Here the building owner achieved a degree of flood resiliency within the variance process while maintaining the building's historic status. This project could become a precedent for other Point district dwellings seeking to adapt to flood hazards. (Hanley)

Westerly's code enforcement and planning staff have been gradually implementing the review of projects affecting historic properties within the town's coastal zones. To date there have been a few projects over the last six years, but not many. The Building Board of Appeals has met several times to review requested variances. Unlike Bristol and Newport, Westerly does not have local historic district zoning nor a local historic district commission. Hence technical reviews and recommendations are coordinated with the RIHPHC. The RIHPHC has been asked to provide advisory opinions regarding the National Register status of buildings and to review projects for their adherence to the *Secretary's Standards*. This sort of consultation with the RIHPHC could be implemented by other Rhode Island communities.

Annotated Bibliography

Braid, Julie and Brian Knowles, editors. *Flood Resiliency in Newport's Point Neighborhood: An Historic Urban Landscape Approach*. A student led project for class credit (HP 302/502: Principles in Preservation Planning, Jeremy Wells, Prof. Bristol, R.I.: Roger Williams University, Spring 2015.

A major finding of this student report is that historic home owners and neighborhood residents claim that poor drainage from small amounts of rainfall can cause street and cellar flooding. This condition is affecting nearly all of the historic properties in the Point neighborhood and is perhaps more serious than inundation or flooding caused by coastal (sea) flood events: "water comes up through the storm drain flapper valves flooding the streets and homes…. It is destroying the foundations of these 18th century homes." The report provides several good illustrations of how historic buildings may be elevated in the district, including illustrations of various levels of elevation – raising stone foundations to 4 feet, or elevating buildings to the BFE on concrete piers. The report recommends a number of near term and long term solutions to future flooding and historic property damage:

Near term,

1) Fix the existing sea wall, which is deteriorated in places.
2) Install a rain garden (likely large) for clearings (sic) or open spaces of the neighborhood. (to infiltrate and treat storm water runoff).
3) Elevate structures (to BFE plus freeboard), following documentation for the historical record. While this may dramatically change the aesthetic of the neighborhood, historic fabric (including interiors) has a better chance of survival, than if it is not elevated.

Long term,

1) Install a sea (salt) marsh (along the coast, to buffer storm surge).
2) Raise the topography throughout the district to be level (infill).
3) Fix the (storm) drainage system.

Barrett, Christopher. "The Precarious Position," in *41 N: Rhode Island's Ocean and Coastal Magazine, Vo 8, No 2, Winter 2015.* Kingston, RI: University of Rhode Island Coastal Institute, 2015.

A report on the costs of recovery after a storm, the effects of Biggert-Waters (2012), the back-lash on insurance rate hikes, and the passage of the Grimm-Waters Home Owner Flood Insurance Affordability Act (2014). Notes that second homes are not subject to insurance rate increase caps.

Environment Resources Management and Whitney, Bailey Cox & Magnani, LLC. *Regulatory Response to Sea Level Rise and Storm Surge Inundation.* Annapolis, Maryland: City of Annapolis, October 2011.

This technical and planning report provides a conservative estimate of sea level rise for Annapolis over the projected planning horizon of 50 years. Significantly (as a model) the report describes policies that would be important to include within the City's comprehensive plan. It also suggests capital improvements deemed necessary to curb coastal flooding and inundation

such as temporary flood walls, dams, and drainage system improvements. These are suggestions that Rhode Island coastal communities such as Bristol, Warren, Newport, North Kingstown, and Westerly may wish to consider. The report recommendations are in line with CRS planning and implementation.

Federal Emergency Management Agency (FEMA). *Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas (Fourth Edition) FEMA P-55, Volume 1,* August 2011.

This guide has been published in 2 volumes, which provide comprehensive guidance on the named factors for new construction. The manual is informative in providing a information about new construction materials and their use, in contrast to the known construction materials and methods for historic buildings over time. Page 5-18 of Volume 1 provides a helpful list of best practices exceeding NFIP regulatory requirements:

- The building foundation is intact and functional (following an event)
- The envelope (lowest floor level, walls, openings, and roof) is structurally sound and capable of minimizing penetration of wind, rain, and debris.
- The lowest floor elevation is high enough to prevent floodwaters from entering the building envelope.
- The utility connections (electricity, water, sewer, gas) remain intact or can easily be restored.
- The building is accessible and habitable (after an event).
- Any damage to enclosures below the lowest floor level does not result in damage to the foundation, utility connections, or elevated portion of the building or nearby structures.

Federal Emergency Management Agency (FEMA). *Protecting Building Utilities from Flood Damage: Principals and Practices for the Design and Construction of Flood Resistant Building Utility Systems FEMA P-348*. Buckeystown, Maryland: FEMA, 1999.

Includes information on building infrastructure requirements above the base flood elevation (BFE), including electrical systems, sewage management systems, potable water systems.

Federal Emergency Management Agency (FEMA). *National Flood Insurance Program Community Rating System Coordinator's Manual FIA 15/2013*, August 1, 2013, updated January 15, 2014.

A complete guide to the CRS program including calculation of credits. Under the CRS program, communities gain credit points for the degree to which they implement programs to reduce flood damage risk. The manual provides detailed guidance on the calculation of such credits. The more credit points accumulated through various programs, the greater the reduction in flood insurance rates for the community.

Federal Emergency Management Agency (FEMA). *Substantial Improvement/Substantial Damage Desk Reference FEMA P-758.* FEMA, 2010.

This guide has an emphasis on how to implement compliance with the "substantial improvement" – 50% rule. The desk reference provides guidance on minimum NFIP requirements. It specifically says that state or locally adopted regulations can be more restrictive in exceeding NFIP minimums or "higher standards." The reference describes the desirability of local communities adopting a definition for "cumulative substantial improvement" (see section 5.7.3 or pg 5-19 of the publication). Recommendations are also made to improve flood resistance or resiliency, some of which can be successfully incorporated into historic buildings without losing architectural and historical integrity (see pages 5-19-20). CRS credits have been awarded to communities that are able to adopt more restrictive substantial improvement definitions, both "cumulative" and "lower threshold" (such as 30% market value).

Federal Emergency Management Agency. *Wet Flood-proofing Requirements for Structures Located in Special Flood Hazard Zones in Accordance with the National Flood Insurance Program FIA-TB-7, 12/93.*

A comprehensive guide to FEMA accepted wet flood-proofing techniques, some of which may be applicable to historic buildings without jeopardizing historical or architectural integrity.

Gray, Jordan, Esq. "Biggert-Waters and the Affordability Act: Making Flood Insurance Reform Affordable," in *Compliance Matters: News form WNC's Compliance Department*. Pasadena, California: WNC Insurance Services, Inc., April 25, 2014.

A concise look at the two recent federal laws enacted to regulate flood insurance and how they interact.

Mississippi Development Authority. *Elevation Design Guidelines for Historic Homes in the Mississippi Gulf Coast Region*, Jackson, Mississippi, no date (post 2005).

Excellent reference for flood elevation change options appropriate for specific architectural styles; includes guidance on site considerations and landscape screening as well as architectural treatments. Also includes an extensive annotated bibliography.

National Flood Insurance Program. *Community Rating System: A Local Official's Guide to Saving Lives, Preventing Property Damage, Reducing the Cost of Flood Insurance*. *FEMA Publication #573.*

A how-to manual for communities desiring to participate in the Community Rating System (CRS) to obtain further reductions in flood insurance rates community-wide.

National Flood Insurance Program Floodplain Management Bulletin: Historic Structures FEMA P-467-2. May 2008.

This technical bulletin explains in detail how the National Flood Insurance Program (NFIP) treats historic properties. Significantly the overall direction is in accord with the Secretary of the Interior's *Standards and Guidelines for the Treatment of Historic Properties* and the document carries an underlying message that the NFIP provides significant relief to historic resources and that the exclusion of historic resources from strict adherence to the flood code requirements actually is an incentive for property owners to maintain and preserve their historic buildings. The exclusion may also serve as an incentive for an owner to obtain historic designation (National Register status) of a structure.

R.C. Quinn Consulting, Inc. *Floodplain Management in Rhode Island: Quick Guide*. Rhode Island National Flood Insurance Program, Rhode Island Emergency Management Agency, Rhode Island Flood Mitigation Associaton, no date.

A guide to management of floodplains includes many statistics about Rhode Island floodplains. For example 14,000 buildings and structures are located in floodplains in Rhode Island. Only three percent (3%) of the state's flood prone property owners have flood insurance. The guide includes information about how insurance rates are affected by the degree of improvements undertaken to diminish flood damage risk such as elevating buildings, flood (smart) vents, etc. The guide also describes elevation certificates, their content and value in determining insurance rates.

Sewell, James. *Treatment of Flood-Damaged Older and Historic Properties. Adapted by the National Trust for Historic Preservation for Preservation Books.* Washington, D.C.: National Trust for Historic Preservation, no date.

This publication adapted from that of similar title from the State Historical Society of Wisconsin provides an excellent summary of materials in historic buildings that may become damaged in the event of flood. The guide provides how-to information on treatment and remediation of flood damaged historic exterior and interior building materials. It is informative to contrast these materials and their treatment with the modern construction materials described within the publication and in *FEMA P-55.*

Shevlin, Tom. "HDC Approves Uplifting Proposal," *in Newport This Week, Vol. 42, No.8.* Newport, R.I., February 20, 2014.

Detailed local newspaper description of the 70 Bridge Street project in the historic Point District.

University of Rhode Island Coastal Institute Shoreline Change SAMP. *Rhode Island Coastal Property Guide: what coastal property owners, renters, builders, and buyers should know about Rhode Island's shoreline*. Kingston, R.I., University of Rhode Island, 2014.

> A complete home owner's guide to the regulatory environment and potential impact of coastal flooding including a section on FEMA flood zones and flood insurance.

www.beachsamp.org. Catalogue of Adaptation Techniques for Coastal and Waterfront Businesses: Options to help deal with the impacts of storm and sea level rise.

> A guide for retrofits and new construction. Some of the concepts may be suitable for historic buildings, provided that integrity is not compromised and character-defining features are not removed or substantially altered.

Appendix

1. GIS Maps of 21 Coastal Communities in Rhode Island Showing Historic Sites and Historic Districts in Flood Zones (2015)

2. Interview Notes: Town Officials, RIEMA Staff, Insurance Professionals, Architects (2015)

3. The National Flood Insurance Act of 1968, as amended, and the Flood Disaster Protection Act of 1973, as amended, 42 U.S.C. 4001 et seq.

4. FEMA, *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning* – Foreword (May 2005)
   Full document available at http://www.fema.gov/media-library/assets/documents/4317

5. FEMA, Federal Insurance and Mitigation Administration, *FEMA Fact Sheet: Historic Structures and the Biggert-Waters Flood Insurance Reform Act of 2012* (n.d.)

6. FEMA, National Flood Insurance Program, *Floodplain Management Bulletin: Historic Structures, FEMA P-467-2* (May 2008)

7. WNC Insurance Services, Inc., *Biggert-Waters and the Affordability Act: Making Flood Insurance Reform Affordable* (April 25, 2014)

8. Indiana Department of Natural Resources, Floodplain Management Section, *State of Indiana Model Ordinance for Flood Hazard Areas* (n.d.)

9. Mississippi Development Authority, *Elevation Design Guidelines for Historic Homes in the Mississippi Gulf Coast Region* – Introduction (n.d.)
   Full document available at http://www.nj.gov/dep/hpo/hrrcn_sandy_pdf%20files/mississippi.pdf

10. City of Annapolis, MD, *Regulatory Response to Sea Level Rise and Storm Surge Inundation* (October 2011)