

ANNOTATED BIBLIOGRAPHY



- A. International
- B. Federal
- C. State of Maryland
- D. Non-State-of-Maryland
- E. Other Entities

NOTE: The majority of the resources referenced in this section was accessed online between the fall of 2015 and spring of 2016. As a result, countless relevant recent publications, articles, and websites are not included in this Annotated Bibliography, and some of the cited links may no longer be active.

INTERNATIONAL



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THE EU FLOODS DIRECTIVE

EUROPEAN COMMISSION

No Date

http://ec.europa.eu/environment/water/flood_risk/

Date Accessed: 23 December 2015

This Directive requires Member States to assess all water courses and coastlines for risk from flooding, to map the flood extent, assets, and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. This Directive also reinforces the rights of the public to access this information and to have a say in the planning process.

12/23/2015 Flood risk management - Water - Environment - European Commission

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The EU Floods Directive

Directive 2007/60/EC on the assessment and management of flood risks entered into force on 20 November 2007. This Directive now requires Member States to assess if all water courses and coastal areas are at risk from flooding; to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. With this Directive also reinforces the right of the public to access this information and to have a say in the planning process.

The Directive was proposed by the European Commission on 18/01/2006, and was finally published in the Official Journal on 6 November 2007. Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires Member States to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such areas they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans. All assessments, maps and plans prepared shall be made available to the public.

Member States shall furthermore coordinate their flood risk management practices in shared river basins, including with third countries, and shall in solidarity not undertake measures that would increase the flood risk in neighbouring countries. Member States shall in take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in this Directive.

Background

Between 1998 and 2009, Europe suffered over 213 major damaging floods, including the catastrophic floods along the Danube and Elbe rivers in summer 2002. Severe floods in 2005 further reinforced the need for concerted action. Between 1998 and 2009, floods in Europe have caused some 1120 deaths, the displacement of about half a million people and at least €32 billion in insured economic losses. (Source: EEA)

Catastrophic floods endanger lives and cause human tragedy as well as heavy economic losses. Floods are natural phenomena but through the right measures we can reduce their likelihood and limit their impacts. In addition to economic and social damage, floods can have severe environmental consequences, for example when installations holding large quantities of toxic chemicals are inundated or wetland areas destroyed. The coming decades are likely to see a higher flood risk in Europe and greater economic damage.

Further reading

[Directive 2007/60/EC on the assessment and management of flood risks in all available languages \(L288, 6.11.2007, p.27\)](#)

[Key documents from the negotiation of the Directive are available here](#)

[Read more about the implementation of the Directive](#)

[Read more about the EU Floods Action Programme](#)

http://ec.europa.eu/environment/water/flood_risk/

12

EUROPEAN CLIMATE ADAPTATION PLATFORM

Climate-ADAPT
European Climate Adaptation Platform

Home Adaptation information EU adaptation policy Countries, regions, cities Tools Links Search the database Newsletter

About Climate Change Adaptation in Europe

The European Climate Adaptation Platform (CLIMATE-ADAPT) aims to support Europe in adapting to climate change. It is an initiative of the European Commission and helps users to access and share information on:

- Expected climate change in Europe
- Current and future vulnerability of regions and sectors
- National and transnational adaptation strategies
- Adaptation case studies and potential adaptation options
- Tools that support adaptation planning

SEARCH THE CLIMATE ADAPTATION DATABASE

Advanced Search

Search Terms: Keyword Search

Sectors: Agriculture and Forest, Biodiversity, Coastal areas

Country: Albania, Austria, Belgium

NEW TO ADAPTATION? Use the Adaptation Support Tool

What are European countries doing? Choose a country

Find case studies on adaptation in Europe Share your information

EU sector policies **EU information systems**

17 Dec 2015 JH Union Europe will propose new open
14 Dec 2015 COP21 - Historic agreement on climate change
04 Dec 2015 New brochure on EU LIFE funds and climate change adaptation
23 Apr 2016 9th European Conference on Sustainable Cities & Towns. Bilbao
10 May 2016 Adaptation Future 2016: practices and solutions. Rotterdam, The Netherlands
23 Jun 2016 22nd International Conference on Urban Transport & the Environment, Crete, Greece

European Commission | European Environment Agency

EUROPEAN ENVIRONMENT AGENCY

No Date

[Http://climate-adapt.eea.europa.eu/](http://climate-adapt.eea.europa.eu/)

Date Accessed: 23 December 2015

The European Climate Adaptation Platform (CLIMATE-ADAPT) is an electronic platform intended to support Europe in adapting to climate change. It helps users access and share data regarding:

- Expected climate change in Europe
- Current and future vulnerability of regions and sectors
- EU, national and transnational adaptation strategies and actions
- Adaptation case studies and potential adaptation options
- Tools that support adaptation planning

Information is organized under the following main entry points and can be easily searched:

- Adaptation information (Observations and scenarios, Vulnerabilities and risks, Adaptation measures, National adaptation strategies, Research projects)
- EU sector policies (Agriculture and forestry, Biodiversity, Coastal areas, Disaster risk reduction, Financial, Health, Infrastructure, Marine and fisheries, Water management)
- Transnational regions, Countries and Urban areas
- Tools (Adaptation Support Tool, Case Study Search Tool, Map Viewer)

DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 23 OCTOBER 2007 ON THE ASSESSMENT AND MANAGEMENT OF FLOOD RISKS

6.11.2007	EN	Official Journal of the European Union	L 288/27
DIRECTIVES			
DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks			
(Text with EEA relevance)			
THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,	coordinated throughout a river basin if they are to be effective.		
Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,	(4) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (*) requires river basin management plans to be developed for each river basin district in order to achieve good ecological and chemical status, and it will contribute to mitigating the effects of floods. However, reducing the risk of floods is not one of the principal objectives of that Directive, nor does it take into account the future changes in the risk of flooding as a result of climate change.		
Having regard to the proposal from the Commission,			
Having regard to the Opinion of the European Economic and Social Committee (*),			
Acting in accordance with the procedure laid down in Article 251 of the Treaty (*),	(5) The Commission Communication of 12 July 2004 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Flood risk management — Flood prevention, protection and mitigation' sets out its analysis and approach to managing flood risks at Community level, and states that concerted and coordinated action at Community level would bring considerable added value and improve the overall level of flood protection.		
Whereas:			
(1) Floods have the potential to cause fatalities, displacement of people and damage to the environment, to severely compromise economic development and to undermine the economic activities of the Community.	(6) Effective flood prevention and mitigation requires, in addition to coordination between Member States, cooperation with third countries. This is in line with Directive 2000/60/EC and international principles of flood risk management as developed notably under the United Nations Convention on the protection and use of transboundary water courses and international lakes, approved by Council Decision 95/108/EC (*), and any succeeding agreements on its application.		
(2) Floods are natural phenomena which cannot be prevented. However, some human activities (such as increasing human settlements and economic assets in floodplains and the reduction of the natural water retention by land use) and climate change contribute to an increase in the likelihood and adverse impacts of flood events.	(7) Council Decision 2001/792/EC, Euratom of 23 October 2001 establishing a Community mechanism to facilitate reinforced cooperation in civil protection assistance interventions (*) mobilises support and assistance from Member States in the event of major emergencies, including floods. Civil protection can provide adequate response to affected populations and improve preparedness and resilience.		
(3) It is feasible and desirable to reduce the risk of adverse consequences, especially for human health and life, the environment, cultural heritage, economic activity and infrastructure associated with floods. However, measures to reduce these risks should, as far as possible, be			
(*) OJ C 195, 18.8.2006, p. 37.	(*) OJ L 327, 22.12.2000, p. 1. Directive as amended by Decision No 2455/2001/EC (OJ L 331, 15.12.2001, p. 1).		
(*) Opinion of the European Parliament of 13 June 2006 (OJ C 100 E, 9.12.2006, p. 123). Council Common Position of 23 November 2006 (OJ C 311 E, 19.12.2006, p. 10) and Position of the European Parliament of 23 April 2007, Council Decision of 18 September 2007.	(*) OJ L 186, 5.8.1995, p. 42.		
	(*) OJ L 297, 15.11.2001, p. 7.		

EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION

23 October 2007

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007L0060&from=EN>

Date Accessed: 23 December 2015

This Directive was adopted by the European Parliament in recognition of the fact that flooding can have an impact on:

- Human health and life
- Cultural heritage
- Economic activity
- Infrastructure

The directive establishes a both framework for coordination between countries and local implementation in order to address various types of flooding and a fund to assist in the event of an emergency. It encourages the preparation of a Flood Risk Management Plan (FRMP) and describes its components, implementation and the process of updating a FRMP.

THE SCIENCE OF SAVING VENICE

ANNA SOMERS COCKS

2005/2006

https://www.wmf.org/sites/default/files/article/pdfs/pg_23-29_venice_c.pdf

Date Accessed: 15 January 2016

This article details the response to November 1966 flooding in Venice - over two meters above mean sea level - as well as continuing efforts to conserve the built fabric from the threat of sea level rise. Cocks describes the factors that impact increased flood events in the city, including:

- Abandonment
- Reduction in permeable surfaces
- Soil compaction
- Erosion
- Salt water intrusion

The article summarizes efforts to protect Venice. The highlight of these efforts is an international discussion amongst scientists, which concluded that Venice's best possible would be a variety of methods, including a mobile barrier system for the Lagoon. Cocks concludes with a reminder that the question is not how to protect Venice from the water, but for how long.

The Science of Saving Venice

PLAGUED BY RECORD HIGH TIDES AND A SETTLING LANDMASS, THE CITY PRESENTS ONE OF THE WORLD'S GREAT CONSERVATION CHALLENGES

by ANNA SOMERS COCKS

Oh Venice! Oh Venice! When thy marble walls
Are level with the waters, there shall be
A cry of nations o'er thy sunken halls
A loud lament along the sweeping sea!

—LORD BYRON, Ode to Venice, June 28, 1819

In the old days of the Venetian Republic, the doge would board his golden barge on Ascension Day to be rowed out beyond the lagoon into the waters of the Adriatic. There, he would throw a consecrated ring into the sea, saying "Desponsamus te, mare." (We wed thee, O sea).

On the night of 3 November 1966, that marriage—more than a millennium in the making—failed as a violent storm surge rolled into the city, flooding its labyrinthine canals to a depth of nearly two meters above mean sea level. Miraculously, no one perished. Yet Venice was forever changed. As debris and pollution from oil spills flowed throughout the city, its most basic services rendered inoperable, the flood threw a harsh spotlight onto the crumbling architectural fabric of Venice, which had been slowly but surely sinking into the waters of the lagoon that had given it life, unbeknownst to the outside world.

Within weeks, the international community responded, pledging to aid Venice in its recovery. Working closely with the soprintendenti or cultural heritage officials in the Italian government, UNESCO drew up a list of more than 100 structures in urgent need of stabilization and conservation and launched an appeal for funds and technical assistance. Among the first to step forward were the British Art and Archives Rescue Fund (renamed Venice in Peril in 1977) and the U.S. Committee to Rescue Italian Art (CRIA). The World Monuments Fund (WMF)—known at that time as the International Fund for Monuments—partnered with the latter and established the Venice Committee to carry out restoration work. Its example was soon followed by the formation of a number of national committees dedicated to the preservation of the city.

In that time WMF has supported some 30 restoration projects in Venice, making it one of the largest beneficiaries of the organization's time and resources, while Venice in Peril has restored more than 40 buildings and works of art, as well as

WMF.ORG

IMPACT OF CLIMATE CHANGE ON CULTURAL HERITAGE: FROM INTERNATIONAL POLICY TO ACTION

MAY CASSAR

2011

http://www.getty.edu/conservation/publications_resources/newsletters/26_1/impact.html

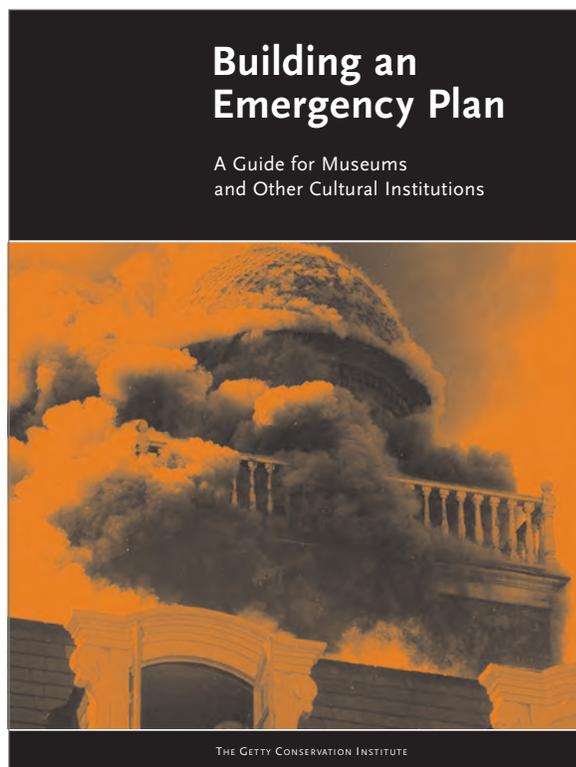
Date Accessed: 19 July 2016

Mary Cassar's article, published in The Getty Conservation Institute's Newsletter, is a brief overview of methods for addressing heritage and climate change. Cassar emphasizes that the physical, cultural, and social aspects of a heritage site cannot be separated and includes a review of past research initiatives on heritage and climate change.

Cassar makes several calls to action. The author advocates for: an interdisciplinary approach to preparing for climate change, renewed focus on damage risk and a bridge between the arts and the sciences. The article concludes by reiterating that all disciplines are affected by climate change and emphasizing that "the way we live [...] who we are [...]" is fundamentally at stake.



BUILDING AN EMERGENCY PLAN: A GUIDE FOR MUSEUMS AND OTHER CULTURAL INSTITUTIONS



VALERIE DORGE AND SHARON L. JONES

1999

http://hdl.handle.net/10020/gci_pubs/emergency_englis

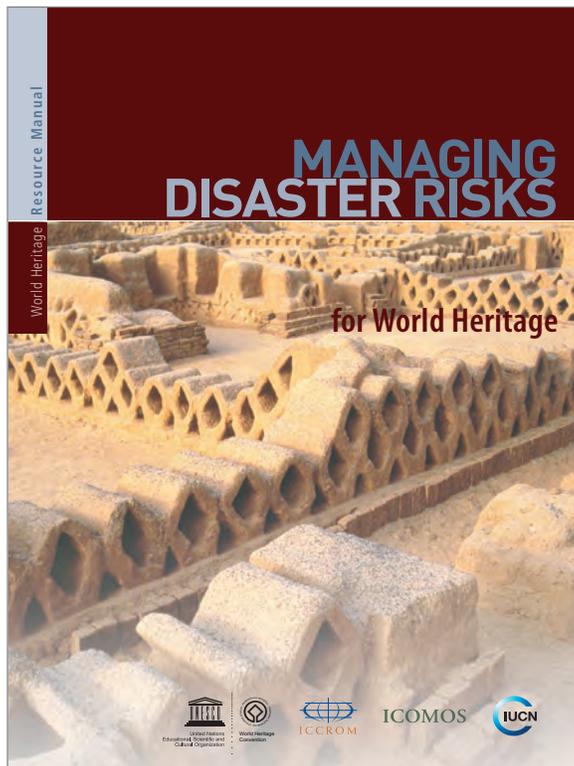
Date Accessed: 19 January 2016

This guide is aimed at museum staff and other cultural institutions, emphasizing that the effects of natural disasters and other emergencies can be minimized if an institution establishes a proper plan. The intent of this guide is to provide methods for developing and instituting the appropriate emergency response plan. It is broken into three parts, each part aimed at a different audience:

- Director of the institution
- Emergency preparedness manager
- Institution departments, including collections and buildings and maintenance

The guide is a jumping off point for a conversation and addresses concerns unique to the three audience list above. It encourages interdepartmental dialogue for a more holistic plan. The guide concludes with an appendix of additional resources as well as examples of emergency plans.

MANAGING DISASTER RISKS FOR WORLD HERITAGE



ICCROM, ICOMOS, IUCN AND UNESCO WORLD HERITAGE CENTRE
2010

<http://whc.unesco.org/document/104522>

Date Accessed: 22 December 2015

This manual is intended to provide managers of World Heritage properties a better understanding of the risks associated with natural and man-made disasters and a methodology for the preparation of a Disaster Risk Management (DRM) plan.

Although prepared for World Heritage sites, the principals of DRM plans can be applied to any cultural institution that is at risk for a disaster. The manual explains:

- Identification and assessment of disaster risk
- Prevention and mitigation of disaster risk
- Disaster preparation and response
- Disaster recovery
- Implementation of the plan

HERITAGE AND RESILIENCE: ISSUES AND OPPORTUNITIES FOR REDUCING DISASTER RISK

ROHIT JOGYASU, ET AL

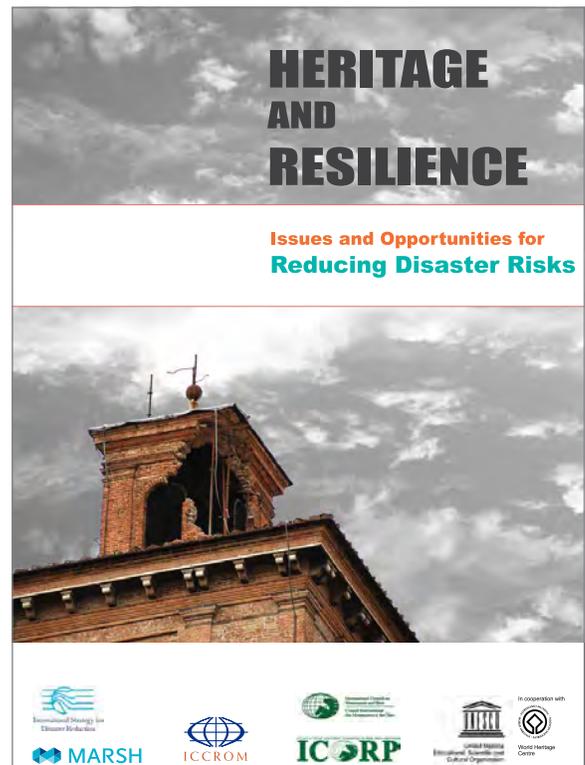
2013

<http://icorp.icomos.org/images/documents/Heritage%20and%20Resilience%20Book%20for%20GPP2013%20Disaster%20Management.pdf>
Date Accessed: 23 December 2015

This paper presents the current thinking in the field as well as examples of how heritage can be better protected from disasters while contributing to the resilience of societies. It aims to bring these issues to the attention of the disaster risk reduction community and stimulate discussion within a post-2015 framework for disaster risk reduction and a post 2015 development agenda. In advocating for integration of these issues within both disaster risk and heritage conservation policies and practices, this paper promotes strategic partnerships that bring the knowledge and capacities of actors in the fields of cultural heritage and disaster risk together and encourages support to the initiatives of local governments and, most importantly, communities that safeguard our shared cultural heritage for resilience.

Five main issues are discussed:

- Why protect heritage?
- How is heritage being protected from disaster risk?
- How is heritage being used to promote resilience after disasters?
- Who is protecting heritage from disasters?
- Way forward for promoting heritage and resilience.



THE EFFECTS OF CLIMATE CHANGE ON CULTURAL HERITAGE IN THE POLAR REGIONS

SUSAN BARR

2008

http://www.icomos.org/risk/world_report/2006-2007/pdf/H@R_2006-2007_53_Special_Focus_Effects_GCC_Polar.pdf
Date Accessed: 18 July 2016

Climate change currently impacts the Arctic region the hardest, threatening historic sites. Barr points specifically to the potential loss of graveyard and other materials preserved by the now melting layer of permafrost.

In instances where a site is sure to be lost, Barr encourages documenting that site for future reference. The article also considers how climate change may open up opportunities for increased tourism in the Arctic, which may produce unintended consequences, such as further erosion of the landscape.

Barr concludes by pointing to the Arctic as a laboratory for mitigating the effects of climate change, which the international community can look to as the impact of climate change manifests itself throughout the rest of the world.

Heritage at Risk 2006/2007

The Effects of Climate Change on Cultural Heritage in the Polar Regions 203

The Effects of Climate Change on Cultural Heritage in the Polar Regions

Introduction

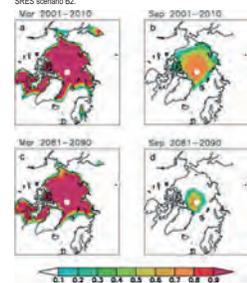
It is a now-documented fact that the changes to the climate in the Arctic are more rapid and deeper than in most other regions of the world. Several large international research programmes address the complexity and have already presented results that show serious implications. For example, the project "International Study of Arctic Change" (ISAC) takes as its starting point changes that already affect the lives of native populations and others who live in the circum-Arctic, including changes in fishery patterns, in vegetation growth and in shipping and transport (<http://www.isac.org/isac.html>).

The Centre for Climate Research (CICERO) in Norway (www.cicero.uio.no) has compiled the following facts about the latest climate changes in the Arctic:

- The average annual temperature has increased about twice as much as in the rest of the world. Glacier melting, sea-ice melting and a shorter snow season are obvious results of this.

Prognosis for diminishing sea ice in the Arctic Basin
From: JOHANNESSEN, OLA M., BENGTSSON, LENNART, MILES, MARTIN W., KLUMINA, SVETLANA I., SEMENOV, VLADIMIR A., ALEXSEEV, GENRIKH V., NAGURNYI, ANDREI P., ZAKHAROV, VICTOR F., BOBYLEV, LEONID P., PETERSSON, LASSE H., HASSELIMANN, KLAUS & CATLE, HOWARD J. Arctic climate change: observed and modelled temperature and sea-ice variability. *Tellus A* 58 (4), 323-341.
doi: 10.1111/j.1600-0870.2004.00090.x

ECHAM5-modelled Northern Hemisphere sea-ice concentration in late winter (March) from (a) 2001-2010 and (c) and 2081-2090, and in late summer (September) from (b) 2001-2010 and (d) 2081-2090. The model has been run using the IPCC IS92a emission scenario comparable to IPCC SRES scenario B2.



- 2005 was globally the warmest year since systematic instrument registering of temperatures started in 1880. The Arctic contributed strongly to this and 2005 was an unusually warm year in the Arctic.

- The summer ice cover in the Arctic Ocean has been substantially reduced during the last years. Whole-year ice is now also melting. Between 2004 and 2005 this ice was reduced by 14%.
- Research in both Siberia and Alaska show that the permafrost is melting in the Arctic. In northern Alaska a widespread and quick permafrost thaw has been registered from 1982 to 2006. Scientists see this in connection with record-high temperatures registered in the period 1989-1998.

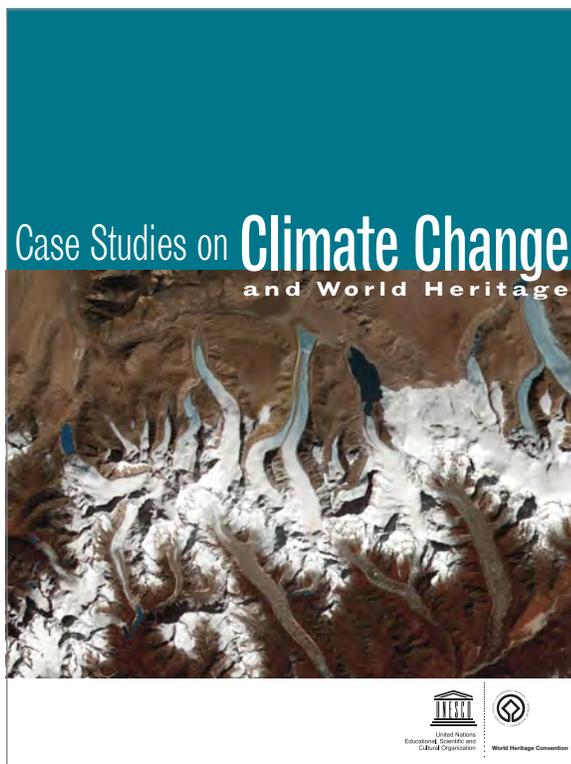
However, it must be stated that as with all climate scenarios, the hardest thing to predict is the future. We can show what has already happened, but the modelling of future climates and weather patterns is a complicated matter which leaves room for varying and sometimes completely opposite conclusions. The Arctic Monitoring and Assessment Programme (AMAP) writes in its "State of the Arctic report" from September 2006 (see <http://www.amap.no>) that: "Many of the trends documented in the ACIA are continuing, but some are not. Taken collectively, the observations presented in this report indicate that during 2000-2005 the Arctic system showed signs of continued warming. However, there are a few indications that certain elements may be recovering and returning to recent climatological norms (for example, the central Arctic Ocean and some wind patterns). These mixed tendencies further illustrate the sensitivity and complexity of the Arctic physical system. They underline the importance of maintaining and expanding efforts to observe and better understand this important component of the climate system to provide accurate predictions of its future state."

The polar bear has been elected by many as the symbol of a warming Arctic and the worst-case scenario that global warming could result in. The polar bear is actually a marine mammal, not a land mammal. It is dependent on the sea ice as its hunting ground for seals, which are the bear's staple food. Catching, for example, reindeer on land or fish and seals swimming in the sea are not viable alternatives. Less sea ice results in a shorter hunting season, and ultimately (worse case), no hunting ground at all. It can sometimes seem more difficult to bring the challenges facing the Arctic peoples, and not least the cultural heritage of the Arctic, into the public awareness than the fate of the annual "king of the Arctic".

The Arctic Peoples website (<http://www.arcticpeoples.org/KeyIssues/ClimateChangeStart.html>) mentions the fact that many non-Arctic people might think that a warming climate is an advantage for those living in the Arctic region. On the contrary, they point out, the Arctic people are well adapted to their traditional climate. A warming climate brings such problems for them as less sea-ice for transport and hunting, more erosion of coastal community shorelines, permafrost movement which disturbs pipelines and building foundations, and more insects which negatively affect reindeer as well as traditional methods of fresh-meat storage.

The warmer ocean and the colder land meet at the coastal zone, and it is in the coastal zone in the Arctic that most human activity and settlement has occurred and still takes place. Cultural heritage and current activities are therefore deeply affected by major changes in the coastal zone, whether it be erosion or land gain. In fact it is erosion that is the main problem for cultural heritage protection around the entire Arctic region, as the two case studies from

CASE STUDIES ON CLIMATE CHANGE AND WORLD HERITAGE



AUGUSTIN COLETTE

2007

<http://whc.unesco.org/en/activities/473/>

Date Accessed: 15 January 2016

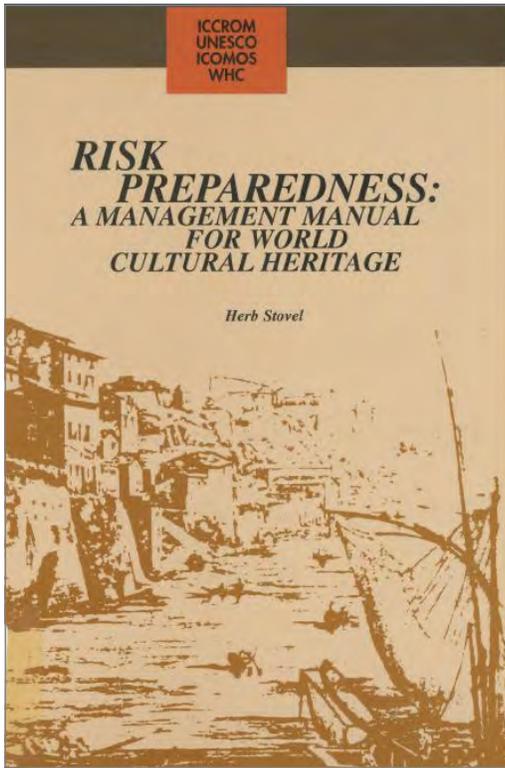
The twenty-six case studies presented here intend to illustrate the effect of climate change on heritage sites. These case studies range from Sagarmatha National Park in Nepal to the Golden Mountains of Altai in the Russian Federation to Timbuktu in Mali. The case studies are organized by category: Glaciers, Marine Biodiversity, Terrestrial Biodiversity, Archaeological Sites, and Historic Cities and Settlements.

Each case study attempts to illustrate the observed, as well predicted, effects of climate change. These effects include:

- Bleaching of coral reefs due to sea-temperature rise
- Changing of animal migration patterns
- Loss of sites due to flooding

In addition to presenting the issues faced by these sites, these case studies include a review of adaptation strategies deployed to counter the effects of climate change.

RISK PREPAREDNESS: A MANAGEMENT MANUAL FOR WORLD CULTURAL HERITAGE



HERB STOVEL

1998

http://www.iccrom.org/ifrcdn/pdf/ICCROM_17_RiskPreparedness_en.pdf

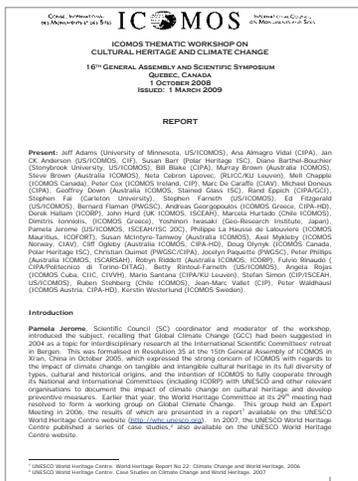
Date Accessed: 22 December 2015

This manual was prepared to assist property managers in developing site-specific risk-preparedness guidelines that address potential natural and man-made disasters in the context of the specific political, economic and cultural conditions. The manual encourages integrating protection of cultural heritage and existing emergency planning mechanisms, and includes the necessary administrative, operational, and technical measures.

The manual is organized to provide general information about risk preparedness for historic buildings and districts followed by chapters applicable to various types of risk. Chapter 7 provides strategies to address potential flooding including:

- Describing the types of flood damage to individual historic buildings, districts, cultural and archaeological sites
- Developing a flood strategy
- Reducing risk and increasing resistance
- Response
- Recovery

REPORT FROM THE ICOMOS THEMATIC WORKSHOP ON CULTURAL HERITAGE AND CLIMATE CHANGE, 16TH GENERAL ASSEMBLY AND SCIENTIFIC SYMPOSIUM QUEBEC, CANADA, OCTOBER 2008



SUMMARY OF THE SIGNIFICANCE OF AND THREATS TO THE CULTURAL RESOURCES LOCATED AT THE HISTORIC SETTLEMENT AREA ON HERSHEL ISLAND TERRITORIAL PARK IN YUKON



PAMELA JEROME - 2009

http://www.icomos.org/climatechange/pdf/ICOMOS_GCC_Cultural_Heritage_Workshop_Quebec_2008_Report_Final_EN.pdf

Date Accessed: 18 July 2016

DOUG OLYNYK - 2008

http://www.icomos.org/risk/world_report/2006-2007/pdf/H@R_2006-2007_56_Special_Focus_Herschel_Yukon.pdf

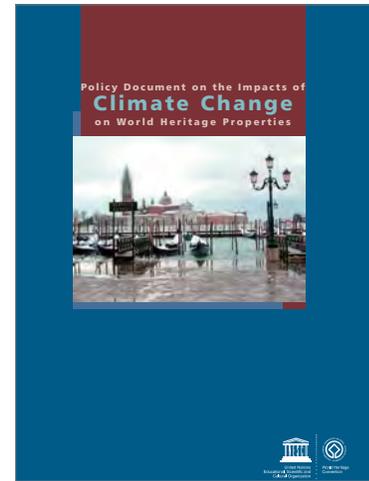
Date Accessed: 19 July 2016

WORLD HERITAGE REPORTS 22, CLIMATE CHANGE AND WORLD HERITAGE



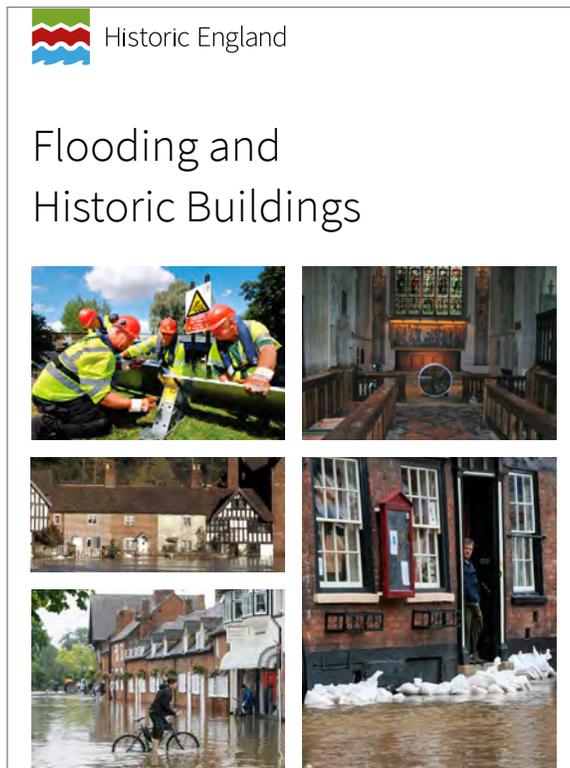
UNESCO/WORLD HERITAGE - 2007
<http://whc.unesco.org/en/activities/474>
 Date Accessed: 18 July 2016

POLICY DOCUMENT AND THE IMPACTS OF CLIMATE CHANGE ON WORLD HERITAGE PROPERTIES



UNESCO - 2008
<http://whc.unesco.org/en/CC-policy-document/>
 Date Accessed: 18 July 2016

FLOODING AND HISTORIC BUILDINGS



DAVID PICKLES, ET AL

2015

<https://content.historicengland.org.uk/images-books/publications/flooding-and-historic-buildings-2ednrev/heag017-flooding-and-historic-buildings.pdf/>

Date Accessed: 22 December 2015

This document was published by Historic England. It describes:

- The increased risk of flooding due to:
 - Climate change
 - Increasing urbanization
- The costs of flooding:
 - Damage to property, infrastructure and occupant possessions
 - Disruption and stress due to evacuation of occupants
- Major consultations and reviews since 2007 by government and regulatory agencies
- Increasing recognition of the need at the local level for coordinated flood-risk management
- The necessity for integrated flood-risk management and effective communication between all involved parties in order to appropriately protect the historic environment

FLOODING FROM GROUNDWATER

LOCAL GOVERNMENT ASSOCIATION

2011

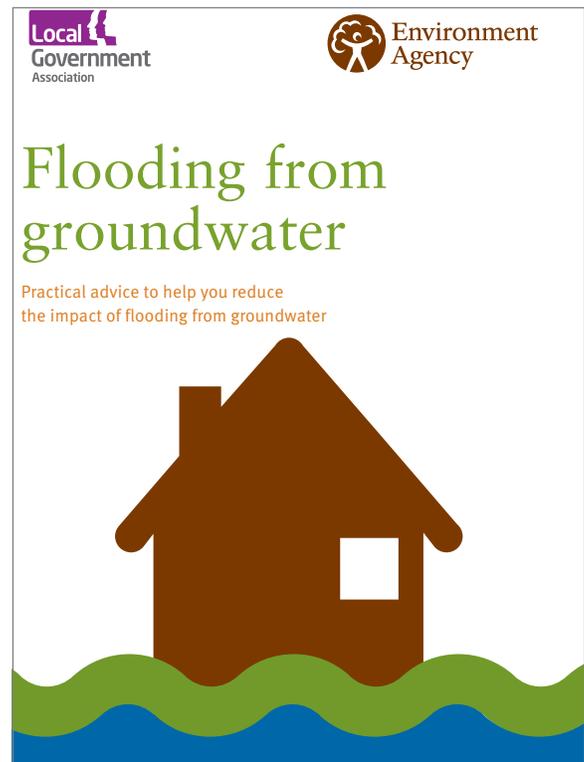
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297421/flho0911bugi-e-e.pdf

Date Accessed: 22 December 2015

This document was authored by the Local Government Association of the Environment Agency of the United Kingdom to provide practical advice primarily to homeowners to reduce the impact of flooding from groundwater on persons and property.

The document describes:

- The potential sources of flooding
- The initiation, duration, and emergent location of flood events
- Potential sources of information regarding groundwater flood risk at a particular property
- Recommended homeowner preparations for flooding
- Alternatives for preventing groundwater from entering a property, such as pumping
- Recommendations for reducing potential damage to the most vulnerable parts of a property
- Recommended actions during a flood event
- Recommended actions after a flood event
- Sources for further information

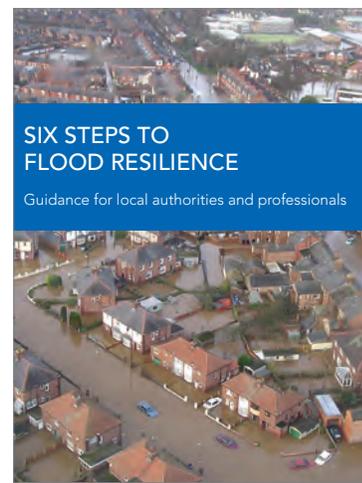


CLIMATE CHANGE AND THE HISTORIC ENVIRONMENT OF WALES: A SUMMARY OF POTENTIAL IMPACTS



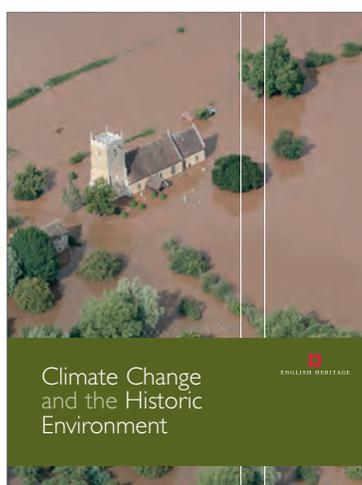
K. MURPHY AND M. INGS - 2013
http://cadw.gov.wales/docs/cadw/publications/Climate_change_and_the_historic_environment_of_Wales_EN.pdf
 Date Accessed: 19 July 2016

SIX STEPS TO FLOOD RESILIENCE – GUIDANCE FOR LOCAL AUTHORITIES AND PROFESSIONALS



I. WHITE, ET AL - 2013
<https://www.bre.co.uk/filelibrary/pdf/projects/flooding/Six-Steps-Professional-web-Aug2013.pdf>
 Date Accessed: 19 January 2016

CLIMATE CHANGE AND THE HISTORIC ENVIRONMENT



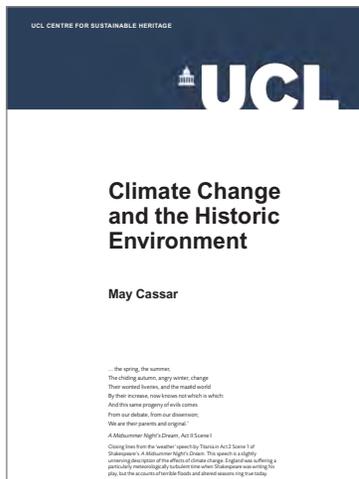
ENGLISH HERITAGE (HISTORIC ENGLAND) - 2011
<https://content.historicengland.org.uk/images-books/publications/climate-change-and-the-historic-environment/climate-change.pdf/>
 Date Accessed: 18 July 2016

FLOOD DAMAGE TO TRADITIONAL BUILDINGS: INFORMATION FOR HISTORIC BUILDINGS



HISTORIC SCOTLAND - 2014
<http://conservation.historic-scotland.gov.uk/inform-flood-damage-to-traditional-buildings.pdf>
 Date Accessed: 18 July 2016

CLIMATE CHANGE AND THE HISTORIC ENVIRONMENT



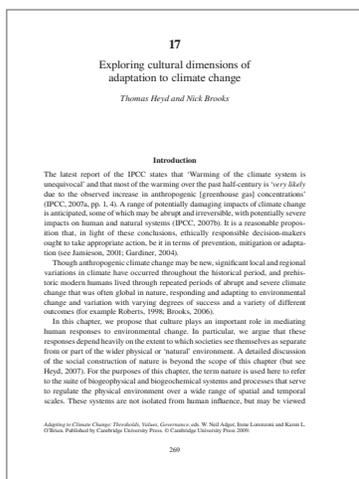
MAY CASSAR - 2005
<http://discovery.ucl.ac.uk/2082/1/2082.pdf>
 Date Accessed: 18 July 2016

QUANTIFYING THE COST OF CLIMATE CHANGE IMPACTS ON THE BUILT HERITAGE



TIM TAYLOR, ALISTAIR HUNT, MAY CASSAR, AND IAN WAINWRIGHT - 2007
<http://discovery.ucl.ac.uk/2612/1/2612.pdf>
 Date Accessed: 19 July 2016

EXPLORING CULTURAL DIMENSIONS OF ADAPTATION TO CLIMATE CHANGE



THOMAS HEYD AND NICK BROOKS - 2009
http://www.garama.co.uk/wp-content/uploads/2013/06/Heyd-Brooks_cultural.pdf
 Date Accessed: 19 July 2016

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FEDERAL

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36 CFR PART 800 – PROTECTION OF HISTORIC PROPERTIES

ADVISORY COUNCIL ON HISTORIC PRESERVATION

2004

<http://www.achp.gov/regs-rev04.pdf>

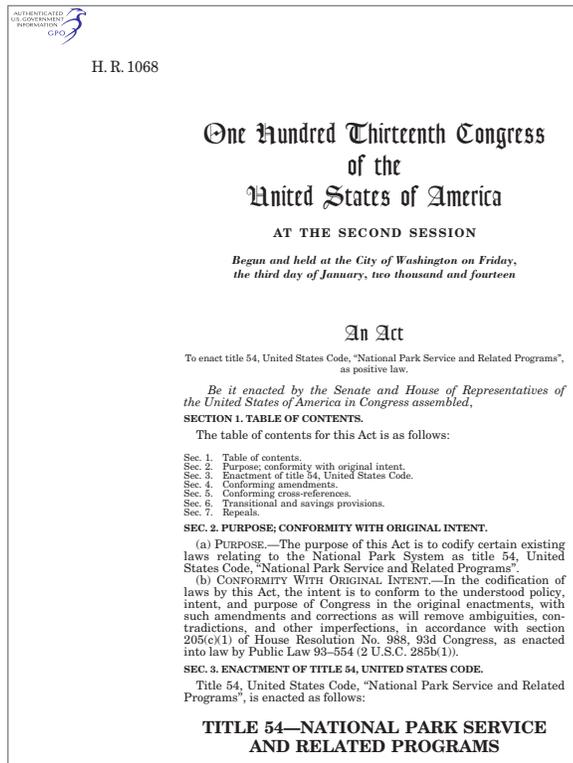
Date Accessed: 22 December 2015

Section 106 of the National Historic Preservation Act of 1966 mandates that all Federal undertakings - any project that uses Federal funding at least in part - must be reviewed with regard to any potential impact on any property or site that is listed, or is eligible for, the National Register of Historic Places.

This document elaborates on the circumstances that will initiate a Section 106 review as well as the required protocol for that process, including assessment of adverse effects. It also details the responsibilities of each party in the process as well as instructions for various situations that may arise.



H. R. 1068, TITLE 54, UNITED STATES CODE, “NATIONAL PARK SERVICE AND RELATED PROGRAMS.”



ONE HUNDRED THIRTEENTH CONGRESS OF THE UNITED STATES OF AMERICA AT THE SECOND SESSION
2003

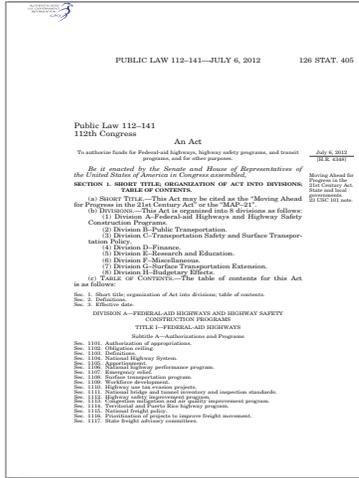
<https://www.gpo.gov/fdsys/pkg/WCPD-2003-03-10/pdf/WCPD-2003-03-10-Pg286.pdf>

Date Accessed: 22 December 2015

This law was enacted by Congress on 12/19/2014 and gathers existing numerous laws relating to the organization and management of the National Park System by the National Park Service. The Service is responsible for carrying out the Historic Sites, Buildings, and Antiquities Act, the National Historic Preservation Act, and other laws relating to protecting and preserving sites that illustrate America’s history. These laws had been classified as part of Title 16, Conservation, but were classified throughout title 16 rather than being in one distinct place in the title. Furthermore, as laws relating to the National Park System were amended and new laws were enacted that related closely to these laws, the Code classifications had become cumbersome to use.

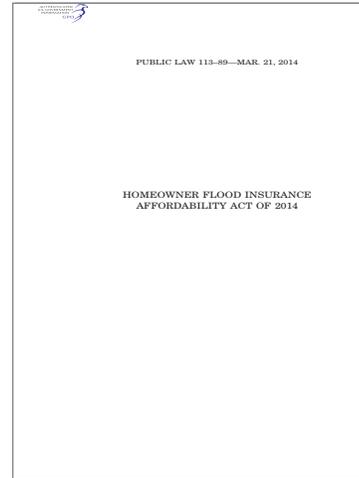
H.R 1068, Title 54 restates these provisions as a new positive law title of the United States Code. The new positive law title replaces the former provisions, which are repealed by the bill. All changes in existing law made by the bill are purely technical in nature.

BIGGERT-WATERS ACT OF 2012



US GOVERNMENT PUBLISHING OFFICE - 6 July 2012
<https://www.gpo.gov/fdsys/pkg/PLAW-112publ141/pdf/PLAW-112publ141.pdf>
Date Accessed: 11 August 2016

HOMEOWNER FLOOD INSURANCE AFFORDABILITY ACT OF 2014



US GOVERNMENT PUBLISHING OFFICE - 21 March 2014
<https://www.congress.gov/113/plaws/publ89/PLAW-113publ89.pdf>
Date Accessed: 22 February 2016

FEMA FACT SHEET: HISTORIC STRUCTURES AND THE BIGGERT-WATERS FLOOD INSURANCE REFORM ACT OF 2012

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2014
http://www.fema.gov/media-library-data/1389204656960-d8d62a77fde51036c4a7157ec6ba1577/Historic_Structures_FS_2013_v01_08_2014.pdf
Date Accessed: 22 December 2015

As a follow-up to FEMA P-467-2 (Floodplain Management Bulletin – Historic Structures), this Fact Sheet clarifies the application of the Biggert-Waters Insurance Reform Act of 2012 (BW 12) to historic structures. BW 12 includes provisions that required the National Flood Insurance Program (NFIP) “to raise the rates to reflect true flood risk, make the program more financially stable, and change how Flood Insurance Rate Map (FIRM) updates impact policyholders.” The fact sheet states that there is no exemption for insurance rate increases for historic buildings or structures. However, it does provide two provisions for qualifying historic buildings:

- The classification of “substantial improvement” does not apply to appropriate alterations to historic buildings
- A variance can be granted for repairs or rehabilitation in a manner that allows continued designation

The Fact Sheet states FEMA P-467-2 will be updated to address BW 12.

1. What does BW12 say about historic buildings?
BW 12 makes no special provisions or exceptions for historic buildings. For rating purposes, historic buildings are to be treated the same as any other Pre-FIRM properties.

2. How does BW12 impact the premiums for flood insurance policies for historic structures?
Section 100205 requires the phase-in of full risk rates for the following types of property: non-primary residences, business properties, severe repetitive loss (SRL) properties, properties for which claims payments exceed the fair market value, and substantially damaged or improved properties. Additionally, Section 100205 requires the immediate application of full risk rates to new policies, lapsed policies, and policies for property that has been sold to a new owner since the enactment of BW 12. Any currently subsidized policies for historic buildings meeting the criteria established in Section 100205 will see premium rate increases. Those structures will have rate increase at a rate of 25% per year until full actuarial rates are achieved.

3. If a historic structure is a primary residence, what impact will this have on its flood policy premium?
All primary residences – including those that are historic buildings – that were built before the initial Flood Insurance Rate Map (Pre-FIRM), and that are located in special flood hazard areas (flood zones A, AE, AH, AO, AI-A30, V, VE, VI-V30) and D zones will see a 16 to 17 percent increase effective on or after October 1, 2013, in order to reduce the amount of subsidy provided to these policyholders. This percentage increase is based on actuarial analysis and includes the 5 percent Reserve Fund assessment for all policies, excluding Preferred Risk Policies. The Reserve Fund assessment is mandated under Section 100205.

4. Is it possible to get an exemption for a historic building from the mandated rate increases?
No. The wording of Section 100205 does not allow FEMA any discretion in implementing it. FEMA does not have the statutory authority to exempt historic buildings from the mandated rate increases of Section 100205.

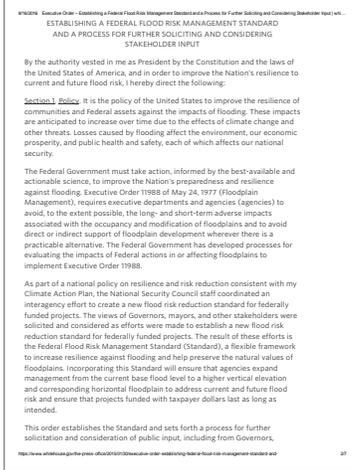
5. Did BW12 modify or address any specific aspect of the National Flood Insurance Program's floodplain management provisions pertaining to historic structures?
No. BW 12 did not modify or address any aspect of the NFIP floodplain management provisions pertaining to historic structures.

6. What are the NFIP floodplain management provisions that pertain to historic structures?
The NFIP contains two provisions that provide relief for “historic structures” in Special Flood Hazard Areas from the NFIP floodplain management regulations for new construction and substantial improvements/substantial damage. The two provisions include:
(1) The definition of “substantial improvement” at 44 CFR 59.1, states, “alteration to an ‘historic structure’ does not constitute a ‘substantial improvement’,” provided that the alteration will not preclude the structure’s continued

“FEMA’s mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.”

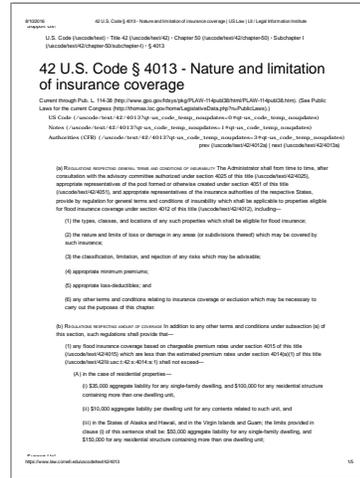


EXECUTIVE ORDER 13690: ESTABLISHING A FEDERAL FLOOD RISK MANAGEMENT STANDARD AND A PROCESS FOR FURTHER SOLICITING AND CONSIDERING STAKEHOLDER INPUT



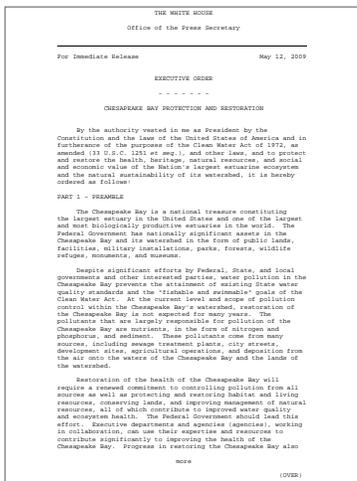
THE WHITE HOUSE - January 2015
<https://www.whitehouse.gov/the-press-office/2015/01/30/executive-order-establishing-federal-flood-risk-management-standard-and->
 Date Accessed: 16 August 2016

U.S. CODE SECTION 4013 – NATURE AND LIMITATION OF INSURANCE COVERAGE



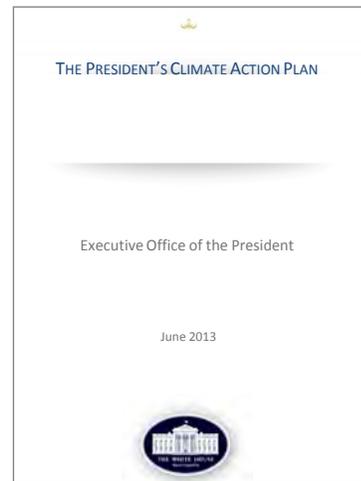
CODE OF FEDERAL REGULATIONS - No Date
<https://www.law.cornell.edu/uscode/text/42/4013>
 Date Accessed: 10 August 2016

EXECUTIVE ORDER, CHESAPEAKE BAY PROTECTION AND RESTORATION



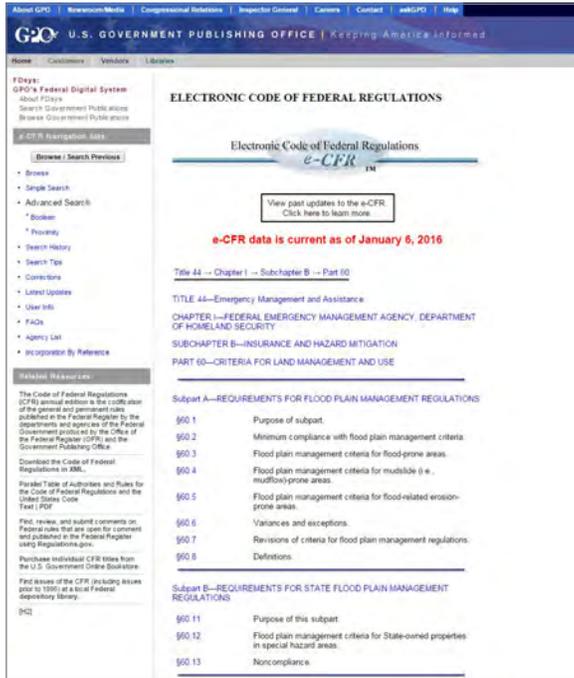
THE WHITE HOUSE - 12 May 2009
<http://executiveorder.chesapeakebay.net/EO/file.axd?file=2009%2f8%2fChesapeake+Executive+Order.pdf>
 Date Accessed: 26 February 2016

THE PRESIDENT'S CLIMATE ACTION PLAN



EXECUTIVE OFFICE OF THE PRESIDENT - June 2013
<https://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf>
 Date Accessed: 26 February 2016

EMERGENCY MANAGEMENT AND ASSISTANCE



44 US CODE

1984

http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title44/44cfr60_main_02.tpl

Date Accessed: 4 January 2016

This is a single page document listing the contents of FEMA's Criteria for Land Management and Use with regard to federal and state regulations governing flood plain management.

EXECUTIVE ORDER 13287: "PRESERVE AMERICA"

PRESIDENT GEORGE W. BUSH

2003

<https://www.gpo.gov/fdsys/pkg/WCPD-2003-03-10/pdf/WCPD-2003-03-10-Pg286.pdf>

Date Accessed: 22 December 2015

The order has these main objectives:

- The Federal government shall provide leadership in preserving America's heritage through active advancement and by promoting partnerships for the preservation and use of historic properties.
- Federal agencies shall seek to build preservation partnerships with State and local governments, Indian tribes, and the private sector to promote economic development and vitality through use.
- Federal agencies shall prepare assessments of historic properties in their management, ensure their compliance with the NHPA, report on their progress in caring for historic properties and designate an official with preservation oversight responsibility.
- Federal agencies shall promote historic properties' long-term preservation and use, increase community benefits, including economic ones, and encourage private preservation assistance. The National Park Service shall assist other agencies. The Council will recognize special achievements.
- Heritage Tourism shall be strengthened. Economic partnerships shall be fostered toward this goal.



FEMA 386-6, INTEGRATING HISTORIC PROPERTY AND CULTURAL RESOURCE CONSIDERATIONS INTO HAZARD MITIGATION PLANNING

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2006

<http://www.fema.gov/media-library/assets/documents/4317>

Date Accessed: 23 December 2015

The importance of integrating historic property and cultural resource considerations into mitigation planning has been made all too apparent by disasters that have occurred in recent years, such as the Northridge Earthquake, the Midwest floods, and Hurricane Katrina. Whether a disaster impacts a major community museum, a historic “Main Street,” or collections of family photographs, the sudden loss of historic properties and cultural resources can negatively impact a community’s character and economy, and can affect the overall ability of the community to recover from a disaster. “How-To” Guide #6 (FEMA 386-6) shows state and local communities step by step, with the needed tools and resources, how to develop, implement and monitor progress of a pre-disaster planning strategy for historic properties and cultural resources. While the emphasis is on the built environment, this Guide includes cultural institutions in order to address the mitigation of cultural heritage, including museum collections, works of art, and books and documents.



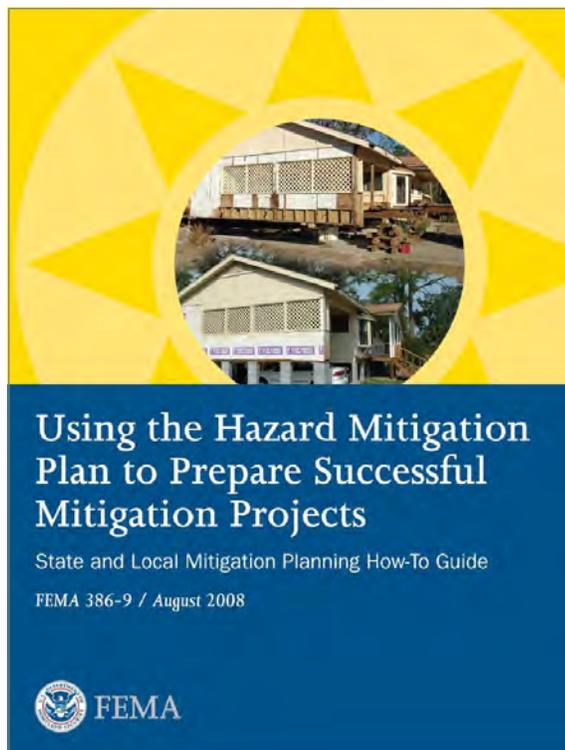
Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005



FEMA 386-9, USING THE HAZARD MITIGATION PLAN TO PREPARE SUCCESSFUL MITIGATION PROJECTS



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

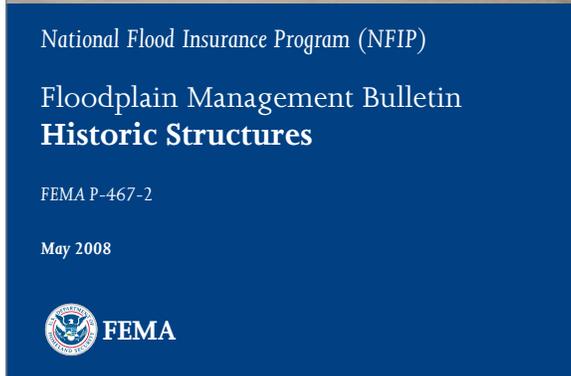
2008

http://www.fema.gov/media-library-data/20130726-1635-20490-7447/how_to_9_aug08.pdf

Date Accessed: 4 January 2016

How-To Guide #9 (FEMA 386-9) shows how a community can move from a hazard mitigation plan to developing mitigation projects that may be implemented fully using FEMA Hazard Mitigation Assistance as appropriate. This Guide explains the process of developing the scope of a project, identifies the key components of a successful mitigation project funding application, and describes how to identify funding available through FEMA and other agencies. It explains how valuable information in the mitigation plan can be used to develop the project scope of work and how to use lessons learned through the implementation of mitigation projects to improve the mitigation plan when it is updated. This Guide is intended for grant writers, project developers, planners, emergency managers, and community leaders. It is particularly helpful for State, Tribal, and local government officials, department heads, nonprofit organizations, and other parties responsible for implementing hazard mitigation actions.

FEMA P-467-2, FLOODPLAIN MANAGEMENT BULLETIN: HISTORIC STRUCTURES



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2008

<http://www.fema.gov/media-library/assets/documents/13411?id=3282>

Date Accessed: 23 December 2015

This guide, prepared by FEMA in May 2008 before the Biggert-Waters Act of 2012 (BW 12), describes the establishment of the National Flood Insurance Program (NFIP) and the application of NFIP to individual historic structures and those within historic districts.

The guide offers mitigation strategies to protect historic buildings ranging from simple measures, many of which can be completed by homeowners, to more complex recommendations that require professional design assistance, including:

- Elevation
 - Buildings and associated foundations
 - Floor levels inside of buildings
- Flood proofing
 - Dry flood proofing
 - Wet flood proofing
- Relocation

FEMA COMMUNITY RATING SYSTEM

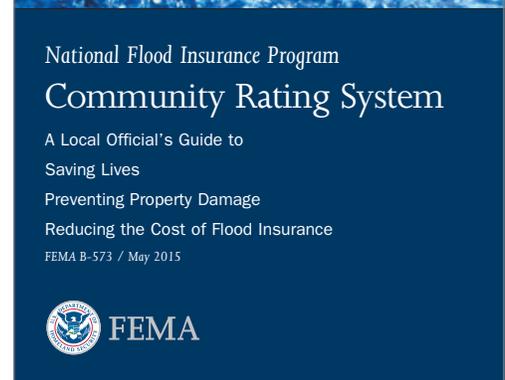
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

22 December 2015

<http://www.fema.gov/community-rating-system>

Date Accessed: 8 January 2016

This document describes the Community Rating System (CRS) which recognizes and encourages community floodplain management activities that exceed the minimum NFIP standards. Depending upon the level of participation, flood insurance premium rates for policyholders can be reduced up to 45%. Besides the benefit of reduced insurance rates, CRS floodplain management activities enhance public safety, reduce damages to property and public infrastructure, avoid economic disruption and losses, reduce human suffering, and protect the environment. Technical assistance on designing and implementing some activities is available at no charge. Participating in the CRS provides an incentive to maintaining and improving a community's floodplain management program over the years. Implementing some CRS activities can help projects qualify for certain other Federal assistance programs.



FEMA P-312, 3RD EDITION: HOMEOWNER'S GUIDE TO RETROFITTING: SIX WAYS TO PROTECT YOUR HOME FROM FLOODING

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2014

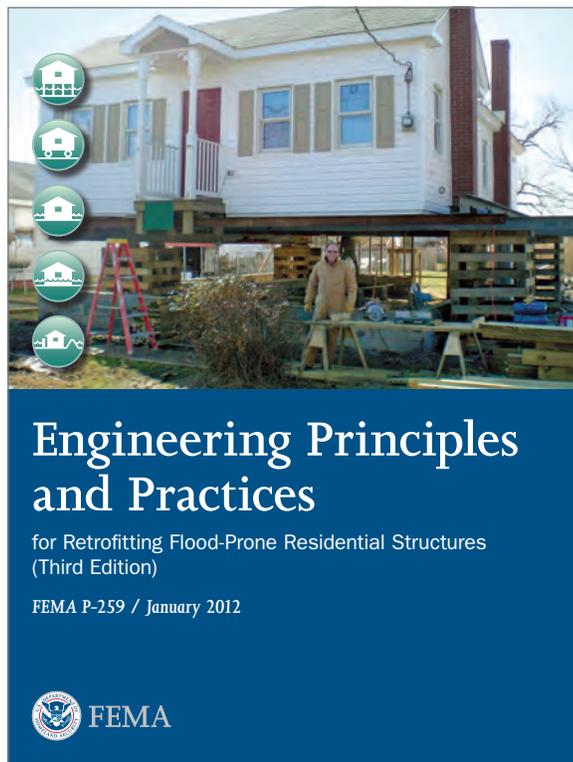
<https://www.fema.gov/media-library/assets/documents/480>

Date Accessed: 22 December 2015

The Federal Emergency Management Agency (FEMA) has prepared this guide specifically for homeowners who want to know how to protect their homes from flooding. Homeowners need clear information about the options available and straightforward guidance in making decisions. This guide gives both, in a form designed for readers who have little or no experience with flood protection methods or building construction techniques.



FEMA P-259, 3RD EDITION: ENGINEERING PRINCIPLES AND PRACTICES OF RETROFITTING FLOODPRONE RESIDENTIAL STRUCTURES



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2012

<https://www.fema.gov/media-library/assets/documents/3001>

Date Accessed: 4 January 2016

The third edition of this document is intended to further aid homeowners in selecting and successfully executing a flood retrofit on their home. Engineering design and economic guidance on what constitutes feasible and cost-effective retrofitting measures for flood-prone residential and non-residential structures are presented. Elevation, relocation, dry floodproofing, wet floodproofing, and the use of levees and floodwalls to mitigate flood hazards are discussed. This edition was updated to be more user-friendly and concise and the overall length of the publication has been shortened.

FEMA P-348, EDITION 1, PROTECTING BUILDING UTILITIES FROM FLOOD DAMAGE



Protecting Building Utilities From Flood Damage

Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems

FEMA P-348, Edition 1 / November 1999



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

1999

<https://www.fema.gov/media-library/assets/documents/3729>

Date Accessed: 22 December 2015

The overall objective of this document is to assist in the design and construction or improvement of building utility systems in new, substantially improved or existing buildings so that the buildings can be re-occupied and fully operational as soon as electricity, sewer, and water are restored to the neighborhood.

FEMA P-936, FLOODPROOFING NON-RESIDENTIAL BUILDINGS

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

2013

http://www.fema.gov/media-library-data/9a50c534fc5895799321dcdd4b6083e7/P-936_8-20-13_508r.pdf

Date Accessed: 23 December 2015

The primary focus of this guidance document is on dry floodproofing technologies for non-residential buildings located in riverine and coastal areas not subject to wave action. It also includes an overview of other techniques including wet floodproofing, the use of levees and floodwalls, protection of utilities, and emergency floodproofing. The publication provides information about regulatory requirements, design considerations, and descriptions of floodproofing methods and equipment. Key document features include: 1) Tools to assist the designer or building owner in determining the best floodproofing option for a particular building, including a vulnerability checklist, 2) Case studies providing examples of applied floodproofing techniques, 3) Equations for determining flood forces and loads, 4) A summary of results from recent dry floodproofing research and testing for new construction.



Floodproofing Non-Residential Buildings

FEMA P-936 / July 2013

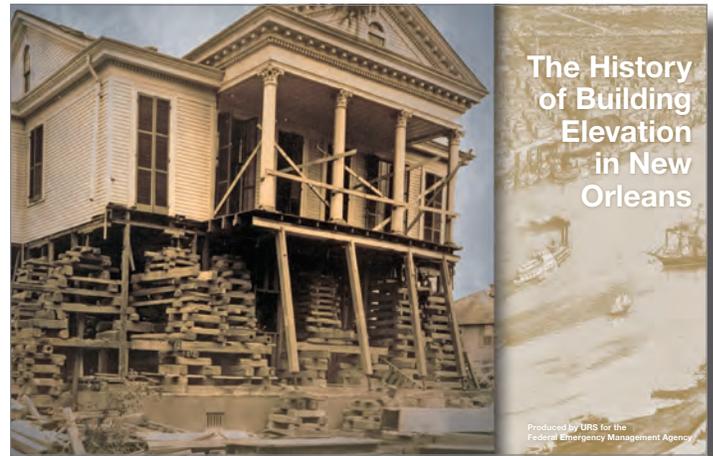


THE HISTORY OF BUILDING ELEVATION IN NEW ORLEANS

This document presents a detailed history of the evolution of the City of New Orleans, from French and then Spanish control to purchase by the United States. This history highlights the city's relationship to the river and how the built fabric responded to the threat of flooding historically, through measures such as elevation, construction on high ground, and development of a canal and drainage system. In the 19th-century, the city required by code that first floors be elevated, of at least three feet above the sidewalk. Around the same time, businesses appeared that specialized in raising structures. Their report dedicated an entire chapter to these businesses. The following chapters detail raised house types and techniques for elevating these homes.

Despite these measures, New Orleans continued fall victim to destructive storms. Following Hurricane Katrina, the city's improved infrastructure encouraged development at sea level, which has only further increased New Orleans's risk to flooding, despite the intention of behind putting this new infrastructure in place.

The report wraps up with a chapter on the archaeological concerns associated with elevating a building. It recommends leaving archaeological findings in place and consulting an archaeologist if this cannot be avoided.



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

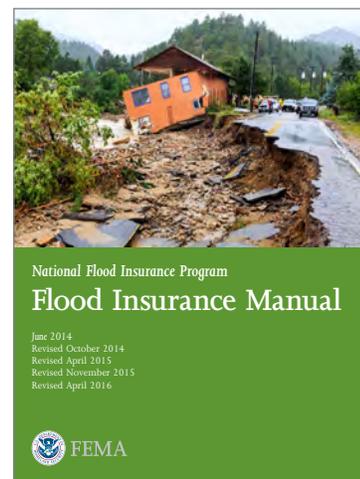
December 2012
http://www.fema.gov/media-library-data/20130726-1919-25045-5921/cno_history_bldg_elev_042313.pdf
 Date Accessed: 8 January 2016

FEMA FACT SHEET: HISTORIC PRESERVATION AND CULTURAL RESOURCES



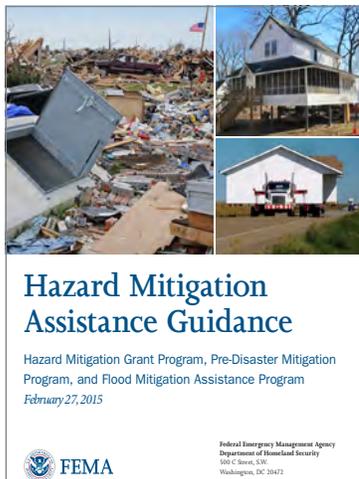
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - 14 July 2014
http://www.fema.gov/media-library-data/20130726-1533-20490-9000/historicpreservationcultural_resources_2012.pdf
 Date Accessed: 5 February 2016

NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE MANUAL



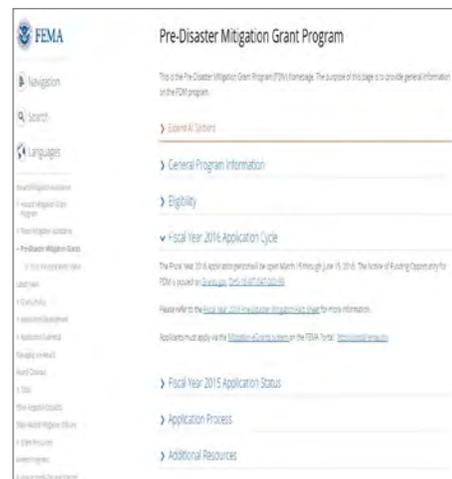
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - Revised April 2016
<http://www.fema.gov/media-library/assets/documents/115549>
 Date Accessed: 9 August 2016

HAZARD MITIGATION ASSISTANCE GUIDANCE



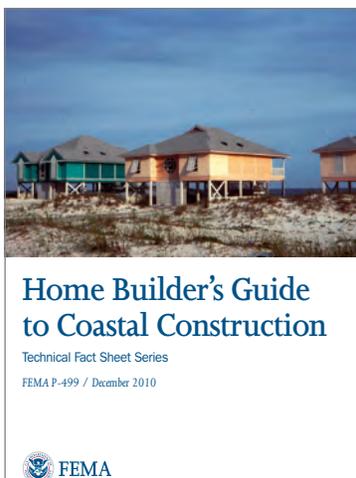
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
27 February 2015
http://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf
Date Accessed: 21 January 2016

PRE-DISASTER MITIGATION GRANT PROGRAM



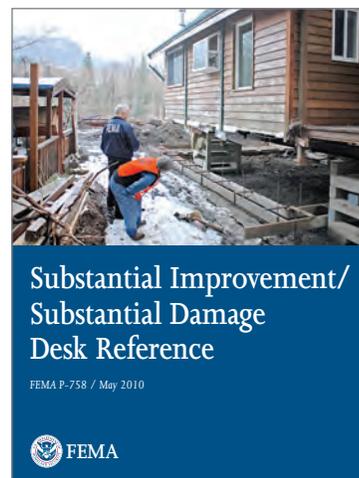
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
30 October 2015
<http://www.fema.gov/pre-disaster-mitigation-grant-program>
Date Accessed: 4 February 2016

FEMA P-499 HOME BUILDER'S GUIDE TO COASTAL CONSTRUCTION



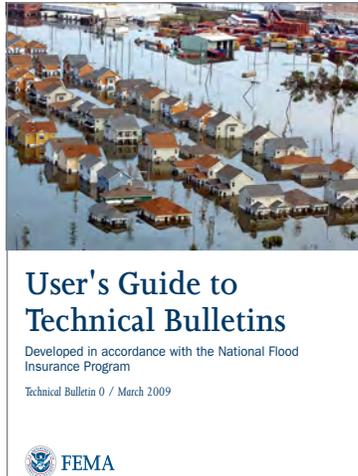
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
December 2010
http://www.fema.gov/media-library-data/20130726-1538-20490-2983/fema499web_2.pdf
Date Accessed: 16 February 2016

FEMA P-758 SUBSTANTIAL IMPROVEMENT/SUBSTANTIAL DAMAGE DESK REFERENCE



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
May 2010
http://www.fema.gov/media-library-data/20130726-1734-25045-8822/fema_p_758_cvr_toc_r2.pdf
Date Accessed: 10 August 2016

TECHNICAL BULLETIN 0: USER'S GUIDE TO TECHNICAL BULLETINS



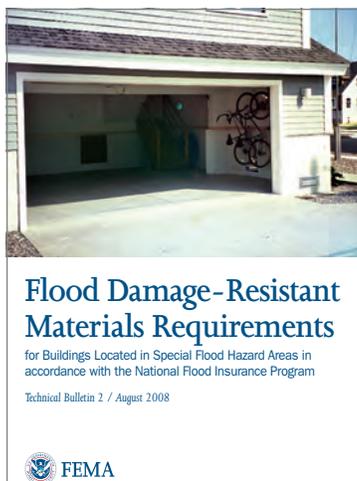
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
 Date: March 2009
http://www.fema.gov/media-library-data/20130726-1447-20490-2019/fema_tb_0_color_rev1.pdf
 Date Accessed: 18 August 2016

TECHNICAL BULLETIN 1: OPENINGS IN FOUNDATION WALLS AND WALLS OF ENCLOSURES



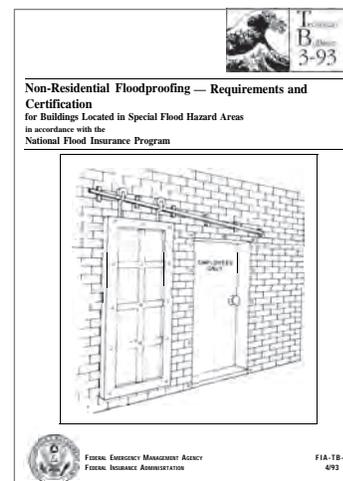
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
 August 2008
http://www.fema.gov/media-library-data/20130726-1502-20490-9949/fema_tb_1__1_.pdf
 Date Accessed: 22 February 2016

TECHNICAL BULLETIN 2: FLOOD DAMAGE-RESISTANT MATERIALS REQUIREMENTS



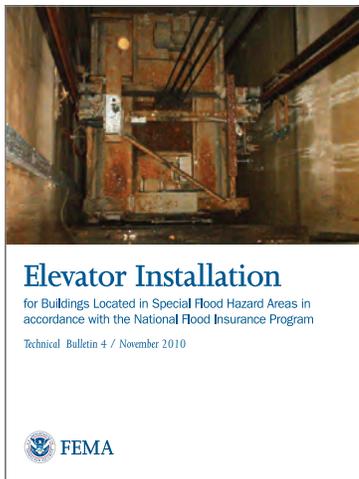
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
 August 2008
http://www.fema.gov/media-library-data/20130726-1502-20490-4764/fema_tb_2_rev1.pdf
 Date Accessed: 22 February 2016

TECHNICAL BULLETIN 3: NON-RESIDENTIAL FLOODPROOFING - REQUIREMENTS AND CERTIFICATION



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -
 1993
<http://www.fema.gov/media-library-data/20130726-1511-20490-5294/job6.pdf>
 Date Accessed: 16 August 2016

TECHNICAL BULLETIN 4: ELEVATOR INSTALLATION



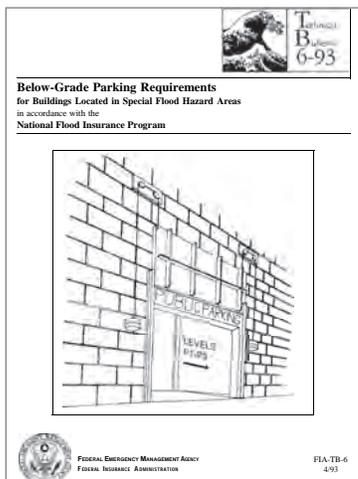
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - November 2010
http://www.fema.gov/media-library-data/20130726-1511-20490-5041/fema_tb_4_rev.pdf
Date Accessed: 16 August 2016

TECHNICAL BULLETIN 5: FREE-OF-OBSTRUCTION REQUIREMENTS



FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - August 2008
http://www.fema.gov/media-library-data/20130726-1511-20490-9526/fema_tb_5.pdf
Date Accessed: 16 August 2016

TECHNICAL BULLETIN 6: BELOW-GRADE PARKING REQUIREMENTS



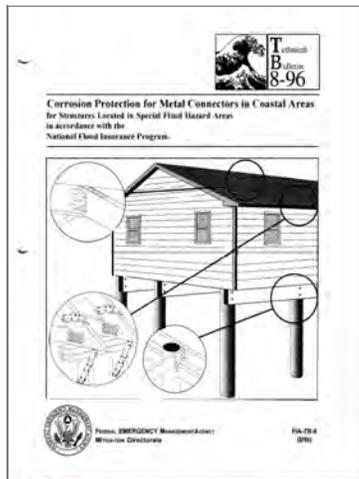
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - 1993
<http://www.fema.gov/media-library-data/20130726-1511-20490-1163/job12.pdf>
Date Accessed: 16 August 2016

TECHNICAL BULLETIN 7: WET FLOODPROOFING REQUIREMENTS



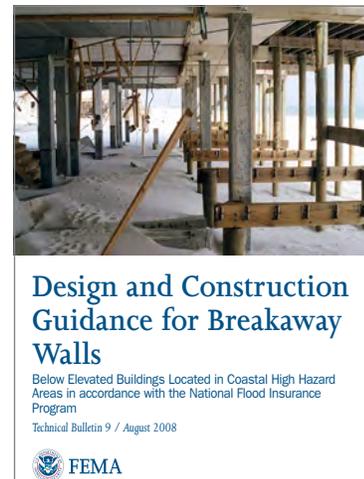
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - 1993
http://www.fema.gov/media-library-data/20130726-1511-20490-8042/tb_7_complete_scan.pdf
Date Accessed: 22 February 2016

TECHNICAL BULLETIN 8: CORROSION PROTECTION FOR METAL CONNECTORS IN COASTAL AREAS



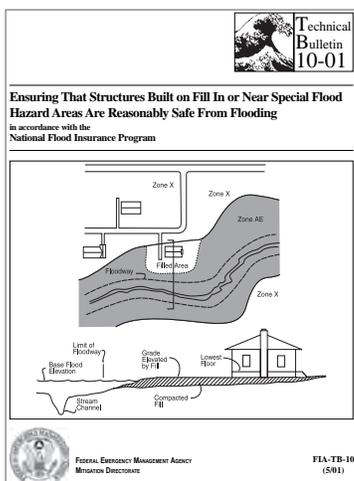
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - 1996
http://www.fema.gov/media-library-data/1396889463119-906ae05bc13c3677cf4330b5dc96897e/tb-8_rev.pdf
 Date Accessed: 22 February 2016

TECHNICAL BULLETIN 9: DESIGN AND CONSTRUCTION GUIDANCE FOR BREAKAWAY WALLS



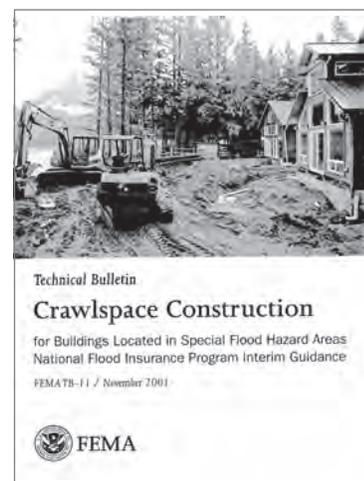
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - August 2008
http://www.fema.gov/media-library-data/20130726-1511-20490-8359/fema_tb_9.pdf
 Date Accessed: 16 August 2016

TECHNICAL BULLETIN 10: ENSURING THAT STRUCTURES BUILT ON FILL IN OR NEAR SPECIAL FLOOD HAZARD AREAS ARE REASONABLY SAFE FROM FLOODING



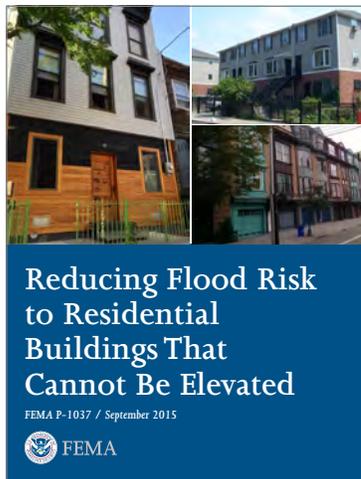
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - May 2001
<http://www.fema.gov/media-library-data/20130726-1511-20490-3169/tb1001.pdf>
 Date Accessed: 16 August 2016

TECHNICAL BULLETIN 11: CRAWLSPACE CONSTRUCTION



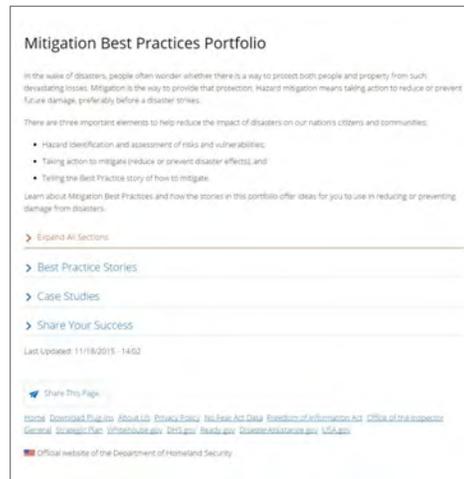
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - November 2001
http://www.fema.gov/media-library-data/20130726-1511-20490-0716/tb_11_rev.pdf
 Date Accessed: 9 August 2016

REDUCING FLOOD RISK TO RESIDENTIAL BUILDINGS THAT CANNOT BE ELEVATED



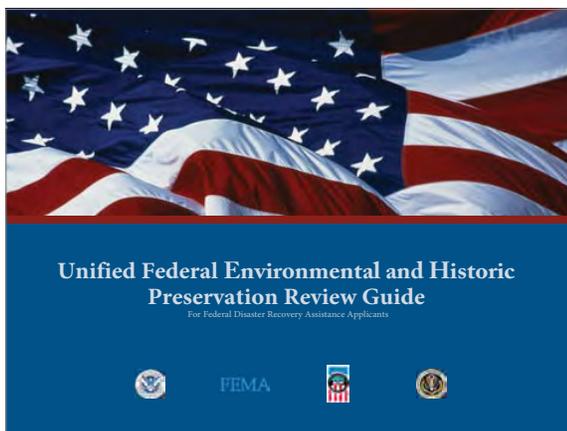
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - September 2015
http://www.fema.gov/media-library-data/1443014398612-a4dfc0f86711bc72434b82c4b100a677/revFEMA_HMA_Grants_4pg_2015_508.pdf Date Accessed: 29 January 2016

MITIGATION BEST PRACTICES PORTFOLIO



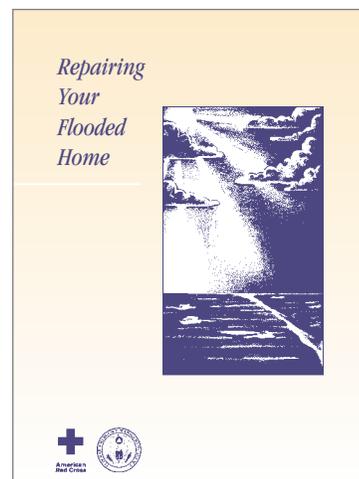
FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) -18 November 2015
<https://www.fema.gov/mitigation-best-practices-portfolio#>
 Date Accessed: 4 January 2016

UNIFIED FEDERAL ENVIRONMENTAL AND HISTORIC PRESERVATION REVIEW GUIDE



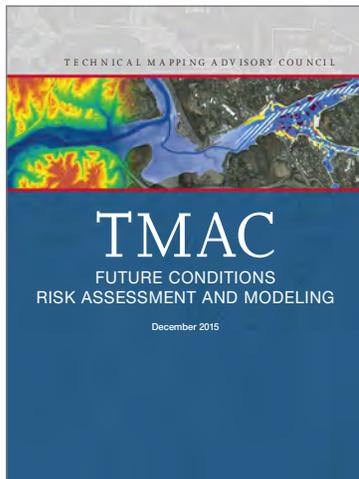
FEMA AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION - No Date
http://www.fema.gov/media-library-data/1440713845421-9bd-b5c0c8fe19ab86d97059ccb26e3b4/UFR_Applicant_Guide_Final_508.pdf Date Accessed: 26 January 2016

REPAIRING YOUR FLOODED HOME



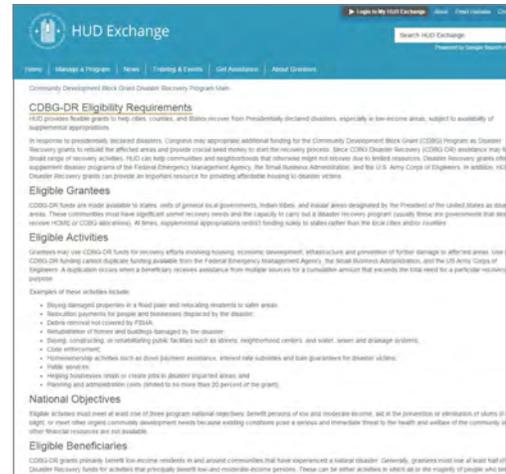
FEDERAL EMERGENCY MANAGEMENT AGENCY AND THE RED CROSS - No Date
http://www2.redcross.org/static/file_cont333_lang0_150.pdf
 Date Accessed: 19 January 2016

TMAC FUTURE CONDITIONS RISK ASSESSMENT AND MODELING



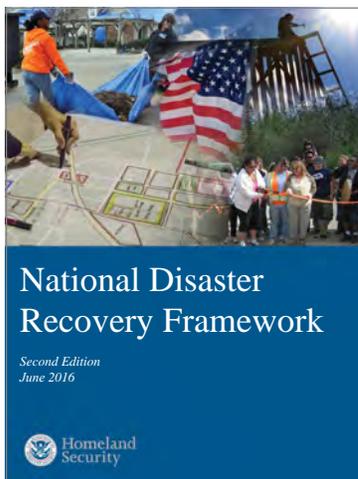
TECHNICAL MAPPING ADVISORY COUNCIL - December 2015
http://www.fema.gov/media-library-data/1454954261186-c348aa9b1768298c9eb66f84366f836e/TMAC_2015_Future_Conditions_Risk_Assessment_and_Modeling_Report.pdf
 Date Accessed: 11 August 2016

COMMUNITY DEVELOPMENT BLOCK GRANT DISASTER RECOVERY PROGRAM



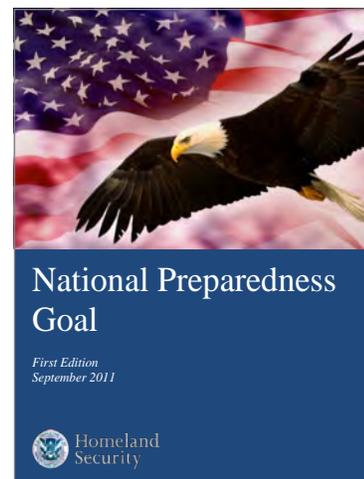
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT - 2014
<https://www.hudexchange.info/programs/cdbg-dr/cdbg-dr-eligibility-requirements/>
 Date Accessed: 4 February 2016

NATIONAL DISASTER RECOVERY FRAMEWORK



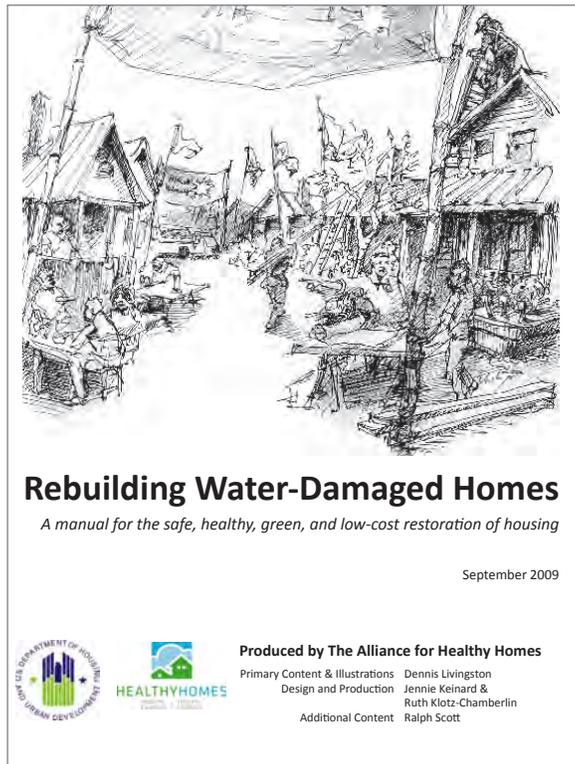
DEPARTMENT OF HOMELAND SECURITY - June 2016
http://www.fema.gov/media-library-data/1466014998123-4bec8550930f774269e0c5968b120ba2/National_Disaster_Recovery_Framework2nd.pdf
 Date Accessed: 10 August 2016

NATIONAL PREPAREDNESS GOAL



DEPARTMENT OF HOMELAND SECURITY - September 2011
<http://www.fema.gov/pdf/prepared/ngp.pdf>
 Date Accessed: 10 August 2016

REBUILDING WATER-DAMAGED HOMES



DENNIS LIVINGSTON

2009

<https://ag.purdue.edu/extension/eden/Mold/AFHH-manual.pdf>

Date Accessed: 22 December 2015

This manual provides information for homeowners interested in low-cost restoration of their homes following a flood. It is lavishly illustrated with clear, annotated line-diagrams that describe:

- Traditional building systems and terminology
- Clean out procedures for flood-damaged buildings including safety precautions and lists of required supplies and tools, as well as cleaning and treatment procedures for building surfaces
- Flood and moisture resilient rebuilding techniques for rehabilitation, including details to prevent water from entering a building and techniques for draining and drying out a building if water enters a building
- Repair techniques for historic building materials
- Hurricane resistant strategies
- Explanation of the house lifting process

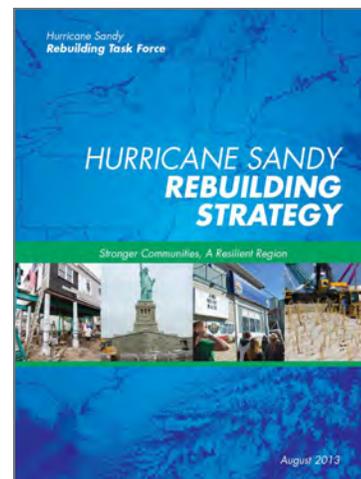
This document was prepared by The Alliance for Healthy Homes, and is now distributed by the Department of Housing and Urban Development. Unlike many other guides, the illustrations in this manual are heavily annotated to identify recommended materials and supplies. It provides a shopping list to aid homeowners in preparing for a flood event, or its immediate aftermath.

HURRICANE SANDY REBUILDING TASK FORCE, REBUILD BY DESIGN



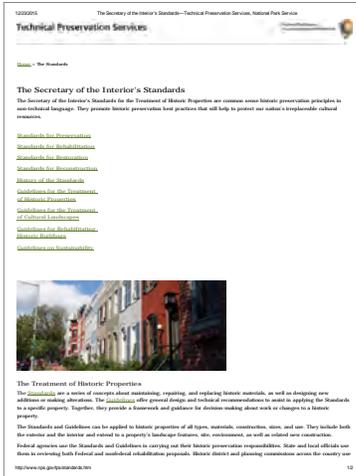
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT - No Date
<http://portal.hud.gov/hudportal/HUD?src=/sandysrebuilding/rebuildbydesign>
 Date Accessed: 23 December 2015

HURRICANE SANDY REBUILDING STRATEGY



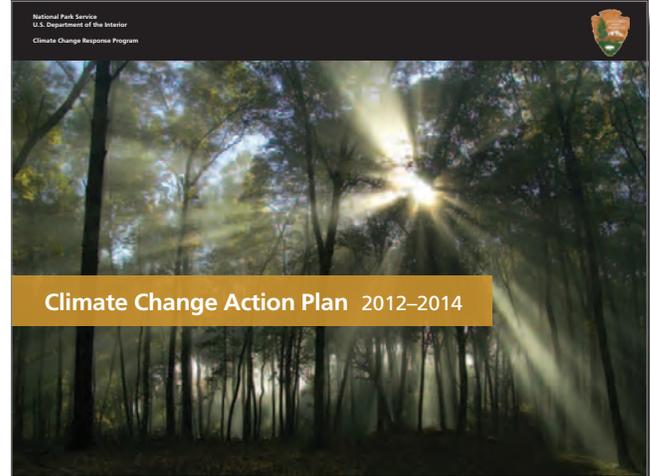
HURRICANE SANDY REBUILDING TASK FORCE - August 2013
<http://portal.hud.gov/hudportal/documents/huddoc?id=HSRebuildingStrategy.pdf>
 Date Accessed: 1 February 2016

THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES



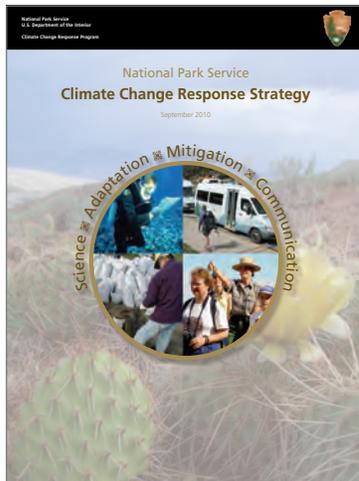
NATIONAL PARK SERVICE - 2017
<http://www.nps.gov/tps/standards.htm>
 Date Accessed: January 2018

CLIMATE ACTION PLAN 2012-2014



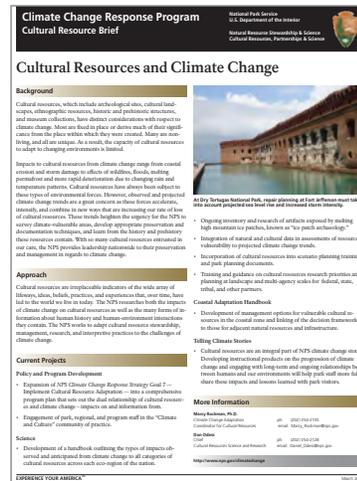
November 2012
http://www.nature.nps.gov/climatechange/docs/NPS_CCActionPlan.pdf
 Date Accessed: 26 February 2016

CLIMATE CHANGE RESPONSE STRATEGY: SCIENCE, ADAPTATION, MITIGATION, COMMUNICATION



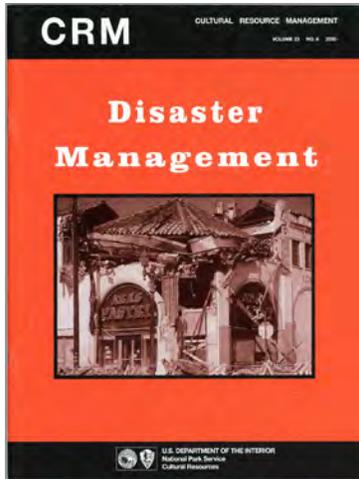
NATIONAL PARK SERVICE - September 2010
https://www.nps.gov/orgs/ccrp/upload/NPS_CCRRS.pdf
 Date Accessed: 18 July 2016

CULTURAL RESOURCES AND CLIMATE CHANGE, CULTURAL RESOURCE BRIEF



NATIONAL PARK SERVICE
<https://www.nps.gov/subjects/climatechange/upload/CulturalResourceBriefMar2013.pdf>
 Date Accessed: 18 July 2016

DISASTER MANAGEMENT FOR CULTURAL PROPERTIES



DAVID W. LOOK AND DIRK H.R. SPENNEMANN - 2000
<http://www.nps.gov/history/CRMJournal/CRM/v23n6.pdf>
Date Accessed: 4 January 2016

DISASTER PREPAREDNESS, PLANNING, AND MITIGATION



DAVID W. LOOK AND DIRK H.R. SPENNEMANN - 2001
<http://www.nps.gov/history/crmjournal/CRM/v24n8.pdf>
Date Accessed: 19 January 2016

EARTH, WIND, FIRE, AND WATER - HISTORIC PRESERVATION DISASTER PLANNING IN MIAMI-DADE COUNTY, FLORIDA



CHRISTOPHER R. ECK - 2000
<http://www.nps.gov/history/CRMJournal/CRM/v23n6.pdf>
Date Accessed: 4 January 2016

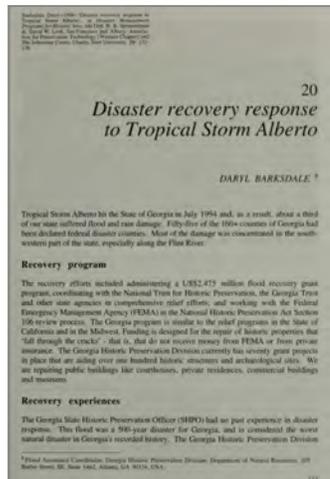
“LORD WILLING N’ THE CREEK DON’T RISE” - FLOOD SUSTAINABILITY AT HARPERS FERRY NATIONAL HISTORICAL PARK



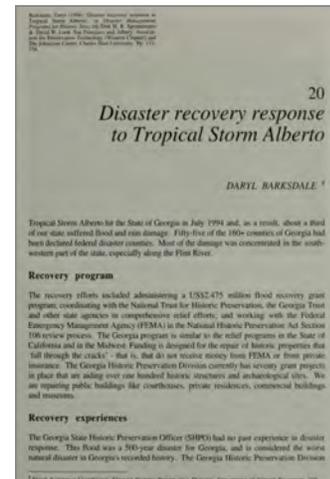
BRUCE J. NOBLE, JR. - 2001
<http://www.nps.gov/history/crmjournal/CRM/v24n8.pdf>
Date Accessed: 4 January 2015

FLOOD CASE STUDY: STILLWATER, NEVADA

DISASTER RECOVERY RESPONSE TO TROPICAL STORM ALBERTO



ALICE M. BALDRICA - 1998
<https://archive.org/stream/disastermanageme00spen#page/132/mode/1up>
 Date Accessed: 5 February 2016



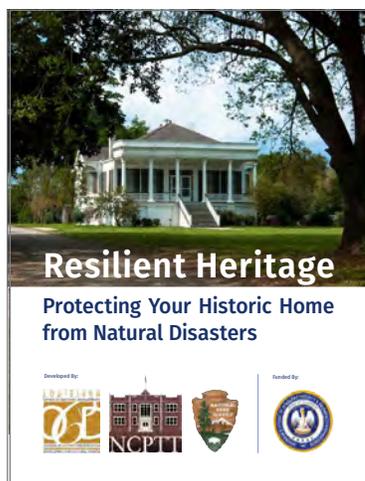
DARYL BARKSDALE - 1998
<https://archive.org/stream/disastermanageme00spen#page/132/mode/1up>
 Date Accessed: 5 February 2016

EMERGENCY RESPONSE AND SALVAGE



JORGE ALBERTO RODRIGUEZ AND SEAN M. CLIFFORD - 9 November 2012
<https://ncptt.nps.gov/blog/ers/>
 Date Accessed: 5 February 2016

RESILIENT HERITAGE: PROTECTING YOUR HISTORIC HOME FROM NATURAL DISASTERS



NATIONAL CENTER FOR PRESERVATION TECHNOLOGY & TRAINING - 2015
<https://ncptt.nps.gov/blog/resilient-heritage-2015-03/>
 Date Accessed: 19 January 2016

PREPARING TO PRESERVE; EMERGENCY PLANNING: MODEL CHECKLIST FOR HISTORIC PRESERVATION



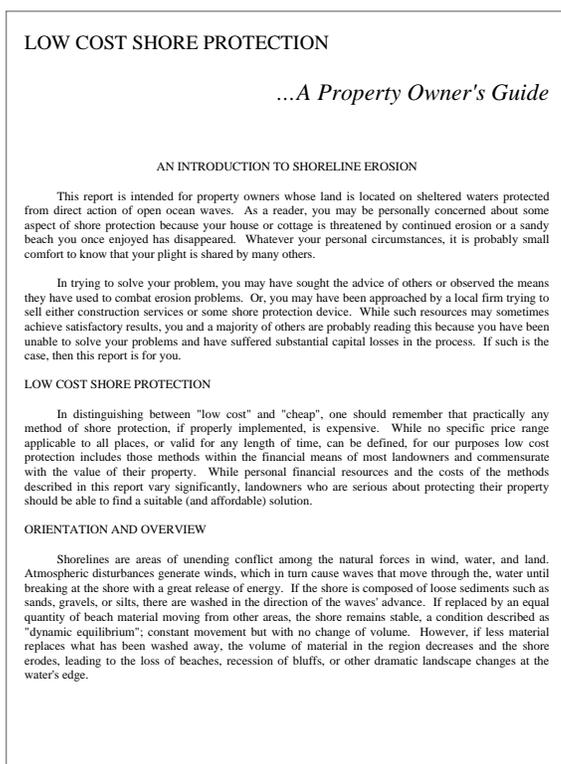
HERITAGE PRESERVATION - No Date
http://www.heritagepreservation.org/PROGRAMS/PtoP_EPChecklist.pdf
 Date Accessed: 16 February 2016

LOW COST SHORE PROTECTION ...A PROPERTY OWNER'S GUIDE

U.S. ARMY CORPS OF ENGINEERS

http://dnr2.maryland.gov/ccs/Publication/sect54owners_sm.pdf
 Date Accessed: 21 July 2016

Report published by the U.S. Army Corps of Engineers for home owners considering implementing a shore protection, such as bulkheads or riprap. The report details how wave action impact coastline. It provides a detailed explanation, as well as illustrative diagrams, regarding a variety of methods for modifying shorelines. These explanations include a overview of the impact these protections have on the shoreline, such as downdrift erosion. This document can be helpful for an individual considering taking on the expense of this mitigation method.



NONSTRUCTURAL MITIGATION ASSESSMENT FOR THE CITY OF ANNAPOLIS HISTORIC DISTRICT

STEPHEN D. O'LEARY, AIA, CFM

December 2014

<http://www.annapolis.gov/docs/default-source/planning-and-zoning-documents/us-army-corps-of-engineers--nonstructural-mitigation.pdf?sfvrsn=0>

Date Accessed: 22 December 2015

In Annapolis, Maryland, the long-term concern for the accelerating rate of sea level rise and the the aftermath of Hurricane Sandy created a sense of urgency for the development of a Cultural Resource Hazard Mitigation Plan (CRHMP). In 2013, the City of Annapolis embarked on developing a plan per Federal Emergency Management Agency's (FEMA) 'how-to' guide to State and Local Mitigation Planning. This approach outlines four phases in the development of a comprehensive CRHMP:

- Organize resources
- Assess risks
- Develop a mitigation plan
- Implement the plan and monitor progress.

The risk assessment includes an analysis of each property's significance, integrity, economic importance and overall public sentiment. Historic American Building Survey level documentation may be recommended for properties that are deemed of high public interest.

NONSTRUCTURAL MITIGATION ASSESSMENT FOR THE CITY OF ANNAPOLIS HISTORIC DISTRICT

Annapolis, Maryland



Prepared for: City of Annapolis
145 Gorman Street, 3rd Floor
Annapolis, Maryland 21401

Prepared by: Planning Division
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203-1715

DECEMBER 2014

NATIONAL NONSTRUCTURAL / FLOOD PROOFING COMMITTEE PRESENTATION



U.S. ARMY CORPS OF ENGINEERS

No Date

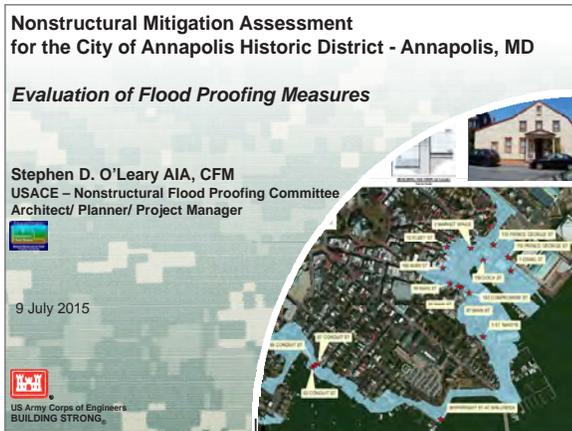
<http://www.kafm.org/downloads/Floodproofing.pdf>

Date Accessed: 23 December 2015

Nonstructural / Flood Proofing measures are permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding. Nonstructural/ Flood Proofing measures differ from Structural measures in that they focus on reducing the consequences of flooding instead of on reducing the probability of flooding. Nonstructural Flood Proofing measures include:

- Elevation
- Relocation
- Buyout / Acquisition
- Dry flood proofing
- Wet flood proofing
- Berms or floodwalls

NONSTRUCTURAL MITIGATION ASSESSMENT FOR THE CITY OF ANNAPOLIS HISTORIC DISTRICT



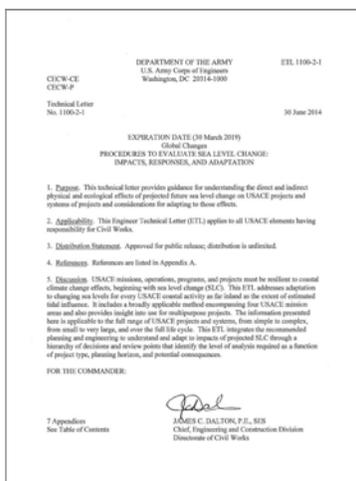
PLANNING DIVISION, U.S. ARMY CORPS OF ENGINEERS - 9 July 2015
<https://www.annapolis.gov/DocumentCenter/View/2182/US-Army-Corps-of-Engineers---Nonstructural-Mitigation-PDF>
 Date Accessed: 22 December 2015

SEA LEVEL CHANGE AND LONG RANGE WATER RESOURCES PLANNING FOR FLORIDA



MIAMI-DADE SEA LEVEL RISE TASK FORCE AND GLENN B. LANDERS - 4 April 2014
<http://www.miamidade.gov/planning/library/presentations/2014-04-04-sea-level-change-and-long-range-water-resources.pdf>
 Date Accessed: 22 December 2015

GLOBAL CHANGES, PROCEDURES TO EVALUATE SEA LEVEL CHANGE: IMPACTS, RESPONSES, AND ADAPTION



U.S. ARMY CORPS OF ENGINEERS - June 2014
http://www.publications.usace.army.mil/Portals/76/Publications/EngineerTechnicalLetters/ETL_1100-2-1.pdf
 Date Accessed: 23 December 2015

STATE OF MARYLAND



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LOCAL HAZARD MITIGATION PLAN GUIDANCE

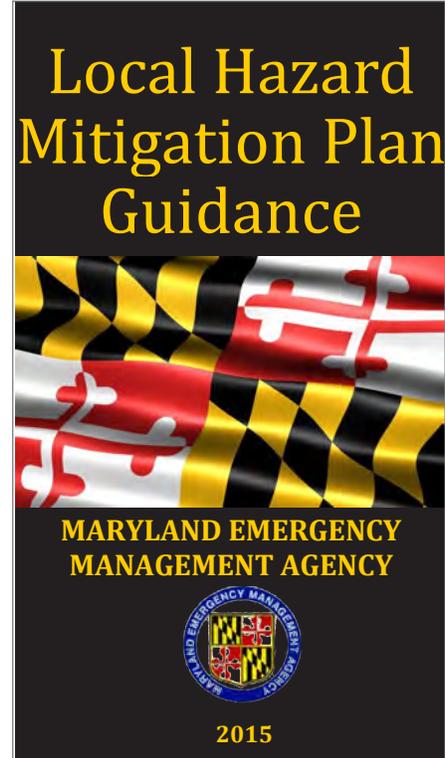
MARYLAND EMERGENCY MANAGEMENT AGENCY

2015

<http://mema.maryland.gov/community/Pages/Mitigation.aspx>

22 December 2015

This document provides planning guidance for local governments to prepare an updated hazard mitigation plan. This guidance introduces Maryland-specific recommendations for hazard mitigation planning and introduces ideas for both plan integration and resiliency to facilitate cooperation between the State and local governments. The document focuses on these areas: hazards, critical facilities, FEMA-flood, capability assessment, resiliency, plan integration, safe plan audit, federal declarations, MDE – Flood, and recommendations and suggests additional resources.



STANDARDS AND GUIDELINES FOR ARCHITECTURAL AND HISTORICAL INVESTIGATIONS IN MARYLAND

Standards and Guidelines for Architectural and Historical Investigations in Maryland



MARYLAND HISTORICAL TRUST
Maryland Department of Planning

MARYLAND DEPARTMENT OF PLANNING AND MARYLAND HISTORICAL TRUST

2000

http://mht.maryland.gov/documents/PDF/research/Survey_standards_architecture_web.pdf

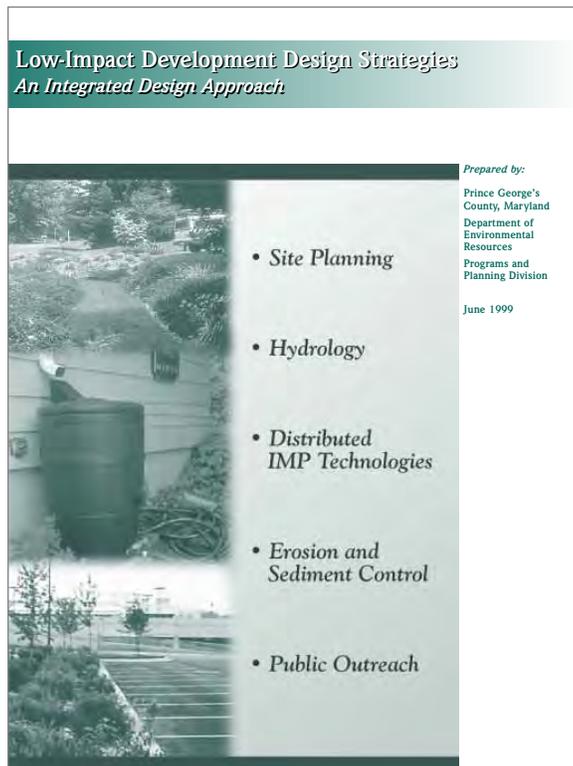
Date Accessed: 22 December 2015

Geared toward preservation professionals, this guide centralizes information relevant to architectural and historical investigations. Its purpose is to provide comprehensive guidance on conducting work that meets standards as determined by the Maryland Historical Trust.

The guide details the training required by individuals who will undertake projects as well as state and federal channels for funding. It is an excellent resource for preparing projects - such as preservation surveys, compliance reports and nominations for Maryland's Inventory of Historic Properties - that meet the state's standards. These standards address content, graphic representation and organization of the final product.

For additional information, the guide also provides resources for general reference.

LOW-IMPACT DEVELOPMENT DESIGN STRATEGIES: AN INTEGRATED DESIGN APPROACH



ENVIRONMENTAL PROTECTION AGENCY/MARYLAND

June 1999

http://www.lowimpactdevelopment.org/pubs/LID_National_Manual.pdf

Date Accessed: 5 January 2016

Low impact development (LID) is an approach to storm water control that strives to mimic natural hydrology as part of the development process. Recommendations include:

- The maintenance of natural drainage courses, resources, and ecosystems
- Dispersing storm water throughout the landscape and controlling storage and runoff to match pre-development conditions
- Minimizing or reducing impervious surface coverage, as well as dependence on storm water drains, structures, and ponds

The strategies are geared toward individual properties as well as larger communities and their management of storm water through mechanisms that include restricting development through zoning, storm water infrastructure construction and maintenance, and roadway specifications.

AN ASSESSMENT OF MARYLAND'S VULNERABILITY TO FLOOD DAMAGE

JOHN M. JOYCE AND MICHAEL S. SCOTT

August 2005

[http://www.prattlibrary.org/uploadedFiles/www/locations/central/business_science_and_technology/subject_guides/An%20Assessment%20of%20Marylands%20Vulnerability%20to%20Flooding-1%20\(1\).pdf](http://www.prattlibrary.org/uploadedFiles/www/locations/central/business_science_and_technology/subject_guides/An%20Assessment%20of%20Marylands%20Vulnerability%20to%20Flooding-1%20(1).pdf)

Date Accessed: 23 February 2016

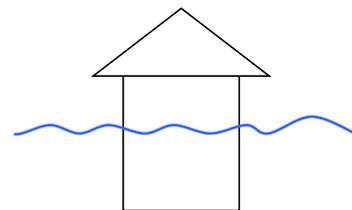
This report provides an in-depth overview of flooding in the state of Maryland. It provides a history of flooding as well as the level of threat in the state, estimating that over 68,000 structures in Maryland are on a floodplain, at an assessed value of \$8 billion.

After presenting extensive flood estimates, the report turns to mitigation strategies. It summarizes the requirements for the National Flood Insurance Program followed by discussion of other strategies used in Maryland. These strategies include, but are not limited, to:

- Maryland Model Floodplain Management Ordinance
- Floodplain Management Database and Repetitive Loss Project
- Mapping efforts in the state

The report wraps up with a list of recommendations - a takeaway for state policymakers. This list emphasizes coordination between agencies, implementation of a statewide "No Adverse Impact" policy and utilization of local planning efforts, tax incentives, and grants in order to encourage action.

An Assessment Of Maryland's Vulnerability To Flood Damage



John M. Joyce
Flood Hazard Mitigation Section
Maryland Department of the Environment
and
Michael S. Scott, PhD
Eastern Shore Regional GIS Cooperative
Salisbury University

August 2005

For more information, contact:



Maryland Department of the Environment
Flood Hazard Mitigation Section
1800 Washington Blvd.
Baltimore, MD 21230-1718
1-800-633-6101

COME HIGH WATER; SEA LEVEL RISE AND CHESAPEAKE BAY. A SPECIAL REPORT FROM CHESAPEAKE QUARTERLY AND BAY JOURNAL

VARIOUS

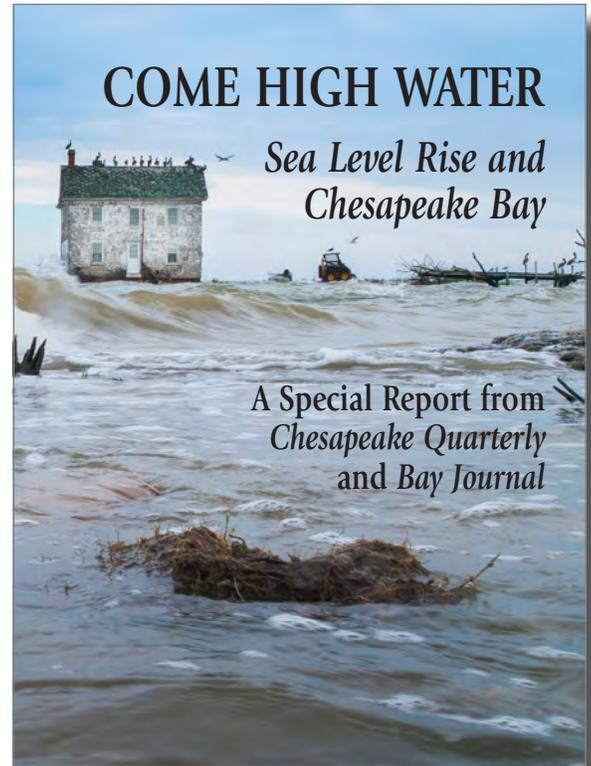
June 2015

<http://www.mdsg.umd.edu/sites/default/files/files/Come%20High%20Water-Report-2015.pdf>

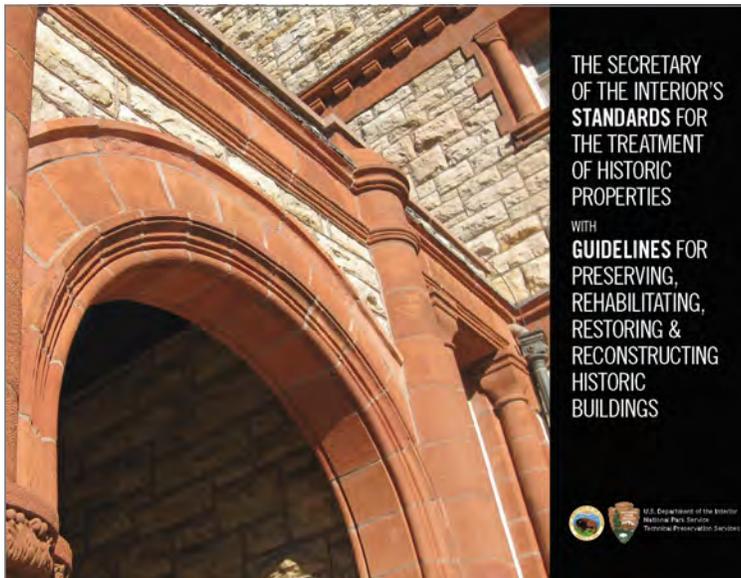
Date Accessed: 5 January 2016

Come High Water is an anthology of articles by contributors to the *Chesapeake Quarterly* and the *Bay Journal*. Both of these publications collaborated to produce this collection of articles on sea level rise and the Bay. Each article zeroes in on a distinct challenge and is grouped together by theme: the causes of, the costs of and the response to sea level rise. These articles cover a wide array of topics within these themes, from the effects of the Gulf Stream on the Bay, to the impact of storm surge on the City of Baltimore and to local response efforts on Smith Island.

While this collection of articles lacks any concluding remarks, the intent is to demonstrate that sea level rise will effect communities as well as wildlife. The articles attempt to illustrate for a wide audience the reality, as well as the unpredictability, of sea level rise.



THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION



MARYLAND DEPARTMENT OF PLANNING AND MARYLAND HISTORICAL TRUST

No Date

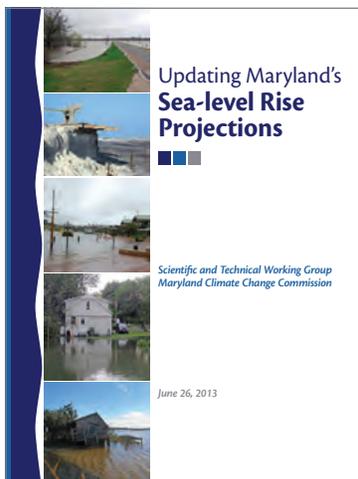
http://mht.maryland.gov/documents/PDF/Standards_36CFR67.pdf

Date Accessed: 22 December 2015

The State of Maryland follows *The Secretary of the Interior's Standards for Rehabilitation* and requires that all projects qualifying for state or federal tax credits or Maryland Historical Trust (MHT) grants or loans meet these standards. The ten standards outlined in this policy address the preservation of a site's character, finishes, and changes that have acquired historic significance, to name a few.

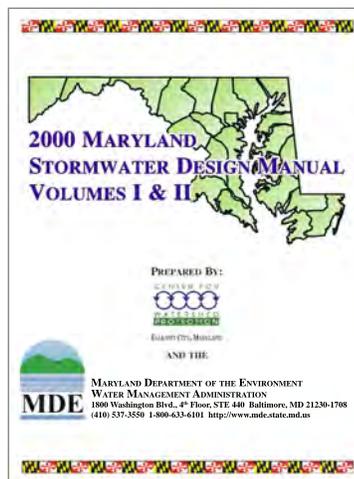
The Maryland Historical Trust's website - <https://mht.maryland.gov/> - provides additional info on eligibility for tax credits, grants, and loans. It stresses adhering to the *Standards* to qualify for MHT programs.

UPDATING MARYLAND'S SEA-LEVEL RISE PROJECTIONS. SPECIAL REPORT OF THE SCIENTIFIC AND TECHNICAL WORKING GROUP TO THE MARYLAND CLIMATE CHANGE COMMISSION



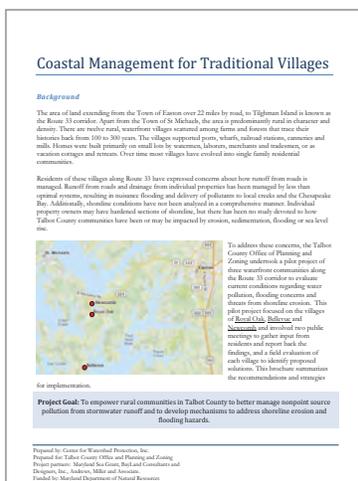
D. F. BOSCH, ET AL - 2013
http://climatechange.maryland.gov/wp-content/uploads/sites/16/2014/12/ian_report_4131.pdf
 Date Accessed: 26 February 2016

2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES I & II



CENTER FOR WATERSHED PROTECTION, INC. - No Date
http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx
 Date Accessed: 10 August 2016

COASTAL MANAGEMENT FOR TRADITIONAL VILLAGES



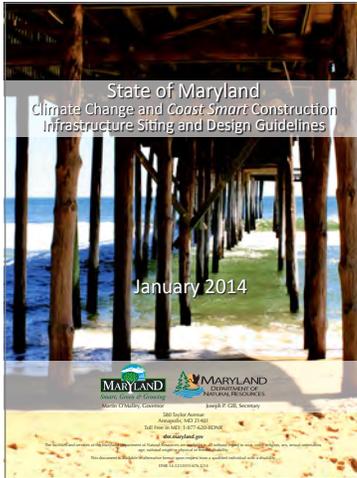
CENTER FOR WATERSHED PROTECTION, INC. - 21 July 2016
http://dnr2.maryland.gov/ccs/Publication/Talbot_CMTV.pdf
 Date Accessed: 21 July 2016

CITY OF BALTIMORE DISASTER PREPAREDNESS AND PLANNING PROJECT (DP3)



CITY OF BALTIMORE - October 2013
<http://www.baltimoresustainability.org/wp-content/uploads/2015/12/Executivesummary.pdf>
 Date Accessed: 26 February 2016

CLIMATE CHANGE AND COAST SMART CONSTRUCTION: INFRASTRUCTURE SITING AND DESIGN GUIDELINES. SPECIAL REPORT OF THE ADAPTATION RESPONSE WORKING GROUP OF THE MARYLAND COMMISSION ON CLIMATE CHANGE



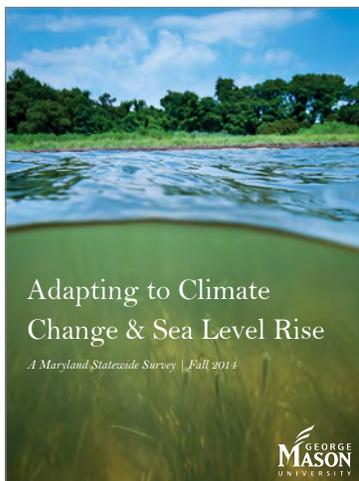
Zoë P. Johnson - January 2014
http://climatechange.maryland.gov/wp-content/uploads/sites/16/2014/12/climate_change_and_coast_smart_final_report1.pdf
 Date Accessed: 26 February 2016

ON A COLLISION COURSE WITH SEA LEVEL RISE: HELPING MARYLAND COMMUNITIES BECOME COAST-SMART



GWEN SHAUGHNESSY - April 2010
http://dnr2.maryland.gov/ccs/Publication/articles_ccslrpr2010.pdf
 Date Accessed: 21 July 2016

ADAPTING TO CLIMATE CHANGE & SEA LEVEL RISE: A MARYLAND STATEWIDE SURVEY



K. AKERLOF AND E.W. MAIBACH - 2014
http://climatechange.maryland.gov/wp-content/uploads/sites/16/2014/12/sea_level_rise_and_adaptation_20141.pdf
 Date Accessed: 26 February 2016

MARYLAND BUILDS RESILIENCE TO CLIMATE CHANGE THROUGH COASTSMART COMMUNITIES



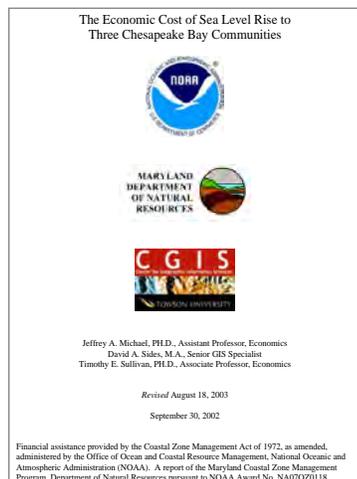
July 2011
<http://dnr2.maryland.gov/ccs/Publication/czmnewsjul11.pdf>
 Date Accessed: 20 July 2016

MERGING BLUE AND GREEN INFRASTRUCTURE IN MARYLAND



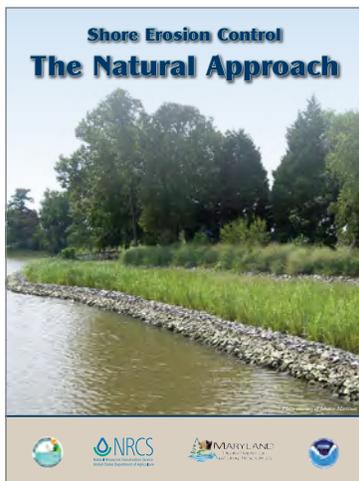
Sept/Oct 2010
http://dnr2.maryland.gov/ccs/Publication/articles_mbgj09102010.pdf
 Date Accessed: 20 July 2016

THE ECONOMIC COST OF SEA LEVEL RISE TO THREE CHESAPEAKE BAY COMMUNITIES



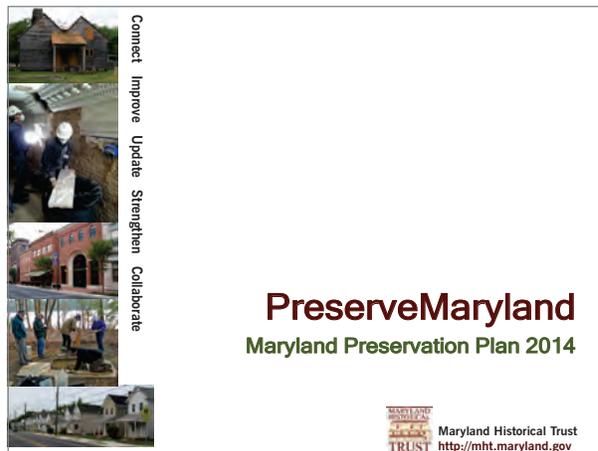
MICHAEL A. JEFFREY, DAVID A. SIDES AND TIMOTHY E. SULLIVAN - July 2004
http://dnr2.maryland.gov/ccs/Publication/2003ec_SeaLevelRise.pdf
 Date Accessed: 21 July 2016

SHORE EROSION CONTROL THE NATURAL APPROACH



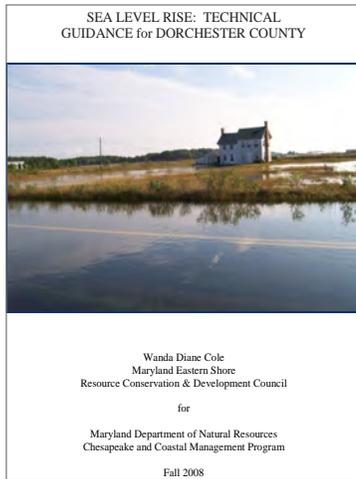
2007
http://dnr2.maryland.gov/ccs/Publication/SE_Natural_Approach_2007.pdf
 Date Accessed: 21 July 2016

PRESERVE MARYLAND: MARYLAND PRESERVATION PLAN 2014



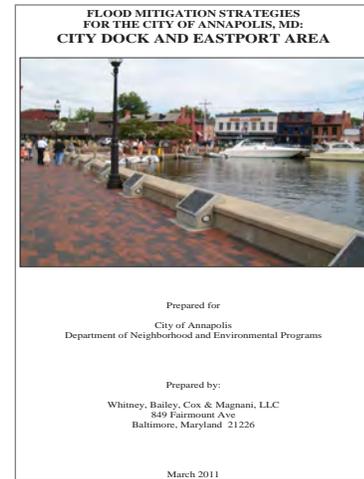
2014
https://mht.maryland.gov/documents/PDF/PreserveMaryland_plan2014.pdf
 Date Accessed: 26 February 2016

SEA LEVEL RISE: TECHNICAL GUIDANCE FOR DORCHESTER COUNTY



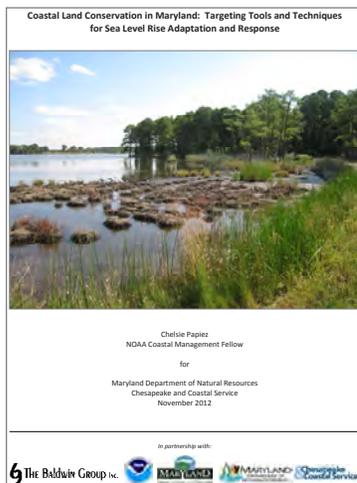
WANDA DIANE COLE
http://dnr2.maryland.gov/ccs/Publication/SeaLevel_Dorchester.pdf
 Date Accessed: 21 July 2016

FLOOD MITIGATION STRATEGIES FOR THE CITY OF ANNAPOLIS, MD: CITY DOCK AND EASTPORT AREA



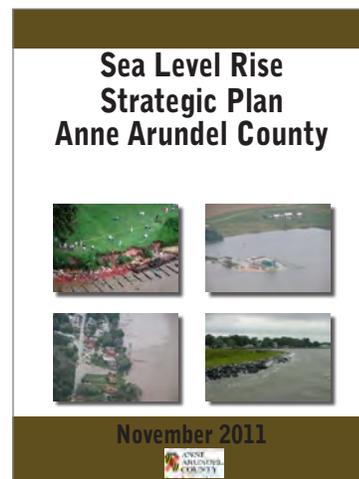
WHITNEY, BAILEY, COX & MAGNANI, LLC - March 2011
<http://www.annapolis.gov/docs/default-source/dnep-documents-pdfs/03-01-2011-sea-level-study.pdf?sfvrsn=6>
 Date Accessed: 26 February 2016

COASTAL LAND CONSERVATION IN MARYLAND: TARGETING TOOLS AND TECHNIQUES FOR SEA LEVEL RISE ADAPTATION AND RESPONSE



CHELSIE PAPIEZ - November 2012
http://dnr2.maryland.gov/ccs/Publication/coastalland_conserv_md.pdf
 Date Accessed: 21 July 2016

SEA LEVEL RISE STRATEGIC PLAN ANNE ARUNDEL COUNTY



ANNE ARUNDEL COUNTY OFFICE OF PLANNING AND ZONING - November 2011
http://dnr2.maryland.gov/ccs/Publication/AASLRStrategicPlan_final.pdf
 Date Accessed: 21 July 2016

WINDS OF CHANGE; OFFSHORE WIND AND OCEAN PLANNING



CHRIS CORTINA, ET. AL. - Fall 2010
http://dnr2.maryland.gov/ccs/Publication/articles_wcfall2010.pdf
 Date Accessed: 20 July 2016

LOCAL RECOVERY PLANNING TOOLKIT OVERVIEW



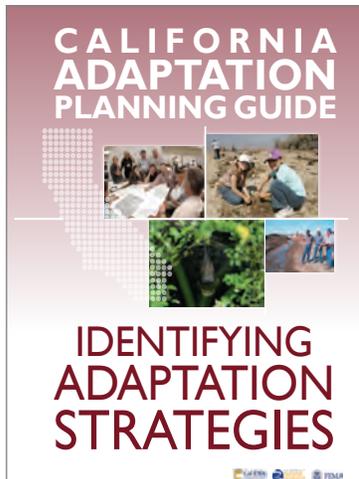
MARYLAND EMERGENCY MANAGEMENT AGENCY - No Date
<http://mema.maryland.gov/Pages/Local-Recovery-Planning-Toolkit.aspx>
 Date Accessed: 10 August 2016

**NON-STATE-OF-MARYLAND,
GOVERNMENTAL ENTITIES**



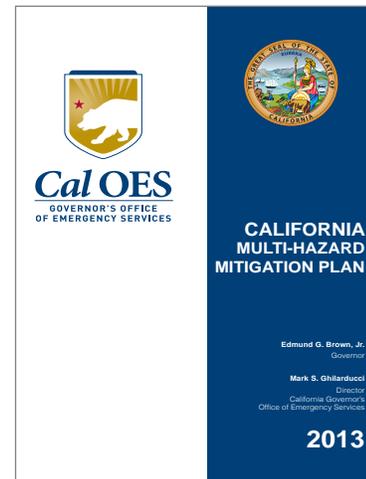
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CALIFORNIA ADAPTATION PLANNING GUIDE



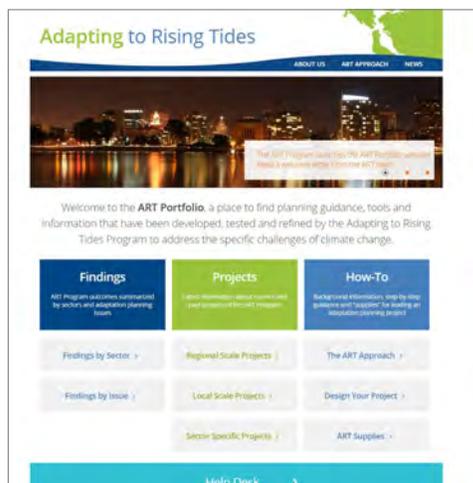
CALIFORNIA EMERGENCY MANAGEMENT AGENCY - July 2012
http://resources.ca.gov/climate/safeguarding/adaptation_policy_guide/
 Date Accessed: 3 February 2016

CALIFORNIA MULTI-HAZARD MITIGATION PLAN



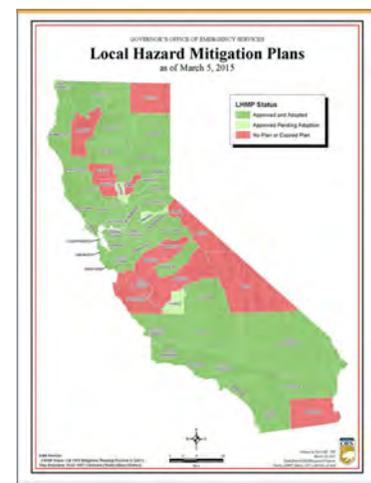
GOVERNOR'S OFFICE OF EMERGENCY SERVICES - 2013
<http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/state-hazard-mitigation-plan>
 Date Accessed: 3 February 2016

ADAPTING TO RISING TIDES



2016
<http://www.adaptingtorisingtides.org/>
 Date Accessed: 26 February 2016

CALIFORNIA COUNTY HAZARD MITIGATION PROGRAMS



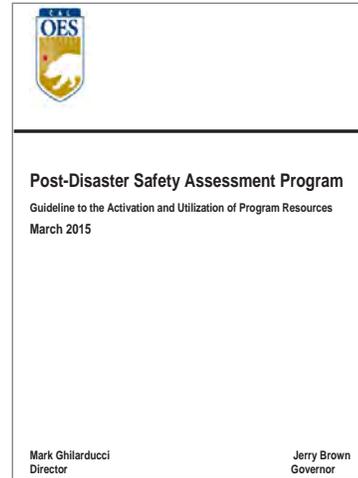
Various Dates
<http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/local-hazard-mitigation-program>
 Date Accessed: 23 February 2016

NATURAL FLOOD PROTECTION



SANTA CLARA VALLEY WATER DISTRICT - 2015
<http://www.valleywater.org/services/naturalfloodprotection.aspx>
 Date Accessed: 23 December 2015

POST-DISASTER SAFETY ASSESSMENT PROGRAM

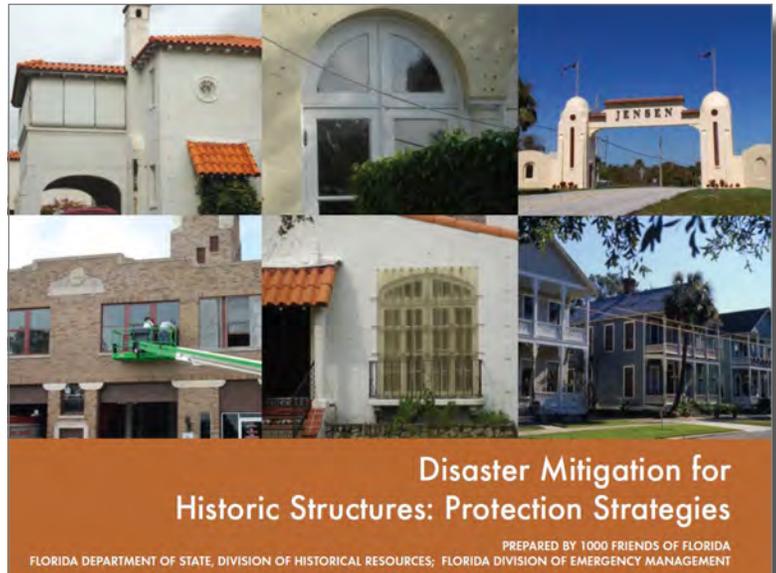


GOVERNOR'S OFFICE OF EMERGENCY SERVICES - March 2015
<http://www.caloes.ca.gov/RecoverySite/Documents/SAP%20Guidelines.pdf>
 Date Accessed: 3 February 2016

DISASTER MITIGATION FOR HISTORIC STRUCTURES: PROTECTION STRATEGIES

This report is a joint agency effort to integrate disaster mitigation and historic preservation. It is a continuation of Disaster Planning for Florida's Historic Resources, providing guidelines for protecting historic structures from disasters.

The report provides background on the Florida Building Code and how historic structures fit within the Code's framework. The report also examines how to determine the most appropriate mitigation method for a particular structure. These mitigation methods are divided by topic, roofs, windows, doors, etc. Guidance on how to sensitively employ these methods is presented. The report makes recommendations based on historic or non-historic materials and provides additional resources for further information.



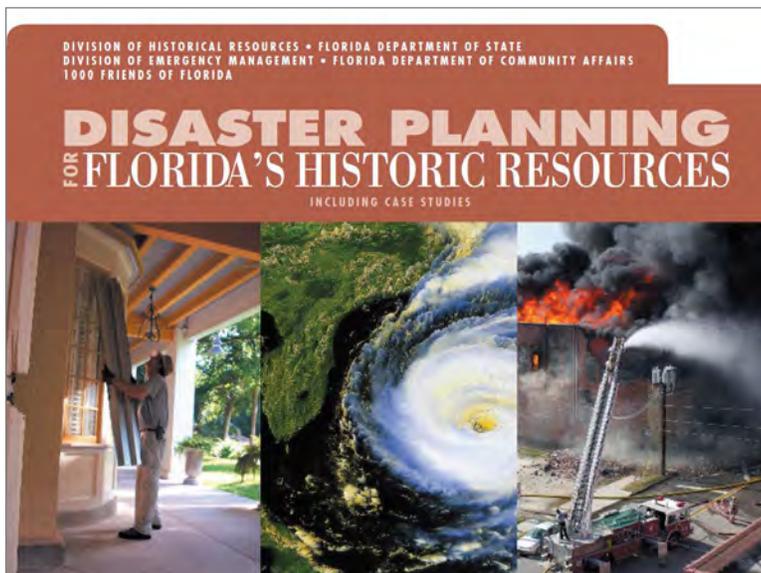
1000 FRIENDS OF FLORIDA

August 2008

<http://www.1000friendsofflorida.org/building-better-communities/disaster-planning/>

Date Accessed: 5 January 2016

DISASTER PLANNING FOR FLORIDA'S HISTORIC RESOURCES - INCLUDING CASE STUDIES



1000 FRIENDS OF FLORIDA

August 2008

<http://www.1000friendsofflorida.org/building-better-communities/disaster-planning/>

Date Accessed: 5 January 2016

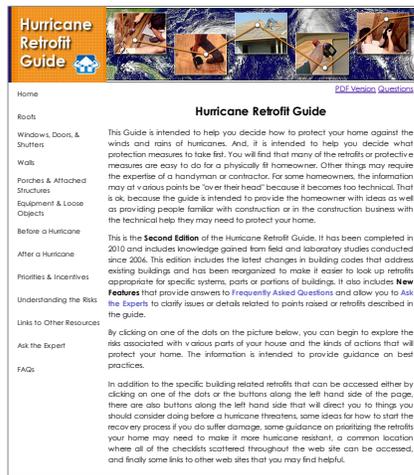
The purpose of this report is to provide guidance on integrating emergency management and historic preservation. The report first provides background information on emergency management and historic preservation individually, then describes how these fields interact. This typically happens only after a disaster has occurred and federal funding has triggered a Section 106 review.

The issues inherent in this approach to addressing historic preservation and emergency management are delineated and recommended solutions follow. These solutions include:

- Creating and updating historic resource surveys
- Developing site-specific plans
- Identifying sources of funding
- Linking preservation and disaster mitigation policy to one another

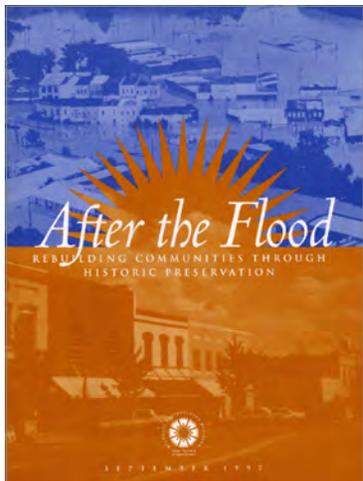
The report provides case studies from various Florida counties, detailing the unique approach taken by each county and the lessons learned.

HURRICANE RETROFIT GUIDE



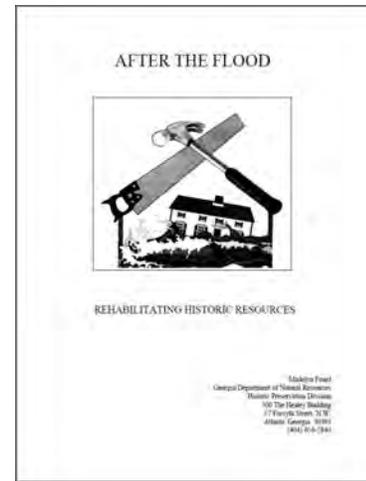
DIVISION OF EMERGENCY MANAGEMENT - No Date
<http://www.floridadisaster.org/hrq/index.asp>
 Date Accessed: 14 January 2016

AFTER THE FLOOD - REBUILDING COMMUNITIES THROUGH HISTORIC PRESERVATION



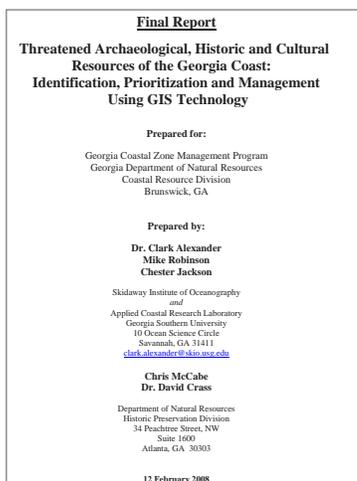
September 1997
http://www.georgiashpo.org/sites/uploads/hpd/pdf/flood_rebuilding_communities.pdf
 Date Access: 20 January 2016

AFTER THE FLOOD - REHABILITATING HISTORIC RESOURCES



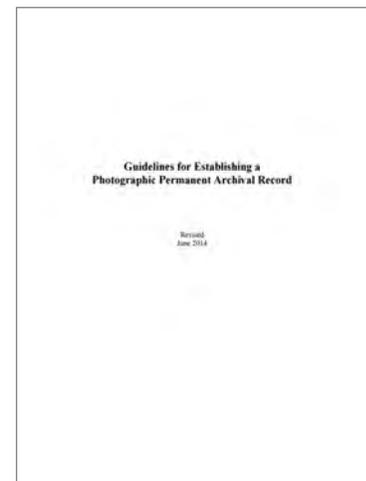
1996
http://www.georgiashpo.org/sites/uploads/hpd/pdf/1996_after_the_flood_complete_rev.pdf
 Date Accessed: 20 January 2016

THREATENED ARCHAEOLOGICAL, HISTORIC AND CULTURAL RESOURCES OF THE GEORGIA COAST - IDENTIFICATION, PRIORITIZATION AND MANAGEMENT USING GIS TECHNOLOGY



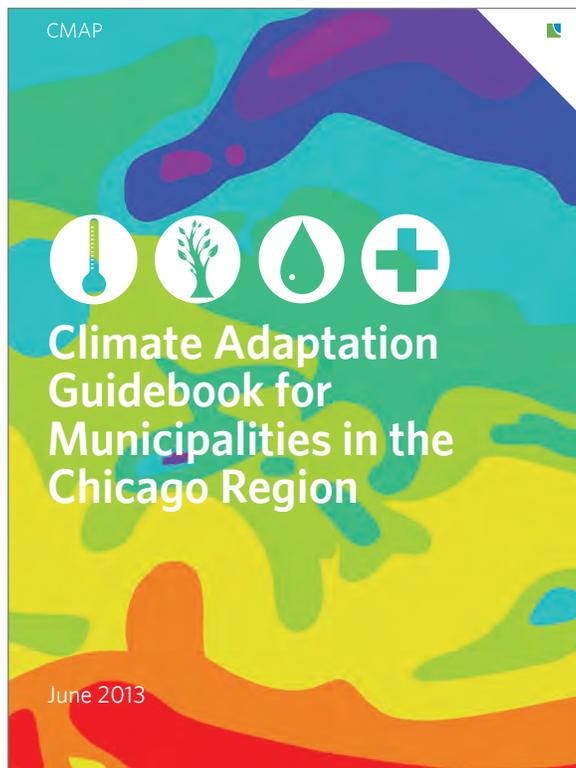
DR. CLARK ALEXANDER, MIKE ROBINSON AND CHESTER JACKSON - 12 February 2008
<https://docs.google.com/file/d/0B3jQMqDd3SpMXc4cVMbDFKekU/edit?pref=2&pli=1>
 Date Accessed: 6 January 2016

GUIDELINES FOR ESTABLISHING A PHOTOGRAPHIC PERMANENT ARCHIVAL RECORD



June 2014
<http://georgiashpo.org/sites/uploads/hpd/pdf/PAR%202014.pdf>
 Date Accessed: 5 February 2016

CLIMATE ADAPTATION GUIDEBOOK FOR MUNICIPALITIES IN THE CHICAGO REGION



June 2013

<http://www.cmap.illinois.gov/documents/10180/14136/FY13-0119%20Climate%20Adaptation%20toolkit.pdf/fa5e3867-8278-4867-841a-aad4e090847a>

Date Accessed: 22 January 2016

Targeted for municipalities, this report recommends methods for integrating climate-related measures into a community's planning. The report first stresses the importance of conducting a self-assessment. With an assessment, a municipality can move forward, prioritize issues and anticipate the impact of climate change.

Next, the report presents recommendations by area. The most relevant area to the purposes of this bibliography is "Standards for Building and Site Planning." General in nature, recommendations under this heading include:

- Requiring measures to improve building material durability
- Encouraging participation in voluntary "above-code" programs for wind/hail resistance

Overall, this report is general in nature. It is a starting point for integrating hazard and climate mitigation measures.

REPORT FOR THE URBAN FLOODING AWARENESS ACT

BRAD A. WINTERS

June 2015

http://www.dnr.illinois.gov/WaterResources/Documents/Final_UFAA_Report.pdf

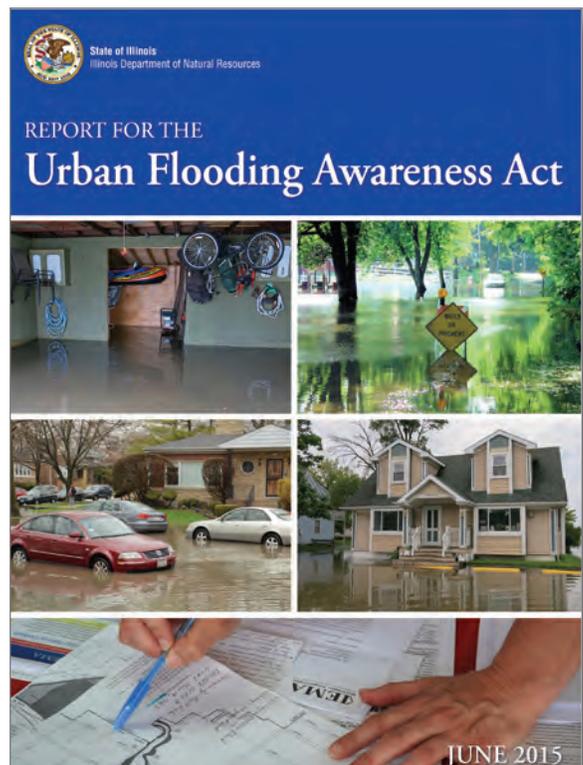
Date Accessed: 26 January 2016

This report for the Illinois General Assembly investigates the causes of urban flooding and methods for reducing urban flooding events. This type of flooding is often attributed to infrastructure that is overwhelmed by rainfall. As a result, older, more densely developed areas have a higher chance of experiencing urban floods due to increased runoff.

Thirty-three recommendations are presented in this report, including:

- Improved data collection
- Adoption of stormwater ordinances and improved stormwater management in developing areas
- Establishment of community cost-sharing mitigation programs
- Development of existing property evaluation programs for homeowners

These recommendations focus almost entirely on stormwater management and related infrastructure. Though not targeted for historic structures, the report's recommendations could reduce the frequency of flooding in historic areas.



RESILIENT NEW ORLEANS

JEFF HEBERT, ET AL

August 2015

http://resilientnola.org/wp-content/uploads/2015/08/Resilient_New_Orleans_Strategy.pdf

Date Accessed: 15 January 2016

Guided by the 100 Resilient Cities project, this report examines practices, employed at a variety of scales, related to resilience. The report looks at resilience strategies of U.S. cities and abroad. It also incorporates feedback from New Orleans' community members. The recommended measures are organized into three sections. Each section, outlined below, presents a range of strategies for addressing challenges to New Orleans.

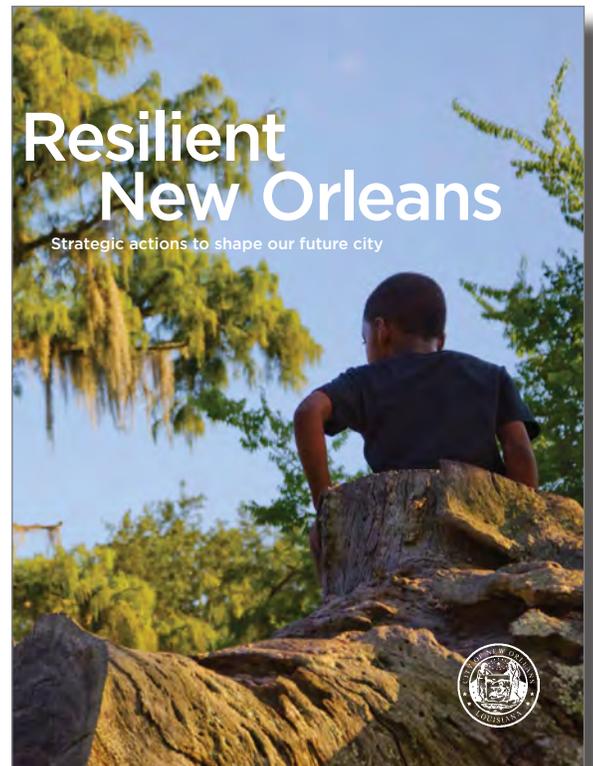
“Adapt to Thrive” advocates:

- Embracing change with wetland restoration
- Incentivizing storm retrofits for homeowners
- Implementation of the Urban Water Plan

“Connect to Opportunity” stresses the importance of equitable development across the city

“Transform City Systems” focuses on updating:

- Operational systems
- Infrastructure



ELEVATION DESIGN GUIDELINES FOR HISTORIC BUILDINGS IN THE LOUISIANA GO ZONE



URS - 2014

<http://www.crt.state.la.us/Assets/OCD/hp/uniquely-louisiana-education/Disaster-Recovery/Final%20Elevation%20Design%20Booklet%2012-07-15%20v2.pdf>

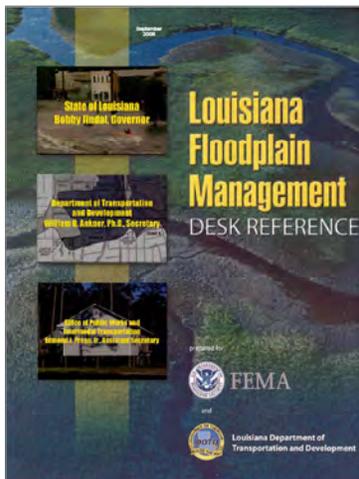
Date Accessed: 4 March 2016

These *Guidelines* are the product of a collaboration between the Louisiana Division of Historic Preservation, 37 parishes in the state of Louisiana and local stakeholders, including flood plain managers, architects, and building officials. As the report explains, these *Guidelines* are intended to be a proactive response to plans for building elevation in the face of floods and sea level rise. Geared to residential and commercial historic structures, the *Guidelines* provides information to homeowners and planning and building officials alike.

The ultimate goal of this document, as described in the “Introduction,” is to “limit the total height of elevation for historic buildings.” (5) In limiting height, the hope is to preserve not only the character of the individual structure, but its relationship to its context. The *Guidelines* intend to achieve this goal while also meeting the regulatory requirements prescribed by federal agencies such as the Federal Emergency Management Agency.

The document provides detailed guidance on a wide range of considerations, including: methods for elevation, site design, accessibility, design considerations, and foundation design.

LOUISIANA FLOODPLAIN MANAGEMENT DESK REFERENCE



LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT - September 2008
http://www8.dotd.la.gov/lafloods/documents/2008_Desk_Ref.pdf
 Date Accessed: 16 August 2016

MASSACHUSETTS CLIMATE CHANGE ADAPTATION REPORT

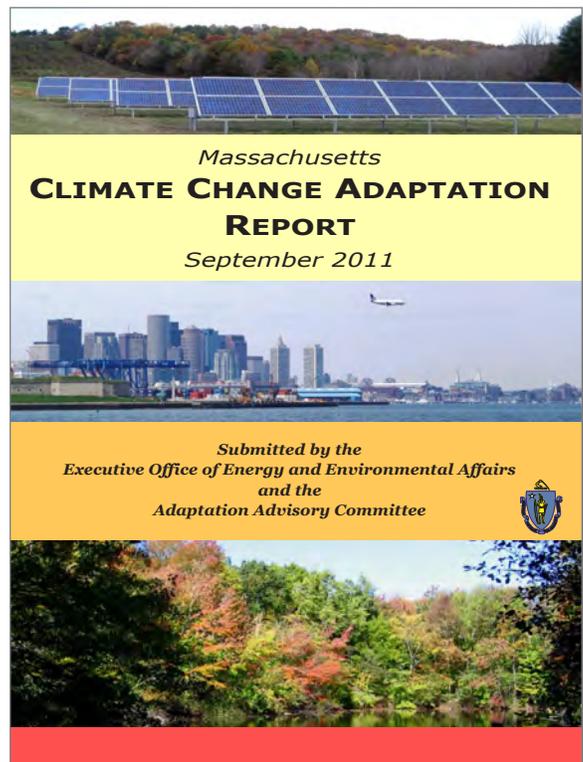
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
 AND THE ADAPTATION ADVISORY COMMITTEE
 September 2011
<http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf>
 Date Accessed: 22 January 2016

The first half of this two-part report details the predicted impact of climate change on the state. It reviews broad strategies for adapting and mitigating these impacts which are meant to be implemented by institutions and agencies across fields. A few examples of these strategies are:

- Combining mitigation and adaptation strategies
- Identifying and filling critical information gaps
- Improving planning and land use practices

The organization of the second half of this report is similar to that of follows a similar organization found in the first half. Here, the focus is not on the state and agencies, but on five different areas. These areas include “local economy and government” and “coastal zone and oceans” and detail related vulnerabilities and strategies.

The report concludes by encouraging action instead of reaction while also acknowledging that while some strategies are new, many result from the evolution of programs and policies.



BUILDING RESILIENCE IN BOSTON

JIM NEWMAN, ET AL

July 2013

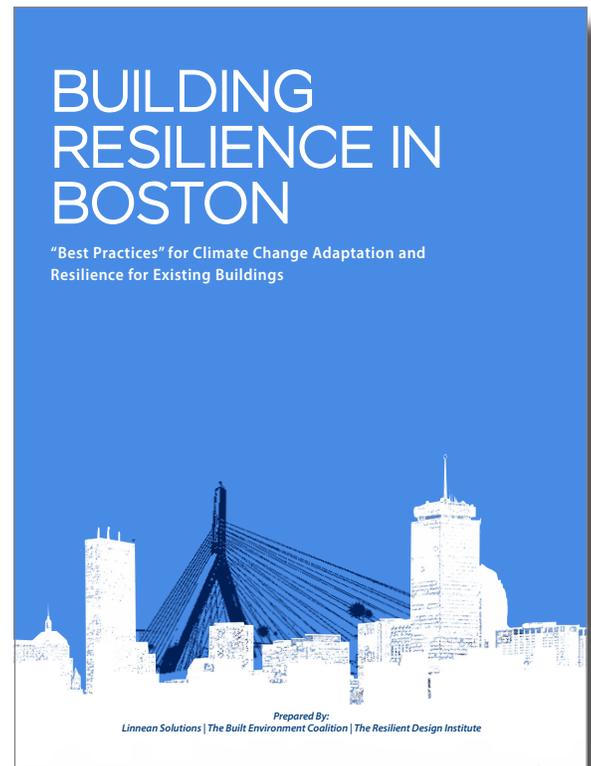
http://www.cityofboston.gov/images_documents/Building_Resilience_in_Boston_FINAL_tcm3-40185.pdf

Date Accessed: 22 January 2016

This report is geared toward property owners and policy-makers and provides an overview of relevant initiatives, policies, reports, and findings related to preparing existing buildings for the impacts of climate change.

As a response to extensive mapping related to flooding and other climactic events, the report examines other resilience studies for guidance - from Post-Sandy Recovery to the Federal Emergency Management Agency publications. Strategies pulled from these reports are then listed by area, such as "Site" and "Building systems."

The report concludes by reiterating the importance of retrofitting existing buildings to improve resilience not only for preserving the built fabric but for preserving life. Its suggested next steps include activating community organizations to identify vulnerabilities and to initiate steps toward resiliency.



PREPARING FOR THE RISING TIDE



ELLEN DOUGLAS

February 2013

http://www.cityofboston.gov/images_documents/preparing_for_the_rising_tide_final_tcm3-40186.pdf

Date Accessed: 22 January 2016

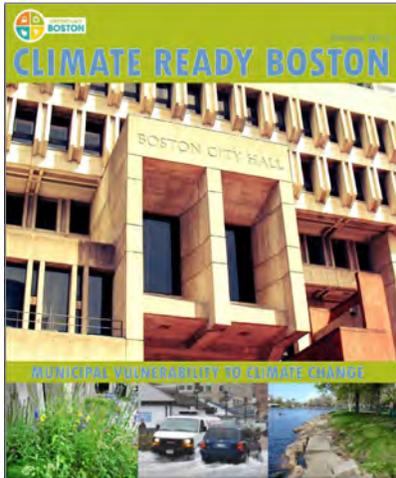
This is a report for property owners, policy-makers, and planners. In addition to outlining how climate change-related coastal flooding will impact Boston, the report provides an assessment of Boston's vulnerability to flooding and an overview of the city's 2012 preparedness plan.

The city's vulnerability is calculated using parcel data and three different flood scenarios. The data analysis and assessment includes special consideration for historic districts "because they represent areas of irreplaceable cultural value [...]" (26)

The report outlines strategies for adapting to climate change as well as two Massachusetts-based case studies. These case studies examine how to develop and deploy strategies. Here the report emphasizes that any plan must have a time component, wherein strategies are implemented over many decades if needed. These are described as "time-phased strategies."

In addition to cooperative efforts, the report concludes by emphasizing that a strategy implemented over time is the most effective method for adapting to climate change.

CLIMATE READY BOSTON



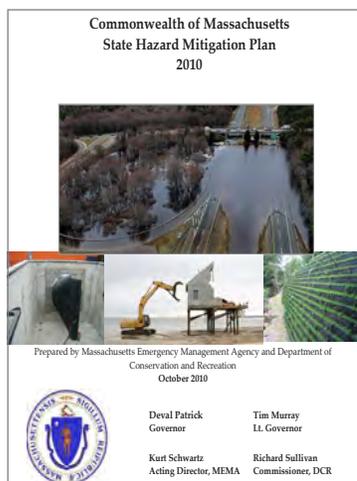
CLIMATE PREPAREDNESS TASK FORCE - October 2013
http://issuu.com/ees_boston/docs/final_report_29oct13
Date Accessed: 22 January 2016

GREENOVATE BOSTON 2014 CLIMATE ACTION PLAN UPDATE



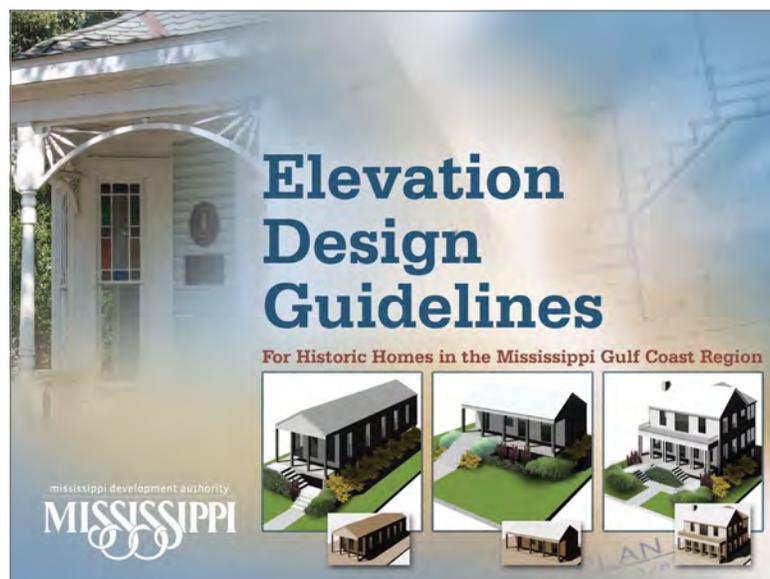
2014
http://www.cityofboston.gov/eeos/pdfs/Greenovate%20Boston%202014%20CAP%20Update_Full.pdf
Date Accessed: 8 February 2016

COMMONWEALTH OF MASSACHUSETTS STATE HAZARD MITIGATION PLAN



October 2010
<http://northeastoceancouncil.org/wp-content/uploads/2012/10/MA-Hazard-Mitigation-Plan-2010.pdf>
Date Accessed: 8 February 2016

ELEVATION DESIGN GUIDELINES: FOR HISTORIC HOMES IN THE MISSISSIPPI GULF COAST REGION



In the aftermath of Hurricane Sandy, this document was developed to provide guidance for the elevation of historic buildings in order to reduce damage from potential future flooding. Property owners are encouraged to protect the historic character of buildings and districts when elevating their homes. The guidance includes recommendations related to sites, buildings, and foundations. Diagrams of prevalent historic building types illustrate the potential impact of raising buildings 5-, 10-, and 15-feet above grade and associated mitigation strategies.

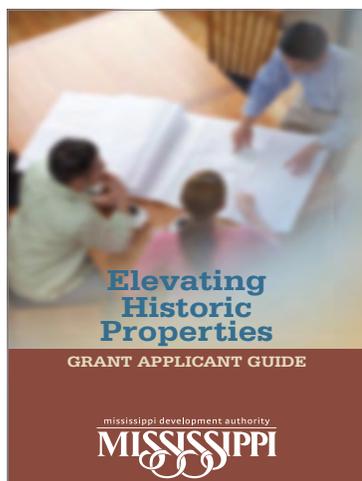
URS

2008

http://www.nj.gov/dep/hpo/hrrcn_sandy_pdf%20files/mississippi.pdf

Date Accessed: 22 December 2015

ELEVATING HISTORIC PROPERTIES GRANT APPLICATION GUIDE



URS - No Date

http://www.msdisasterrecovery.com/documents/historic_prop_grant_app.pdf

Date Accessed: 4 March 2016

STEMMING THE TIDE OF FLOOD LOSSES - STORIES OF SUCCESS FROM THE HISTORY OF MISSOURI'S FLOOD MITIGATION PROGRAM

MISSOURI STATE MANAGEMENT AGENCY

No Date

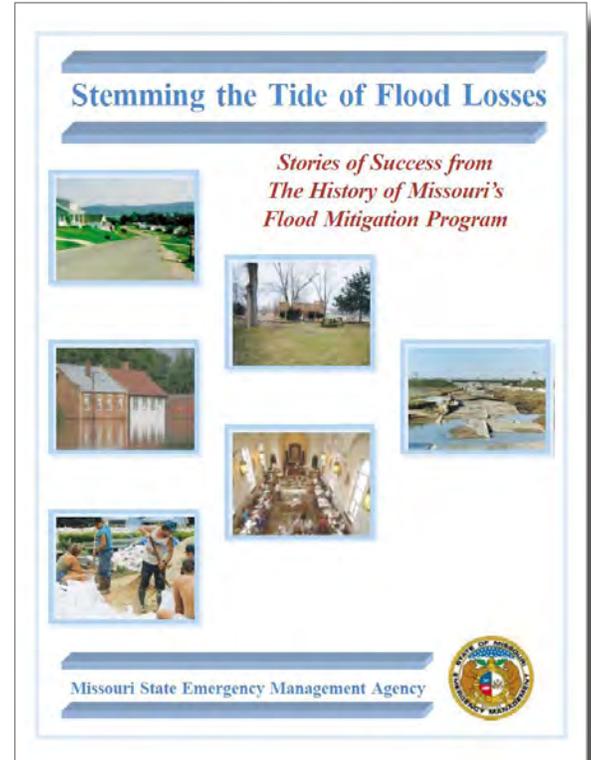
<http://sema.dps.mo.gov/docs/publications/stemming.pdf>

Date Accessed: 21 January 2016

This report details administration and processes of a hazard mitigation program of the Missouri State Emergency Management Agency following major flooding in 1993. The Agency determined that the best course of action would be state acquisition of damaged, residential properties. These damaged homes were demolished and the open land that resulted was dedicated to public use. This Acquisition program is known as the Missouri Community Buyout Program.

The report details the evolution of the Program's procedures and elaborates on its policies, including that participation had to be voluntary and that nothing could be built on vacated land, except for structures related to open, public use.

The report provides case studies from many communities on the impact of the Missouri Community Buyout Program. It does not detail any other mitigation measures. It is ultimately an overview of how the program was executed. The very success of the program is determined by the program itself.



SUSTAINED SURVIVAL

STEPHANIE L. CHERRY-FARMER

March 2013

http://gardenstatelegacy.com/files/Sustained_Survival_Cherry-Farmer_GSL19.pdf

Date Accessed: 15 March 2016

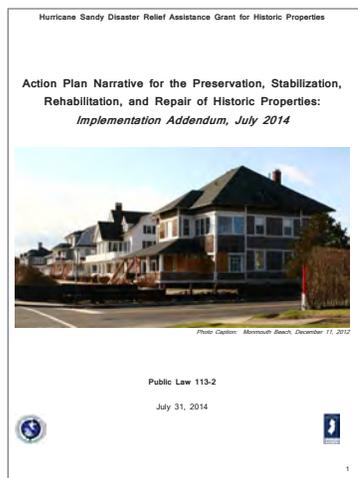
As of the date of Cherry-Farmer's article, the response to the impact of Hurricane Sandy was in a state of flux and the preservation community in NJ could not yet predict how the response would impact historic resources. The full effect of Sandy on these resources was also not yet fully understood and will likely never be grasped. As Cherry-Farmer explains, it is difficult to get a true tally of the extent of damage to listed and eligible-for-listing sites.

The article describes the NJ Historic Preservation Office's response to Sandy, primarily by surveying neighborhoods. The lack of a pre-Sandy survey is the primary obstacle, as described here, to understanding Sandy-related damage. The article then summarizes the Section 106 process that will accompany federally-subsidized recovery projects. It also addresses elevating structures, citing the Mississippi Elevation Design Guidelines as the "Gold Standard," while also acknowledging that these guidelines are not easily applied to NJ's built fabric.

The article concludes that final decisions for recovery rest with property owners and calls for updated planning efforts to guide these decisions.

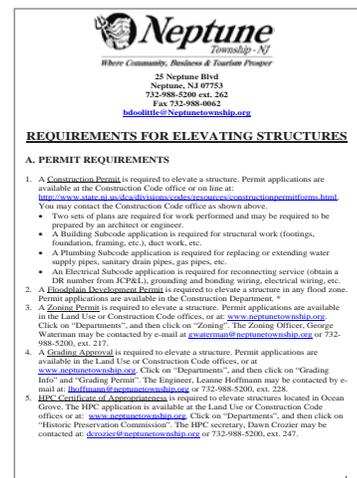


ACTION PLAN NARRATIVE FOR THE PRESERVATION, STABILIZATION, REHABILITATION, AND REPAIR OF HISTORIC PROPERTIES: IMPLEMENTATION ADDENDUM



STATE OF NEW JERSEY - July 2014
http://www.nj.gov/dep/hpo/Index_HomePage_images_links/Hurricane%20Sandy/01-Action%20Plan%20ADDENDUM_2014-07-31_final.pdf
Date Accessed: 22 February 2016

REQUIREMENTS FOR ELEVATING STRUCTURES



NEPTUNE, NJ TOWNSHIP - No Date
<http://www.neptunetownship.org/sites/default/files/documents/Construction/ELEVATING%20STRUCTURES%20-%20Requirements.pdf>
Date Accessed: 22 February 2016

RETROFITTING BUILDINGS FOR FLOOD RISK

CARL WEISBROD

October 2014

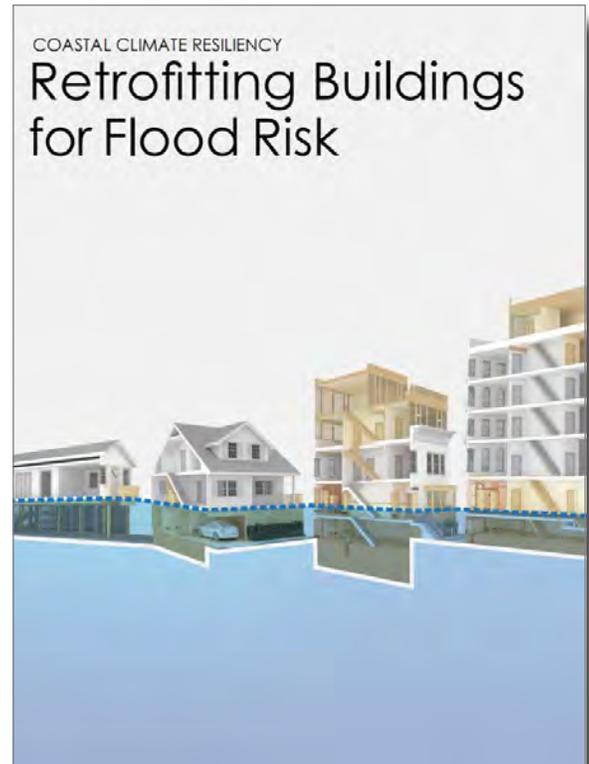
http://www.nyc.gov/html/dcp/pdf/retrofitting/retrofitting_complete.pdf

Date Accessed: 14 January 2016

Retrofitting Buildings for Flood Risk is a guide for the public to navigating post-Sandy policies in an effort to improve community resiliency throughout New York City's boroughs. New floodmaps, building codes and insurance programs can be difficult to maneuver. This report is an attempt to illustrate what methods for retrofitting buildings satisfy these updated regulations. The profiled methods are specific to New York City and its typical building typologies (tenements, apartment buildings, rowhouses, etc.).

In addition to a glossary for the general public, the report provides a profile of building types, linked to the city's geography and provides in-depth information for an individual to independently determine the most appropriate method for retrofitting their home.

A series of case studies demonstrate how these retrofitting measures have been applied.



ALL HANDS ON DECK - MOBILIZING NEW YORKERS FOR A LIVABLE AND RESILIENT CITY



THE MUNICIPAL ARTS SOCIETY OF NEW YORK

December 2013

<https://assets.rockefellerfoundation.org/app/uploads/20131201174244/All-Hands-on-Deck.pdf>

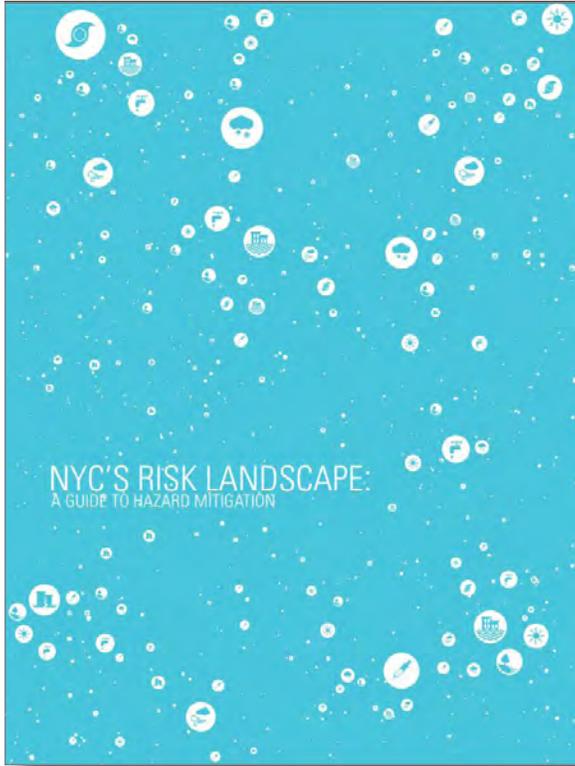
Date Accessed: 20 January 2016

The Municipal Arts Society (MAS), an organization focused on civic engagement and invested in improvement of New York City as well as preservation of its character, published this strategy in response to Hurricane Sandy. It is an effort to advocate for the goals of the MAS. The report emphasizes collaboration and transparency across the four themes addressed:

- Using local funding along with a hybrid of local and international strategies
- Improving neighborhood adaptability
- Strengthening existing infrastructure with design
- Authoring legislation that will encourage hazard mitigation in future plans

Each chapter details related priorities and recommendations, developed through extensive community dialogue. The report concludes by acknowledging that, despite the recommendations presented here, a city's resilience strategy should constantly evolve.

NYC'S RISK LANDSCAPE: A GUIDE TO HAZARD MITIGATION



NYC EMERGENCY MANAGEMENT

November 2014

http://www1.nyc.gov/assets/em/downloads/pdf/hazard_mitigation/nycs_risk_landscape_a_guide_to_hazard_mitigation_final.pdf

Date Accessed: 1 February 2016

This guide is geared toward the broader population of New York City. It is an attempt to clearly illustrate hazards faced by the city and to provide methods for mitigating hazard risks. The hazards discussed include flooding, strong windstorms and winter weather. In addition to chapters that provide an overview and reasons for producing the report, the three key chapters are:

- An introduction to New York City's risk landscape
- Selected hazards and risk management strategies
- Behind the scenes: our risk management process and what lies ahead

The focus is not on responding to disasters but preparing for disasters.

The guide also makes clear that hazard mitigation methods constantly evolve and that the guide itself will require periodic updates.

ONE NEW YORK: THE PLAN FOR A STRONG AND JUST CITY

ONENYC

April 2015

<http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf>

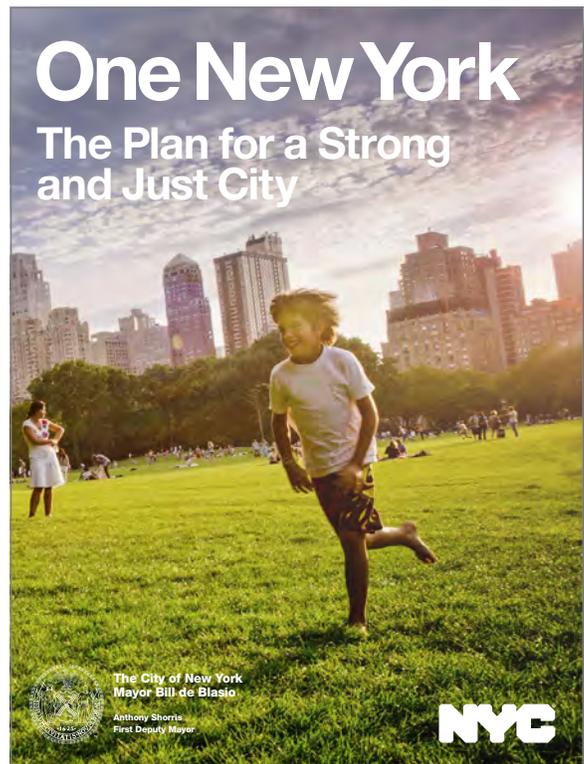
Date Accessed: 15 January 2016

OneNY is an initiative from the City of New York to articulate challenges faced by the city and propose a plan for addressing those challenges. This plan is organized around four principles: economic growth, equity, sustainability, and resiliency.

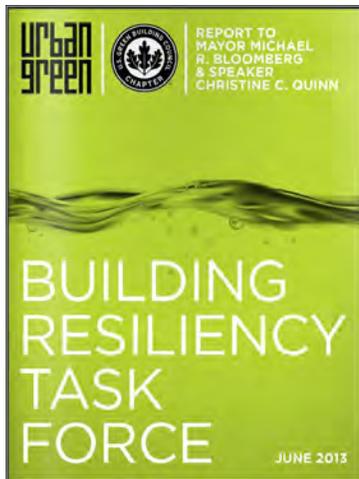
The plan's chapter on resiliency calls for improved disaster mitigation measures for New York City's buildings, neighborhoods, and coastline and proposes several initiatives, including:

- Upgrading public and private city buildings
- Adopting policies to support building upgrades
- Working to reform FEMA's National Flood Insurance Program (NFIP)

These initiatives focus on both small scale goals that apply to individuals and changes that can occur at the scale of the city.

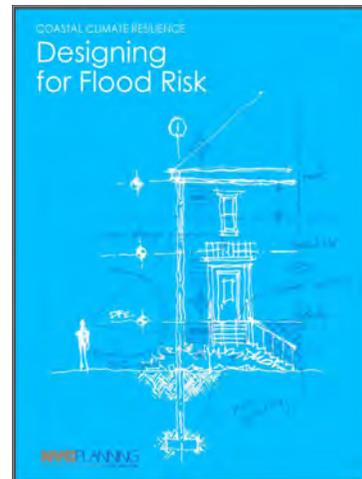


**BUILDING RESILIENCY TASK FORCE:
REPORT TO MAYOR MICHAEL R.
BLOOMBERG & SPEAKER CHRISTINE C.
QUINN**



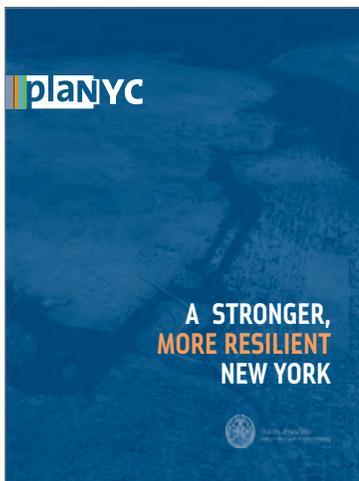
June 2013
http://issuu.com/urbangreen/docs/btrtf_executive_summary
 Date Accessed: 5 February 2016

DESIGNING FOR FLOOD RISK



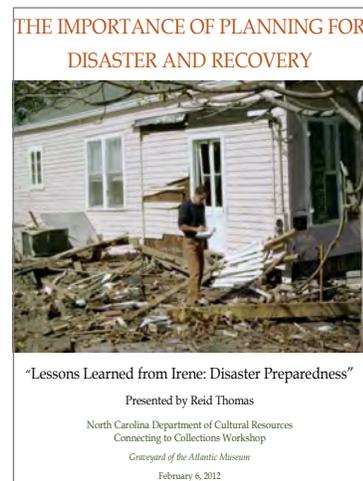
DEPARTMENT OF CITY PLANNING CITY OF NEW YORK -
 June 2013
http://www1.nyc.gov/assets/planning/download/pdf/plans-studies/sustainable-communities/climate-resilience/designing_flood_risk.pdf
 Date Accessed: 3 February 2016

**A STRONGER, MORE RESILIENT NEW
YORK**



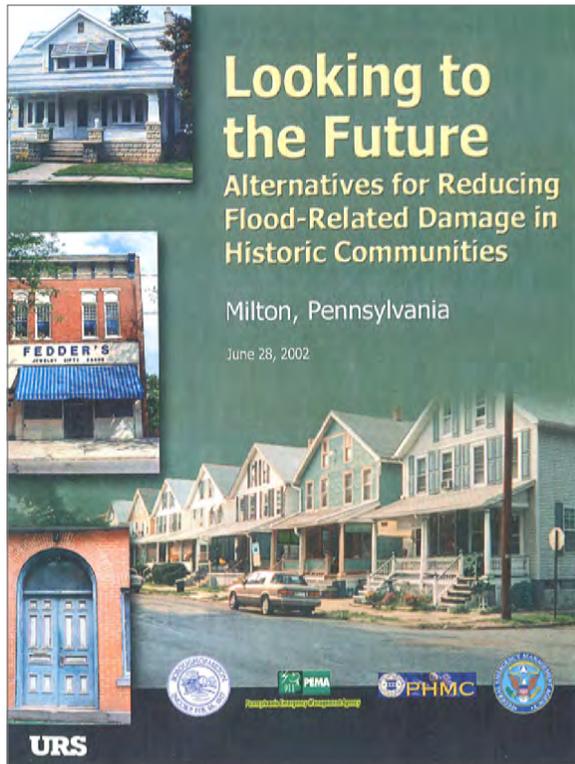
PLAN NYC - June 2013
http://s-media.nyc.gov/agencies/sirr/SIRR_singles_Lo_res.pdf
 Date Accessed: 3 February 2016

**THE IMPORTANCE OF PLANNING FOR
DISASTER RECOVERY**



REID THOMAS - 6 February 2012
<http://www.hpo.ncdcr.gov/DisasterPlanning&Recovery.pdf>
 Date Accessed: 16 February 2012

LOOKING TO THE FUTURE: ALTERNATIVES FOR REDUCING FLOOD-RELATED DAMAGE IN HISTORIC COMMUNITIES



URS

28 June 2002

https://www.portal.state.pa.us/portal/server.pt/document/1425057/looking_to_the_future

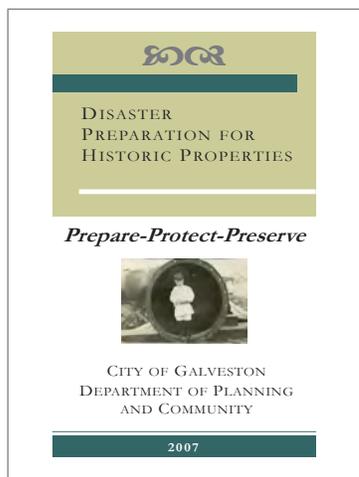
Date Accessed: 6 January 2016

The goal of this report, published by URS, is to identify methods for integrating mitigation measures that are sensitive to cultural resources into Milton's plans. With Milton's history of repeated flooding, this report was undertaken to provide guidance for Milton and serve as a model for other historic towns in Pennsylvania.

Following extended historical flood research, historic architectural surveys and public participation, the report reviews the following mitigation measures for their applicability in Milton:

- Acquisition and demolition
- Relocation
- Elevation
- Floodproofing
- Structural flood diversion improvements and stream channel modifications

DISASTER PREPARATION FOR HISTORIC PROPERTIES

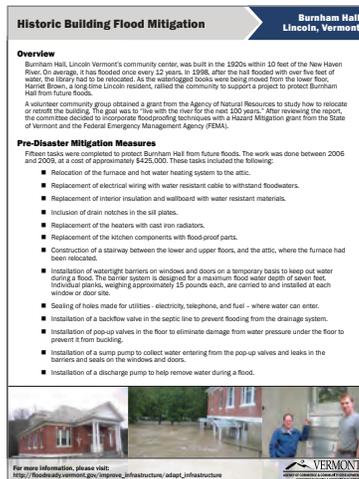


2007

<http://www.cityofgalveston.org/DocumentCenter/View/104>

Date Accessed: 16 February 2016

HISTORIC BUILDING FLOOD MITIGATION IN VERMONT

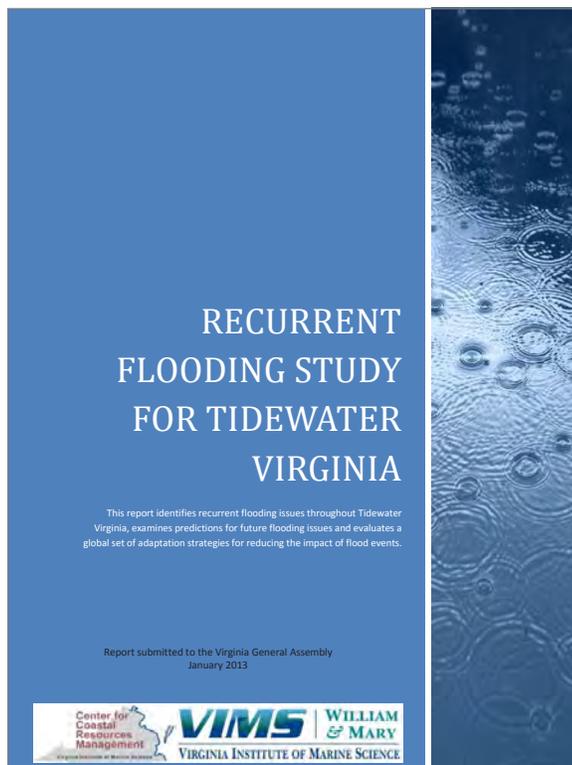


No Date

http://accd.vermont.gov/sites/accd/files/Flood_Mitigation_Case_Studies_Final.pdf

Date Accessed: 11 August 2016

RECURRENT FLOODING STUDY FOR TIDEWATER VIRGINIA



VIRGINIA INSTITUTE FOR MARINE SCIENCE

January 2013

<http://tinyurl.com/q22p77s>

Date Accessed: 5 January 2016

This study reviews and predicts flooding in Virginia's Tidewater region. In addition to these predictions, the study examines potential strategies to mitigate the impact of flooding. The study considers strategies from the United States and abroad and recommends mitigation measures that may best address challenges unique to Tidewater Virginia.

Recommended strategies are addressed on three levels:

- State actions
- Locality Actions
- Individual Actions

Included in this study was review of recommended measures by stakeholders.

NORFOLK: RESILIENT CITY



JUDITH RODIN, ET AL

October 2015

http://nfkresilientcity.org/wp-content/uploads/2015/10/Norfolk_Resilient_Strategy_October_2015.pdf

Date Accessed: 15 January 2016

Funded in part by the Rockefeller Foundation, this document outlines Norfolk's resilience plan. As a port city, the plan acknowledges that the city is especially vulnerable to the threats of sea-level rise and emphasizes the need for collaboration among all community members. This plan reviews the guiding tenets for resiliency as well as the plan's three goals:

- Design the coastal community of the future
- Create economic opportunity by advancing efforts to grow existing and new sections of the city
- Advance initiatives to connect communities, deconcentrate poverty, and strengthen neighborhoods

These three goals are elaborated upon with a description of the strategies for pursuing these goals.

POTOMAC RIVER WATERFRONT FLOOD MITIGATION STUDY: EVALUATION AND RECOMMENDATION OF MITIGATION MEASURES

URS

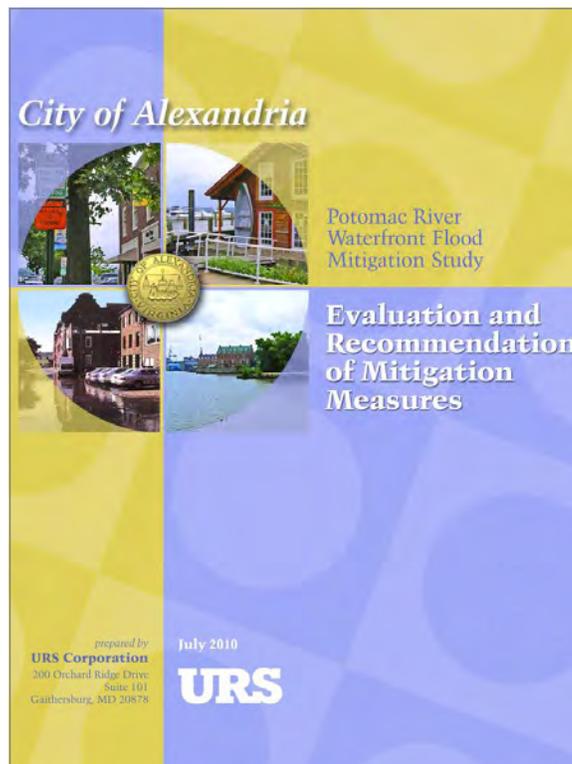
July 2010

https://www.alexandriava.gov/uploadedFiles/tes/info/Final_Potomac_Mitigation_Studyx.pdf

Date Accessed: 20 July 2016

Commissioned by the City of Alexandria, this report aims to outline issues related to flooding within the city and to propose solutions for these issues. After an assessment, the report provides an extended list of 27 mitigation measures, both structural and nonstructural, available to the city. The report examines various potential mitigation measures and considers each along with survey results from Alexandria's decision-makers and community members. Of those 27, the report concludes that three structural mitigations are the most appropriate options for Alexandria:

- Elevated walkways
- Floodproofing
- Inlet and roadway improvement



MITIGATION LEADS TO PRESERVATION AND ECONOMIC RECOVERY FOR ONE COMMUNITY: DARLINGTON, WISCONSIN

No Date

http://emergencymanagement.wi.gov/mitigation/stories/hm-darlington_success.pdf

Date Accessed: 23 December 2015

This article details the development of a flood mitigation plan for Darlington, Wisconsin following multiple flood events. Approved by FEMA, Darlington's plan attempts to mitigate flood-damage using the following methods:

- Purchasing and demolishing structures along the river
- Providing as much protection as possible for buildings that cannot be elevated or floodproofed
- Retrofitting historic buildings along the central business corridor

The town's solution to retrofitting historic structures was to construct floodproof vestibules at ground floor entrances. Water will be allowed into the vestibules but not beyond. This method for mitigating damage would not interfere with the streetscape. In addition to the retrofitting vestibules, the plan requires that owners purchase flood insurance and that all historic structures satisfy building codes.

In addition to improved preparation, the plan also had significant economic and social impact on the community.

Mitigation Leads to Preservation and Economic Recovery For One Community: Darlington, Wisconsin

The Effects of Flooding

During the past half century, multiple flooding events along the Pecatonica River took a toll on Darlington, the county seat of Lafayette County, population of 2418. Numerous times the river wreaked havoc with its destructive force, leaving a trail of mud, debris and bacteria, and contributing financial stress to both families and businesses. Repetitive flooding deteriorated structures and lowered property values. Owners experienced substantial loss of business during the times of flooding, cleanup, and repair. The buildup of mold and mildew in constantly flooded structures led to unhealthy conditions in the buildings.



Preserving Main Street

After the 1993 flood, the community adopted four goals, as part of a comprehensive plan, in order to retain the historic and community value of Darlington's Main Street as well as to mitigate against future flood damage:



1. Preserve the historic downtown business district
2. Restore the downtown economic base
3. Develop an urban river open space park and recreation area
4. Eliminate or substantially reduce flood damage in the future

Partnering for Success

The city needed to obtain funding and expert knowledge to implement the plan. The success in reaching the city's goals depended on forming an interagency coalition and promoting the cooperation of government – local, state, and federal – and businesses. Multiple agencies contributed grants and/or expertise to the project, including:

- Federal Emergency Management Agency (FEMA); Hazard Mitigation Grant Program (HMGP) and the National Flood Insurance FMA program
- Wisconsin Emergency Management
- Wisconsin Department of Natural Resources
- Wisconsin Department of Commerce
- Wisconsin Department of Administration
- Wisconsin Historical Society
- Economic Development Administration
- Southwest Wisconsin Regional Planning Commission

HOW MANY PRE-FIRM HISTORIC BUILDINGS ARE OUT THERE IN THE FLOODPLAIN?

How many pre-FIRM historic buildings are out there in the floodplain?

Written by Rod Scott, CFM, of I&R Resources, LLC in Mandeville, Louisiana

Rod Scott will be writing a series of columns on the issue of historic buildings and the challenges when attempting to mitigate them.



Hurricane Sandy surged onto the South Side of Ellis Island, depositing debris and flooding the basements of the historic hospital and administration buildings. Photo taken Nov. 3, 2012 by NPS/Leonard's via Flickr.

Now that we are in the era of great change in flood insurance policy rates for pre-Flood Insurance Rate Map (pre-FIRM) buildings, we need to take a look at the challenges ahead. Many of us who work in the flood hazard mitigation field are trying to get a better handle on the reality of the situation. FEMA's National Flood Insurance Program has or had about 1.5 million pre-FIRM policies when the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) was passed. About 250,000 property owners have dropped flood insurance since HFIAA went into effect, which is a very troubling trend.

It is also well known that many more pre-FIRM buildings do not carry flood insurance due to the lack of a mortgage, which requires flood insurance coverage. The fact is that we do not know how many pre-FIRM buildings are out there in the special Flood hazard area and many of them are our historic buildings. These pre-FIRM buildings are more at risk from flooding due to being built before we had flood mapping and building codes that reduce the risk of flooding. For more than 40 years these buildings have been charged a discounted flood policy rate that was artificially low compared to the risk of and actually being flooded. Owners of these older historic buildings are now going to pay substantially more for flood insurance due to the buildings being below Base Flood Elevation.

News & Views August 2015

ROD SCOTT - August 2015

http://www.floods.org/ace-files/documentlibrary/News_VIEWS/News_VIEWS_Aug2015.pdf

Date Accessed: 26 January 2016

OTHER ENTITIES



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TREATMENT OF FLOOD-DAMAGED OLDER AND HISTORIC BUILDINGS

RICHARD WAGNER AND CLAUDETTE HANKS REICHEL

No Date

http://www.historycolorado.org/sites/default/files/files/OAHP/NTHP_Flood_Damage.pdf

Date Accessed: 22 December 2015

Published by the National Trust for Historic Preservation, this article provides guidance to owners on how to safely approach a flooded building. The article illustrates how to properly begin the drying process and reviews how to approach the process of repair and restoration depending on the material affected.

The article also provides safe methods for addressing mold and provides owners a checklist for properly executing repairs. For further guidance, readers can find additional resources listed at the end of the article.

Treatment of Flood-Damaged Older and Historic Buildings

In recent years, many older and historic buildings have been affected by the heavy rains and flooding that occurred during hurricanes and tropical storms. The purpose of this booklet is to help building owners minimize structural and cosmetic flood damage. It contains general advice written to cover a wide variety of buildings with varying degrees of flood damage. If you suspect that your building may have some structural damage, contact a qualified structural engineer or architect to thoroughly assess the situation and suggest remedies. Your state historic preservation office (SHPO) can provide you with a list of architects who are experienced in the treatment of historic buildings. A description of the tax credit programs for rehabilitation of historic structures, free technical publications available through your state historic preservation office and the Federal Emergency Management Agency (FEMA), telephone numbers you can call for more assistance, and additional resources are provided at the end of the booklet.



- Stay away from power lines and electrical wires.
- Make sure that all of your electricity is turned off. If any electrical wiring was submerged, have it inspected before turning the power back on.
- Look before you step. Floods deposit mud which makes most walking surfaces very slippery.
- Be alert for gas leaks.
- Carbon monoxide exhaust kills. If you use electrical generators or charcoal grills, make sure that they are properly vented.
- Clean everything that got wet. Floodwaters carry sewage and chemicals. Hose down concrete and masonry walls. Scrub all surfaces with disinfectant. Discard any food and medicine that came in contact with floodwater. Wear protective clothing and make sure the building is properly ventilated while working inside.

- Remember to follow local health guidelines concerning preventive shots or vaccinations.
- After the Water Recedes**
No other "element" is as destructive to buildings as water. After your building has been saturated and once the floodwaters recede, it is important that the drying process begin immediately. Most of the damaging effects of water, such as rot, rust, and spalling, can be minimized by reducing both interior and exterior moisture levels. The least damaging drying process appears to be one that begins by using only ventilation. To speed evaporation, outside air must be vented to the outside. The most effective way to do this is to open windows and doors and allow the moisture to escape. Fans can be used to speed evaporation by moving interior air and exhausting humid air to the outdoors.

In 2005, floodwaters severely damaged New Orleans and other communities along the Gulf Coast following Hurricane Katrina and Rita.



CLIMATE CHANGE IN NEWPORT

Preservation Leadership Forum Blog
Insights and information for Preservation Professionals

Climate Change in Newport
Posted on September 4th, 2015 by Special Contributor
By Pieter N. Roos

Preservationists around the country are taking steps to document, protect, and mitigate the effects of climate change on cultural resources. In the summer issue of the Forum Journal, titled, "High Water and High Stakes: Cultural Resources and Climate Change," contributors examined in last changing local patterns means for cultural resources, what communities are doing to prepare, and how rising sea levels are already affecting communities. The PLF blog will continue to cover these issues; this week Pieter N. Roos, the executive director of the Newport Restoration Foundation, writes about the work that his organization is doing to address the effects of sea level rise on this historic Rhode Island community.

Like so many coastal cities, Newport, Rhode Island's vitality is drawn from the sea. Through the centuries, Newport has been a powerful colonial seaport, Gilded Age resort, home for the Navy, and, more recently, a vibrant tourist destination—each chapter formed by a distinct relationship to the water. Proximity to the ocean has always been one of Newport's greatest assets, so it poses an imminent survival threat.

Newport's 376-year history is strikingly visible in neighborhoods populated by 18th- and 19th-century homes, commercial buildings, houses of worship, and wharves. This remarkable collection of historic structures is an extraordinary resource that deserves critical protection in the face of the sea weather realities imposed by climate change. The Newport Restoration Foundation (NRF), of which I am the director, has saved and restored over nearly 60 18th-century homes in Newport. Our stake in the stewardship of the city's heritage is clear.

Newport's historic connection to catastrophic weather events should be as obvious as its location. Over the centuries nearly a dozen hurricanes have decimated the Rhode Island. One of the most and most tragic was the infamous Category III "Hurricane of 1938." It was closely followed by Hurricane Carol, yet another Category III storm in 1954. These storms provide well-documented warnings for tidal flooding and help us understand the impact for low-lying areas. They also send a warning for what increased tropical activity will bring in the

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Archives
Archives Select Month: [v]

PIETER N. ROOS

4 September 2015

http://blog.preservationleadershipforum.org/2015/09/04/climate-change-in-newport/#.Vp_gGfkrJmM

Date Accessed: 20 January 2016

In his post for the Preservation Leadership Forum Blog, Roos details how sea-level rise impacts Newport, Rhode Island today and how it will do so in the future. He describes how flooding measures have a significant impact on a historic district in the city. The answer, according to Roos, is to communicate within and across professions.

CLIMATE CHANGE AND RISING SEA LEVEL: IMPLICATIONS FOR HISTORIC PRESERVATION

Climate Change and Rising Sea Level: Implications for Historic Preservation

BY JOHN ENGLANDER

We have entered a new era, totally unprecedented in all human civilization. The melting of glaciers and ice sheets due to global warming has just started to raise sea level—a trend that is now unstoppable. Rising seas will have profound and permanent repercussions in all coastal regions worldwide.

I was delighted to give a talk at PastForward 2014 in Savannah, where I met many preservation advocates and professionals. It was immediately obvious that preservationists are uniquely suited to see what is at risk in this new era and to help communicate that to the public. You have a wonderful long-term perspective and passion. Climate change and rising sea level mandate a new kind of assessment of the vulnerability of historic resources, requiring stakeholders to look at adaptation options and to decide what will be saved for future generations—both in terms of determining what is technically possible, and also in terms of allocating finite resources.

Though it may be tempting to think of rising sea level like a storm event, it is quite different. Storms hit one area. They are sudden. The major impact is at the coast from wave damage. High waters recede rather quickly. But rising sea level is exactly the opposite in all those aspects. The impact is global and slow, it affects lowlands and tidal rivers far inland, and it is essentially permanent.

Unlike a storm, rising sea level does give us time to prepare. That is a blessing. We still have time to plan and adapt, but no time to waste.

This is the moment in history for us to change our perspective, to recognize a revolutionary reality, and, in many places, to plan for a new priority of preservation. History gives us context. One reason why we preserve buildings and landscapes is for education. The increasingly threatened state of some historic places can now help illustrate the depth and extent of the change

ForumJournal SUMMER 2015

3

JOHN ENGLANDER, ET. AL.

Summer 2015

Forum Journal

Englander provides an introduction to this issue in *Forum Journal*. The article provides a good taste of the relevant issues, though it does not delve too deeply into those issues. (His book, *High Tide on Main Street*, is referenced on page E.22.)

CLIMATE CHANGE AND CULTURAL LANDSCAPES: OBSERVATIONS AND OPTIONS

Climate Change and Cultural Landscapes: Observations and Options

ROBERT Z. MELNICK, FASLA

Ever since the Mount Vernon Ladies' Association enlightened our society to the value of preserving significant historic sites and resources in the mid-19th century, historic preservation has changed, adapted and evolved over time. We have seen the preservation movement mature from protecting the homes of past presidents to addressing a much wider range of concerns, including protecting sites where important events happened, historic districts of workers' housing, historic bridges and engineering accomplishments, and now also significant cultural landscapes.

A cultural landscape is "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: [historic sites](#), [historic designed landscapes](#), [historic vernacular landscapes](#), and [ethnographic landscapes](#). Gettysburg National Military Park, Central Park, Chaco Canyon, and the Presidio of San Francisco are all examples of cultural landscapes.

As we come to grips with one of the most pressing problems of the 21st century, we can now ask: What can an understanding of cultural landscapes tell us about climate change? How has attention to historic landscapes altered our view of historic preservation? And how can concern for these landscapes help us grapple with the impacts of global climate change? As will be evident, there are more questions than answers.

Because of their inherent integration of natural and human systems, cultural landscapes can be understood as the "canary in the coal mine"—providing warning signs of the impact of climate change on cultural resources. They can also be the testing ground for making wise and thoughtful decisions, as we gain a better recognition of the certainty of uncertain change to these valued

ForumJournal SUMMER 2015

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ROBERT Z. MELNICK - Summer 2015
Forum Journal

PRESERVATION IN A CHANGING CLIMATE: TIME TO PICK UP THE TAB

Preservation in a Changing Climate: Time to Pick Up the Tab

ANTHONY VEERKAMP

On June 23, 1988, Dr. James E. Hansen, director of NASA's Institute for Space Studies, testified before the Senate Energy and Natural Resources Committee, stating: "Global warming has reached a level such that we can ascribe with a high degree of confidence a cause and effect relationship between the greenhouse effect and observed warming...It is already happening now."

By all accounts, the testimony provided by Hansen and other scientists was pretty convincing stuff. Senator Timothy E. Wirth, the Colorado Democrat who presided at the hearing, stated: "As I read it, the scientific evidence is compelling: the global climate is changing as the earth's atmosphere gets warmer. Now, the Congress must begin to consider how we are going to slow or halt that warming trend and how we are going to cope with the changes that may already be inevitable."

At the time, one might have reasonably expected that by 2015, more than a quarter century later, Congress would have long since moved beyond the consideration stage and taken meaningful action to address the looming threat. One would be gravely disappointed.

HOW DID WE GET HERE?

At the time of Hansen's testimony on Capitol Hill, congressional—indeed, global—resolve to address climate change seemed certain. After all, the international treaty to phase out substances that deplete the ozone layer (the "[Montreal Protocol](#)") had just been agreed upon the previous fall, proving that a multilateral agreement to address a global environmental threat was politically feasible. It also proved to be remarkably effective: by 2009, 98 percent of the chemicals listed by the protocol as damaging to the ozone layer had been phased out.

Indeed, in 1992 the United Nations Framework Convention on Climate Change (UNFCCC) was signed by 165 countries, including

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ANTHONY VEERKAMP - Summer 2015
Forum Journal

THE IMPACTS OF COASTAL EROSION ON TRIBAL CULTURAL HERITAGE

The Impacts of Coastal Erosion on Tribal Cultural Heritage

PATTY FERGUSON-BOHNEE

Growing up, I never thought that the community to which I belong, the *Pointe-au-Chien Indian Community*, would be on the verge of disappearing. Our people have occupied our traditional homelands since time immemorial and have been documented as living here since the first explorers visited Louisiana. The land on which we live was once lush and fertile. We had large agricultural enterprises, domesticated animals, fresh water, and access to game and fish. We lived and continue to live a subsistence lifestyle.

Isolated in the lower bayous of Terrebonne and Lafourche Parishes, we were able to live peacefully and to prosper. Topsoil carried by the Mississippi replenished the earth and created new land. The barrier islands protected the community from flood waters. Today the barrier islands have disappeared, and salt water intrusion has ended most farming and cattle grazing.

Over the past six decades, tribal members have adapted to this changing environment. We continue to fish, hunt and trap, but our small tribe of approximately 700 members faces serious challenges trying to maintain our homelands, culture and traditions due to coastal erosion and environmental neglect. Sacred sites and cemeteries are at risk and some are already submerged. Despite the challenges, the *Pointe-au-Chien* people have been resilient.

COASTAL EROSION
During the past 100 years, Louisiana has lost more than one million acres of coastal land and wetlands, and is losing approximately 25-40 square miles per year.² Ninety percent of the coastal wetlands loss in the United States is in Louisiana. *Pointe-au-Chien* is located in the Terrebonne Basin, one of the fastest eroding areas in the United States.³

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PATTY FERGUSON-BOHNEE - Summer 2015
Forum Journal

THE NATIONAL FLOOD INSURANCE PROGRAM AND HISTORIC RESOURCES

The National Flood Insurance Program and Historic Resources

JENIFER EGGLESTON AND JEN WELLOCK

Nearly a decade after Hurricane Katrina hit the Gulf Coast on August 29, 2005, its effects on the coastal communities in Alabama, Louisiana and Mississippi are still clearly visible. Claiming more than 1,800 lives and causing over \$100 billion in property damage, Hurricane Katrina was the single most catastrophic natural disaster in our nation's history. Much of Katrina's damage, stretching 400 miles across the Gulf Coast, was due to a storm surge that reached an estimated 35 feet and to sustained winds of up to 140 miles per hour. In addition to being our nation's most costly disaster, Hurricane Katrina destroyed thousands of irreplaceable historic resources while leaving countless more severely damaged and vulnerable. In response, Congress appropriated \$53 million in Historic Preservation Fund (HPF) grant funding to the state historic preservation offices (SHPOs) of Alabama, Louisiana and Mississippi to aid in the recovery and rehabilitation of historic resources on the Gulf Coast. A similar congressional appropriation of \$47.5 million was made to the Northeast SHPOs and tribal historic preservation offices (THPOs) following the devastation of Superstorm Sandy, which battered the mid-Atlantic coast in late October 2012. The projects supported by these two grant programs have helped the National Park Service (NPS) recognize the vulnerability of historic resources to flooding and the challenges both of protecting them before disaster strikes and of addressing damage afterward. Specifically, we at the NPS have learned how



The interior of this historic home in Ocean Springs, Mississippi shows damage to the interior walls with flood marks on the wall following Hurricane Katrina.

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JENIFER EGGLESTON AND JEN WELLOCK - Summer 2015
Forum Journal

WEATHER IT TOGETHER: ANNAPOLIS' MODEL PLANNING EFFORT

Weather It Together: Annapolis' Model Planning Effort

LISA CRAIG

While many other communities are planning for the impacts of climate change to infrastructure, Annapolis is breaking new ground by specifically accounting for the historic places that are such an important part of [the] your city's fabric, cultural identity, and economy. By naming Annapolis a National Treasure, we are raising awareness of the threats posed by climate change to historic places nationwide.

—Stephanie Meeks, President, National Trust for Historic Preservation, Oct. 23, 2014¹

While recognition of the historic city of Annapolis is usually welcome—certainly, the local economy is dependent on the heritage traveler—we would rather have visitors uploading digital images of our beautiful City Dock than shots of tidal flood waters circling the feet of the statue of Alex Haley as he reads to children at the Kunta Kinte Memorial. Yet Alex has become the high water mark for flooding events in Annapolis—events that have become an increasingly urgent call to action.

The Colonial Annapolis Historic District was designated one of 43 National Historic Landmark Districts in 1965 by the U.S. Department of the Interior. While Annapolis' collection of 18th-, 19th- and 20th-century architecture is important to the entire nation, the historic district is a major heritage tourism asset for the local economy.²

When Secretary of the Interior Stewart Udall visited Annapolis on July 7, 1965, to officially announce the designation, he warned, "Annapolis must work now to preserve its historic heritage... otherwise it will simply share the weakness of so many cities in America—sameness."³

Now in 2015 we are again heeding a warning, but it is not the prospect of unplanned, insensitive development that threatens destruction of our historic city, but the unpredictable, inescapable

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LISA CRAIG - Summer 2015
Forum Journal

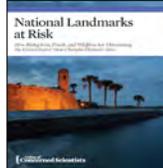
A HERITAGE COALITION'S "CALL TO ACTION" ON CLIMATE CHANGE AND CULTURAL HERITAGE

A Heritage Coalition's "Call to Action" on Climate Change and Cultural Heritage

ADAM MARKHAM AND JEANA WISER

Global average temperatures have been rising since the late 1800s, with much of the warming due to human activities, especially the release of carbon dioxide and other greenhouse gases into the atmosphere from the burning of fossil fuels. This is causing sea levels to rise and extreme weather events—heat waves, droughts, rain deluges—to occur more often. Now these global environmental changes threaten built and natural resources, presenting new challenges for stewardship.

Numerous organizations around the country—indeed the globe—are concerned about the effects of climate change on historic resources. And not just cultural heritage organizations. The *Union of Concerned Scientists* (UCS), a nonprofit science advocacy organization that has worked on climate change science and policies for decades, had not previously addressed the issues of heritage preservation. But in 2014, with no prospect of congressional action in Washington in response to the problem, UCS turned its attention to highlighting how the impacts of a changing climate are already affecting communities across America. Its research drew on the knowledge of USC's network of more than 18,000 scientists nationwide as well as all the latest scientific reports and peer-reviewed literature. As UCS



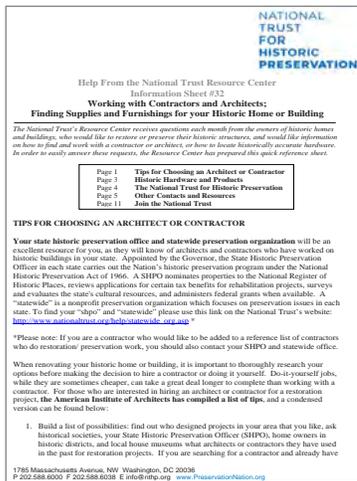
National Landmarks at Risk
A Report from the Union of Concerned Scientists

The Union of Concerned Scientists released the report *National Landmarks at Risk* in May 2014 to draw attention to the threat to cultural heritage from sea level rise.

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ADAM MARKHAM AND JEANA WISER - Summer 2015
Forum Journal

INFORMATION SHEET #32: WORKING WITH CONTRACTORS AND ARCHITECTS - FINDING SUPPLIES AND FURNISHINGS FOR YOUR HISTORIC HOME OR BUILDING



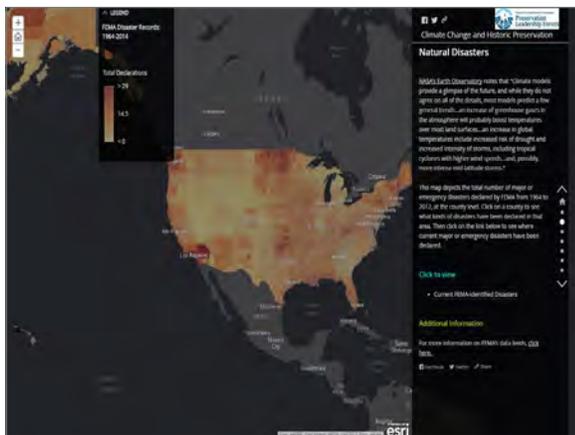
No Date
<http://www.preservationnation.org/resources/disaster-recovery/additional-resources/flood-recovery-resources/32-Working-with-Contractors-and-Architects-Finding-Supplies-and-Furnishings-for-your-Historic-Home-or-Building.pdf>
 Date Accessed: 16 February 2016

PREPARING TO PRESERVE: AN ACTION PLAN TO INTEGRATE HISTORIC PRESERVATION INTO TRIBAL, STATE, AND LOCAL EMERGENCY MANAGEMENT PLANS



December 2008
<https://www.doi.gov/sites/doi.gov/files/migrated/pmb/oepc/rppr/upload/12-18-08-Preparing-To-Preserve.pdf>
 Date Accessed: 5 Feb 2016

CLIMATE CHANGE AND HISTORIC PRESERVATION



NATIONAL TRUST FOR HISTORIC PRESERVATION - No Date
<http://nthp.maps.arcgis.com/apps/MapJournal/index.html?appid=a6e67c159c364434af3950b407edc8f2>
 Date Accessed: 18 July 2016

WHOLE BUILDING DESIGN GUIDE

NATIONAL INSTITUTE OF BUILDING SCIENCE

12 April 2015

https://www.wbdg.org/design/historic_pres.php

Date Accessed: 23 December 2015

The National Institute of Building Science's Whole Building Design Guide includes an introduction to historic preservation, including a summary of *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. Discussion includes a brief consideration of how to address disaster preparation within historic preservation, along with additional related resources.

12/23/2015

Historic Preservation | Whole Building Design Guide

WBDG a program of the National Institute of Building Science

Historic Preservation

by the WBDG Historic Preservation Subcommittee

Last updated: 04-16-2015

OVERVIEW

Preserving historic buildings is vital to understanding our nation's heritage. In addition, it is an environmentally responsible practice. By reusing existing buildings historic preservation is essentially a recycling program of historic proportions. Existing buildings can often be energy efficient through their use of good ventilation, durable materials, and spatial relationships. An immediate advantage of older buildings is that a building already exists, therefore energy is not necessary to demolish a building or create new building materials and the infrastructure may already be in place. Minor modifications can be made to adapt existing buildings to compatible new uses. Systems can be upgraded to meet modern building requirements and codes. This not only makes good economic sense, but preserves our legacy and is an inherently sustainable practice and an intrinsic component of whole building design (see also [SustainableConstruction.org](#) and [Sustainable Historic Preservation Resources Available to State Historic Sites](#))

Realizing the need to protect America's cultural resources, Congress established the [National Historic Preservation Act \(NHPA\)](#) (<http://www.nps.gov/history/historicalservice/988.html>) in 1966, which mandated the active use of historic buildings for public benefit and to preserve our national heritage. Cultural resources, as identified in the [National Register for Historic Places](#) (<http://www.nps.gov/>), include buildings, archeological sites, structures, objects, and historic districts. The surrounding landscape is often an integral part of a historic property. Not only can significant archeological remains be destroyed during the course of construction, but the landscape, designed or natural, may be irreparably damaged, and caution is advised whenever major physical intervention is required in an extant building or landscape. The [Archaeological Resources Protection Act](#) (http://www.nps.gov/education/protected_areas.htm) established the public mandate to protect these resources.

Some practical and/or intangible benefits of historic preservation include:

- Retention of history and authenticity
 - Commemorates the past
 - Aesthetic/aesthetics: texture, craftsmanship, style
 - Professional/volunteer appeal
 - Contextual and human scale
- Increased commercial value (Economic Benefits)
 - Materials and ornaments that are not affordable or readily available
 - Durable, high quality materials (e.g., old growth wood)
- Retention of building materials/resources/characteristics (refer also to [WBDG Sustainable Construction](#))
 - Less construction and demolition debris
 - Less hazardous material debris
 - Less need for new materials
- Enabling suitable space—multiple occupancy
 - Rehabilitation often costs less than new construction
- Reuse of infrastructure
- Energy savings/energy conservation (see)
 - No energy used for demolition
 - No energy used for new construction
 - Reuse of embodied energy in building materials and assemblies

Following passage of the NHPA, the Secretary of the Interior established [Standards for the Treatment of Historic Properties](#) (<http://www.nps.gov/standards.htm>) to promote and guide the responsible treatment of historic structures and to protect irreplaceable cultural resources. Today, the Standards are the guiding principles behind sensitive preservation design and practice in America.

- Apply the [Preservation Process Success/Utility/Process](#) (<http://www.nps.gov/standards/preservation-process.htm>)—The preservation process involves five basic steps: Identify, Investigate, Develop, Execute, and Evaluate. Successful preservation design requires early and frequent consultation with a variety of organizations and close collaboration among technical specialists, architects, inventors/crafts, and preservation professionals.

Work on historic properties requires specialized skills. The Secretary of the Interior has identified professional [qualification standards](#) (<http://www.nps.gov/standards/qualification-standards.htm>) for a variety of preservation disciplines.

Four Treatment Approaches

Within the Secretary of the Interior's Standards for the Treatment of Historic Properties there are Standards for four distinct approaches to the treatment of historic properties: preservation, rehabilitation, restoration, and reconstruction.

<http://www.nps.gov/standards/standards-four-treatments/treatment-preservation.htm> focuses on the maintenance, stabilization, and repair of existing historic materials and retention of a property's form as it has evolved over time.

<http://www.nps.gov/standards/standards-four-treatments/treatment-rehabilitation.htm> acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.

<http://www.nps.gov/standards/standards-four-treatments/treatment-restoration.htm> depicts a property at a particular period of time in its history, while removing evidence of other periods.

<http://www.nps.gov/standards/standards-four-treatments/treatment-reconstruction.htm> re-creates vanished or non-surviving portions of a property for interpretive purposes.

https://www.wbdg.org/design/historic_pres.php

1/7

BRIEF GUIDE TO UNDERSTANDING REPAIRS TO HISTORIC HOMES DAMAGED BY HURRICANE KATRINA AND OTHER RELATED FLOODS

Brief Guide to Understanding Repairs to Historic Homes Damaged by Hurricane Katrina and Other Related Floods

Written by Mike Logan, with thanks to Camille Agricola Bowman and the Alabama Historical Commission's Guide for Owners of Alabama's Historic Houses

Your historic house is worth saving! Despite the drastic circumstances, it is built better than anything that can be built new. It is worth protecting its historic materials and working with the historic house, despite the overzealous advice that you might get from well-intentioned helpers that come along. This guide is meant to be brief and a quick aid to assessing the damage that you are encountering in your home as a result of hurricane and flood damage.

Preservation Trades Network
PO Box 249
Amherst, New Hampshire 03031-0249
www.PTN.org and www.IPTW.org

Printed copies of this handbook were made possible by the generous support of the following contributors from Howard County, Maryland: Ellcott City Restoration Foundation, Historic Ellcott City, Inc., Preservation Howard County

This publication was made possible through a partnership of the World Monuments Fund and the Preservation Trades Network

MIKE LOGAN

No Date

<http://ptn.org/sites/default/files/docs/katrina-handbook.pdf>

Date Accessed: 16 February 2016

Intended for Gulf Coast homeowners affected by flooding, this guide is meant to serve an introduction to methods for repairing historic homes. It begins with a brief overview of the advantages of repairing and restoring over demolition, highlighting the superior quality and durability of historic buildings over new construction.

The guide discusses foundation and roof repair in detail, elucidating concerns that are specific to historic homes, such as:

- Consistency of mortar used for repointing masonry
- Suitability of cleaning products for different historic materials
- Appropriate flashing for roofing

The guide concludes with an extensive list of additional resources, including a summary of *The Secretary of the Interior's Standards for Rehabilitation of Historic Properties*. As promised in the introduction, this is a short guide whose aim is to introduce homeowners to appropriately repairs for historic homes.



PLANNING BEFORE DISASTER STRIKES: AN INTRODUCTION TO ADAPTATION STRATEGIES

ANN D. HOROWITZ

2016
APT Bulletin, Vol. XLVII No. 1

Defines the purpose of adaptive methods: “minimize climate-change effects or create situations where areas benefit from the changing climate.” (41) Horowitz emphasizes that these adaptation strategies are a viable and proactive alternative to relocation and elevation of a structure. The article provides summaries for preservation professionals on a variety of strategies for adapting to climate change. These summaries include discussion on the advantages and disadvantages of these strategies.

Planning before Disaster Strikes: An Introduction to Adaptation Strategies

Ann D. Horowitz



Fig. 1. Galeshead Seawall.
Galeshead, Texas, built between 1902 and 1904, 1910-1920. Courtesy of Library of Congress Prints and Photographs.

The debilitating effects of sea-level rise — flooding, storm surge, and coastal erosion — are projected to alter the natural and built environments, forever changing the lives of millions of coastal residents around the world. The longer-term impacts from Hurricanes Katrina and Sandy illustrate this point. Understandably, the protection of critical infrastructure, emergency facilities, and transportation links are at the forefront of climate-change adaptation discussions. The vulnerability of cultural heritage, however, must not be overlooked; many significant historic resources are located along low-lying tidal shorelines. Without evidence of their cultural heritage, communities relinquish their unique identities and jeopardize the quality of life of their residents, both of which are critical to community resilience.¹

As the guardian of historic resources, the historic-preservation community must become involved in the planning discussion on adaptation through partnerships with multi-disciplinary teams of decision-makers and stakeholders — city planners, engineers, policymakers, coastal scientists, emergency-preparedness professionals, and residents — to ensure that historic resources are included in protection proposals. The historic-preservation community's role in the collaborative-planning effort is to stress the importance of property-risk assessments, as well as advocate for property protection in place, relocation

The future of historic properties on tidal shorelines is uncertain unless the preservation community implements methods to protect them from sea-level rise.

SEA-LEVEL RISE VULNERABILITY ASSESSMENT OF COASTAL RESOURCES IN NEW HAMPSHIRE

PERMAFROST THAW AND ABORIGINAL CULTURAL LANDSCAPES IN THE GWICH'IN REGION, CANADA

Sea-Level Rise Vulnerability Assessment of Coastal Resources in New Hampshire

Benjamin Curran,
Michael Routhier,
Gopal Mulukutla



Fig. 1. Coastal town in New Hampshire.
Coastal town in New Hampshire, showing buildings and waterfront. Photograph by Michael Routhier.

As the impacts of sea-level rise increase for coastal communities, so too will the toll on the built heritage that has come to distinguish them. Hurricanes and sea-level rise, along with increasing temperatures, rainfall, storm surge, and sea level, will have a profound and lasting impact on the historic built heritage of coastal communities. The damage to historic resources will be extensive and long-lasting. Many historic resources are located in low-lying coastal areas, making them particularly vulnerable to sea-level rise. The National Historic Preservation Act (NHPA) requires that historic resources be protected from sea-level rise. This report provides a vulnerability assessment of coastal resources in New Hampshire, identifying those resources that are most at risk and providing recommendations for their protection.

Permafrost Thaw and Aboriginal Cultural Landscapes in the Gwich'in Region, Canada

Thomas D. Andrew,
Et. Al.



Fig. 1. A large body of water in the Gwich'in region, Canada.
A large body of water in the Gwich'in region, Canada, showing a wide expanse of water and surrounding land. Photograph by Thomas D. Andrew.

Climate change-induced impacts to cultural resources in the Northwest Territories are unprecedented, widespread, and increasingly severe. The Gwich'in people, who live in the Arctic region of Canada, are particularly vulnerable to the impacts of climate change. The Gwich'in have a rich cultural heritage, and their traditional practices and knowledge are being lost. This report provides a vulnerability assessment of Gwich'in cultural resources in the Northwest Territories, identifying those resources that are most at risk and providing recommendations for their protection.

BENJAMIN CURRAN, MICHAEL ROUTHIER AND GOPAL MULUKUTLA - 2016
APT Bulletin, Vol. XLVII No. 1

THOMAS D. ANDREW, ET. AL. - 2016
APT Bulletin, Vol. XLVII No. 1



CLIMATE CHANGE AND NON-MECHANICALLY VENTILATED INTERIORS



PETER BRIMBLECOMBE AND CAROLINE BRIMBLECOMBE - 2016
APT Bulletin, Vol. XLVII No. 1

WATER MANAGEMENT FOR TRADITIONAL BUILDINGS: ADAPTATION FOR A CHANGING CLIMATE



ROGER CURTIS - 2016
APT Bulletin, Vol. XLVII No. 1

CLIMATE CHANGE AND LANDSCAPE PRESERVATION: A TWENTIETH-CENTURY CONUNDRUM



ROBERT MELNICK - 2009
<http://www.apti.org/clientuploads/pdf/Melnick-40-3-4.pdf>

REFINING CLIMATE CHANGE THREATS TO HERITAGE



PETER BRIMBLECOMBE - 2014
<http://www.tandfonline.com/doi/pdf/10.1080/19455224.2014.916226>
Date Accessed: 19 July 2016

AFTER SANDY: ADVANCING STRATEGIES FOR LONG-TERM RESILIENCE AND ADAPTABILITY



URBAN LAND INSTITUTE

2013

<http://uli.org/wp-content/uploads/ULI-Documents/AfterSandy.pdf>

Date Accessed: 22 December 2015

Prepared in the aftermath of Hurricane Sandy, this Urban Land Institute document provides a summary of 23 recommendations to be considered in planning for long-term resilience. The recommendations are in the following categories:

- Land Use and Development
- Infrastructure, Technology, and Capacity
- Finance, Investment, and Insurance
- Leadership and Governance

The document was prepared for the New York – New Jersey region, and provides recommendations that address big city resiliency in New York, in addition to the small towns and coastal communities in Long Island and New Jersey.

RISK & RESILIENCE IN COASTAL REGIONS

UWE BRANDES AND ALICE LE BLANC

2013

<http://uli.org/wp-content/uploads/ULI-Documents/CoastalRegions.pdf>

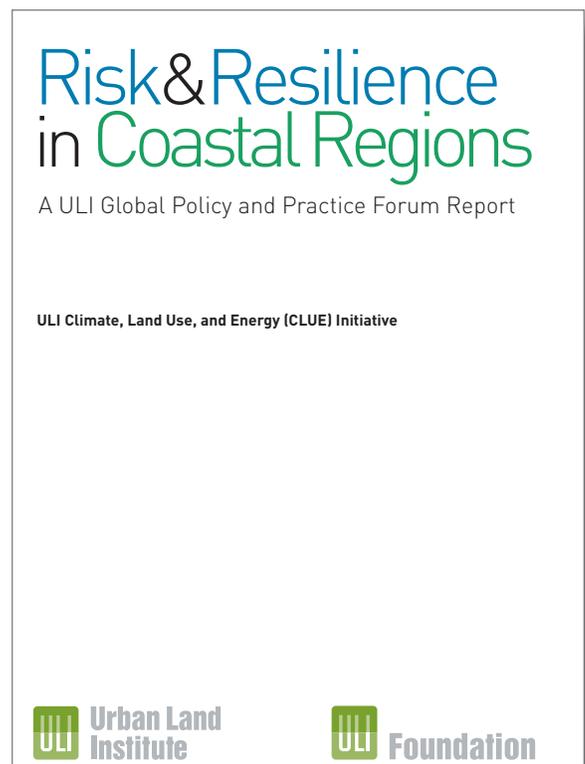
Date Accessed: 22 December 2015

This report presents the themes and subsequent discussions of a panel on coastal development and climate change. Broken into two parts, themes and summaries, the intent is to represent lessons from the panel. Themes addressed include:

- Climate change as a new source of coastal market risk
- Uncertainty in preparing for future events
- Resilience as interdisciplinary and systems based

Panel summaries include an overview of the discussion in addition to a list of key points. Topics of the summaries include:

- Dimensions of community decision-making
- Assessing risk across regions and markets
- On site: Mitigating risk in the project



TEN PRINCIPLES FOR COASTAL DEVELOPMENT

MICHAEL PAWLUKIEWICZ, PREMA KATARI AND CARL KOELBEL

2007

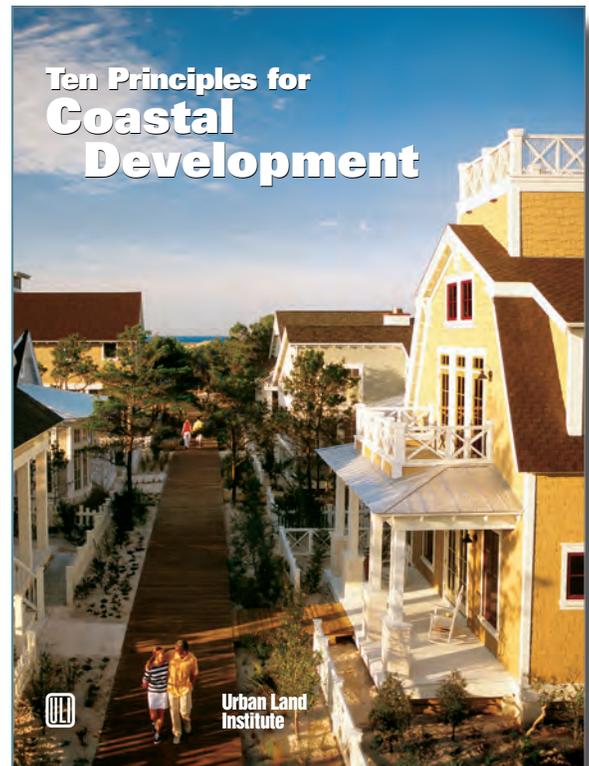
<http://uli.org/wp-content/uploads/ULI-Documents/Ten-Principles-for-Coastal-Development.pdf>

Date Accessed: 22 December 2015

A publication of the Urban Land Institute, Ten Principles for Coastal Development is geared toward a wide audience of planning professionals, policy makers and the public. The product of a collaborative efforts of experts, this report provides ten methods for addressing issues related to climate change and sea-level rise, such as:

- Lower risk by exceeding standards for siting and construction
- Address social and economic equity concerns
- Protect fragile water resources on the coast
- Commit to stewardship that will sustain coastal areas

The report concludes with a list of case studies for the reader to pursue further.



NATIONAL LANDMARKS AT RISK: HOW RISING SEAS, FLOODS, AND WILDFIRES ARE THREATENING THE UNITED STATES' MOST CHERISHED HISTORIC SITES



DEBRA HOLTZ, ET AL

May 2014

http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/National-Landmarks-at-Risk-Full-Report.pdf

Date Accessed: 16 February 2016

Published by the Union of Concerned Scientists, this report is a collection of case studies that illustrates the impact of climate change, specifically on National Landmarks. Each case study summarizes how climate change impacts has have already begun to manifest at the site and details the cultural resources at risk.

The report emphasizes that climate change is not a future threat. It is a present threat that requires action, the absence of which presents the risk of losing these Landmarks. The report does not present any clear guidance for adapting historic sites in response to climate change. It is instead a call for action, highlighting that, although an individual may not be directly impacted by climate change, there will be consequences for everyone's tangible cultural heritage.

In its final chapter, the report includes a general explanation of the science behind climate change and how related consequences are predicted. The report concludes with a call to action, not only to protect historic sites but to reduce greenhouse gases.

POST-SANDY INITIATIVE



AMERICAN INSTITUTE OF ARCHITECTS NEW YORK CHAPTER

May 2013

http://postsandyinitiative.org/wp-content/uploads/2013/05/Post-Sandy-Report_Full.pdf

Date Accessed: 1 February 2016

Geared toward professionals in design, this report emphasizes that design approaches should be site-specific, whether the project is new construction or rehabilitation. A city can be resilient in the face of disaster when it can take site-specific solutions along with standardized, system-wide changes.

The report focuses on four different areas, or opportunities, for increased resilience:

- Transportation and infrastructure
- Housing
- Critical and commercial buildings
- Waterfront

Each chapter discusses the findings of the American Institute of Architects New York Chapter resulting from a series of charrettes, as well as key concepts and next steps.

BUILDINGS AT RISK: FLOOD DESIGN BASICS FOR PRACTICING ARCHITECTS

AMERICAN INSTITUTE OF ARCHITECTS

No Date

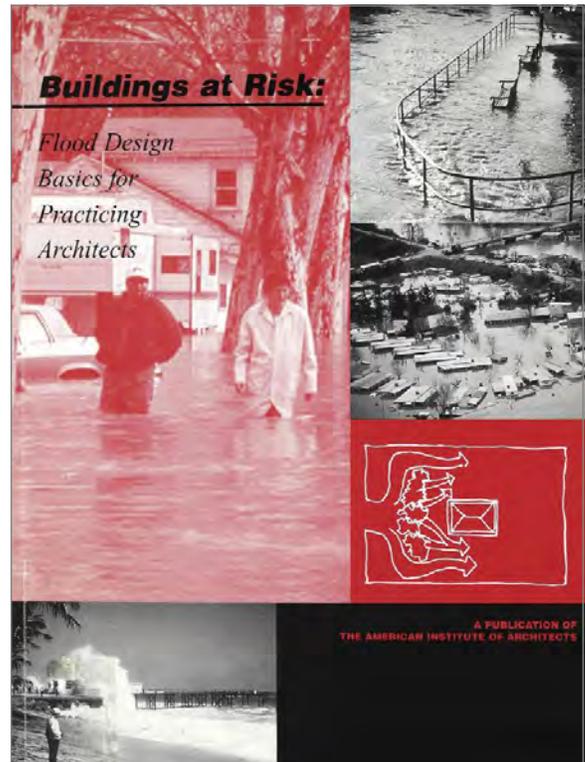
http://www.aia.org/aiaucmp/groups/ek_members/documents/pdf/aiap014821.pdf

Date Accessed: 8 January 2016

Part of a series of publications produced for the American Institute of Architects (AIA), Smith's Buildings at Risk provides an overview of issues related to flooding, including a discussion on the different kinds of flooding and expected damage. In addition to "Type of Floods and Their Causes," Smith also provides:

- An Overview of Floods and Flood Management in the U.S.
- How Floods Damage Buildings and Their Contents
- Assessing Flood Hazard and Establishing Goals for Flood Damage Reduction
- Flood-Resistant Design Strategies

As a publication of the AIA, Buildings at Risk is geared toward educating design professionals.



A HIGHER TIDE

MADELINE BODIN

Planning

August-September 2015, 44-46

Date Accessed: 5 January 2016

Bodin's article is an introduction to the challenges of sea-level rise as well as the tools and resources that respond to these challenges. After outlining the causes of sea-level rise, Bodin points to a number of efforts to mitigate its impact. These efforts include:

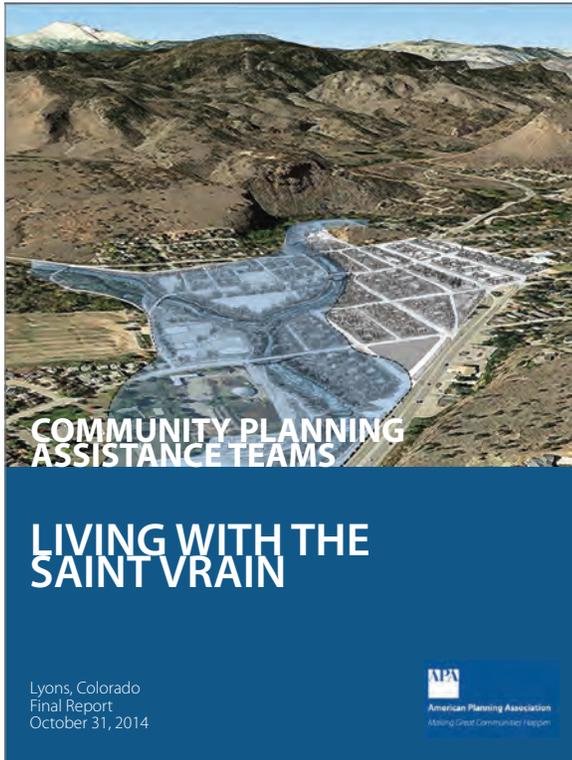
- The Georgetown Climate Center's Sea-Level Rise and Coastal Land Use Adaptation Toolkit
- The Southeast Florida Regional Climate Change Compact
- The South Carolina Small Business Chamber of Commerce's South Carolina Businesses Acting on Rising Seas project

In addition to such efforts, Bodin provides a short summary of tools to enact to mitigate the effect of sea-level rise, such as:

- Natural solutions for coastal protection
- Zoning overlays
- Conservation easements



LIVING WITH THE SAINT VRAIN



COMMUNITY PLANNING ASSISTANCE TEAMS

October 31, 2014

<https://www.planning.org/communityassistance/teams/lyons/pdf/finallyonsreport.pdf>

Date Accessed: 8 January 2016

Following flash flooding of the Saint Vrain Creeks and the destructive effects on Lyon, Colorado, this report details the recommendations of a collaborative review process involving the American Planning Association's Community Planning Assistance Team, the State of Colorado, officials from Lyon, and the Federal Emergency Management Agency. The recommendations are the result of conversations with residents, reviews of existing plans and site visits.

These recommendations are presented as design- or policy-related.

Design-related options include:

- Living with the river, including its assets and risks
- Use of vacant lots in the flood plain

Policy-related options include:

- Providing disaster reconstruction guidance
- Adopting higher floodplain management standards: Strategic disinvestment in the floodplain
- Enhancing existing plans to improve resilience

PREPARING FOR THE NEXT BIG ONE: PLACES THAT PUT 'RESILIENCE' IN THEIR FUTURE



JON DAVIS

Planning

August-September 2015, 22-26

Date Accessed

Beginning with a short summary of the American Planning Association's report *Planning for Post-Disaster Recovery*, Davis's article examines the positive impact resilience planning can have on a community after disaster strikes. Davis provides several examples of cities that have implemented resiliency plans in response to both flooding and sea-level rise, though the author makes it clear that there are still many definitions of resilience. Time will tell which of these plans is successful.

Davis's article also stresses the role that state governments can play in a town or city's disaster preparedness. Leadership is an important factor in a city's recovery.

PAS REPORT 576 PLANNING FOR POST-DISASTER RECOVERY: NEXT GENERATION

JAMES C. SCHWAB

December 2014

https://www.planning.org/pas/reports/pdf/PAS_576.pdf

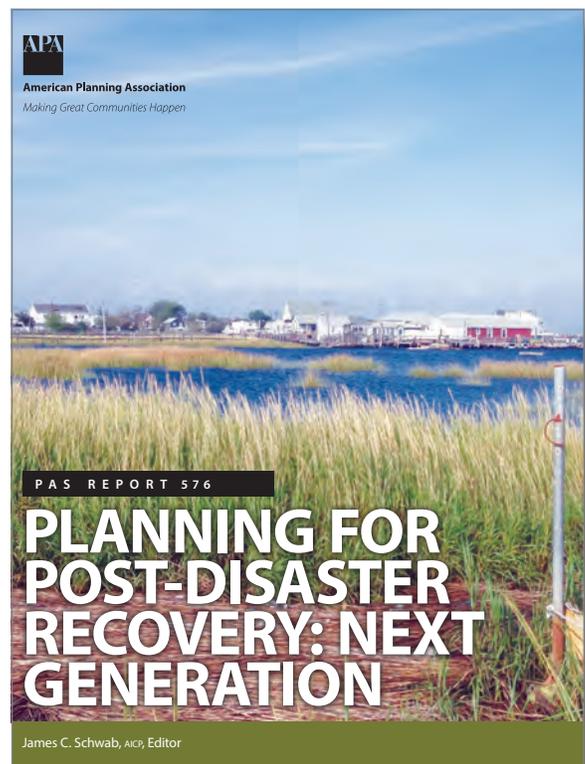
Date Accessed: 5 January 2016

An update to a previous report by the American Planning Association (APA) on disaster recovery, this report is targeted toward planners in an effort to prepare professionals for addressing what comes after a disaster.

Drawing on lessons from past disasters, the report emphasizes that, if approached from the appropriate angle, disasters present an opportunity to introduce resiliency measures into a community's plans.

In eight chapters, the report goes in-depth into a variety of concerns that planners must address, including:

- Anticipating Disruption
- Disaster Recovery Planning: Expectations versus Reality
- The Federal Framework for Disaster Recovery
- Long-Term Recovery Planning: Goals and Policies



WATER WARRIOR

MATT WEISER

Planning

August-September 2015, 32-35

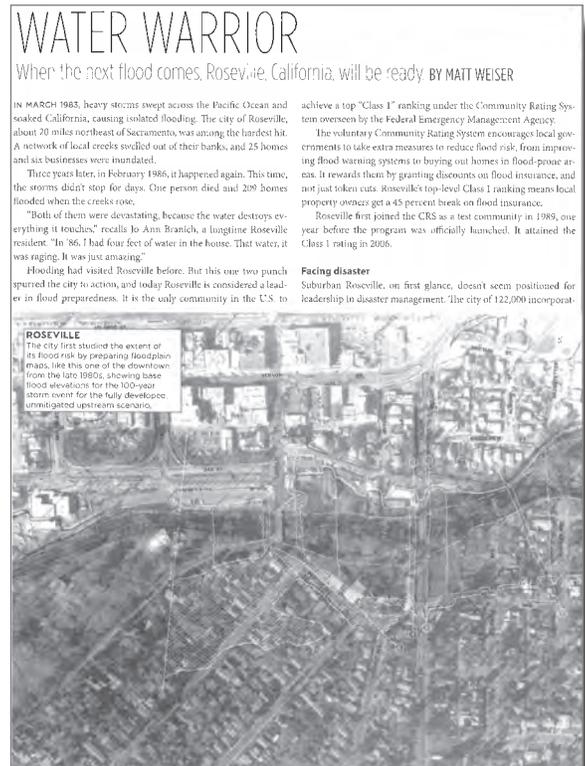
Date Accessed: 5 January 2016

Weiser's article is a case study of Roseville, California. After addressing repeated flooding of the Dry Creek, Roseville became one of the only cities in the United States to achieve a Class 1 rating under FEMA's Community Rating System (CRS).

This article details the planning, research, and costs undertaken by Roseville to improve the town's resiliency and achieve Class 1 status. Roseville employed several methods for controlling the impact of flooding including:

- Elevating homes
- Purchasing and demolishing high-risk homes
- Constructing new flood walls

In addition to Roseville's efforts, Weiser details how a community can participate in, and benefit from, the CRS.



CLIMATE ADAPTATION AND SEA-LEVEL RISE IN THE SAN FRANCISCO BAY AREA

LAURA TAM

January 2012

<https://www.planning.org/planning/2012/jan/waterwarriorsside2.htm>

Date Accessed: 8 January 2016

Tam's article examines the effects of, and mitigation efforts against, climate change in the Bay Area. As Tam explains: "Mitigation and adaptation are related." (1) The article continues with methods and considerations for planning during uncertain times, which requires a degree of flexibility and adaptability.

After detailing how climate change will manifest itself in San Francisco, Tam outlines mitigation and adaptation strategies. These strategies are grouped into four categories:

- Physical strategies for sea-level rise
- Governance of sea-level rise
- Managing public health
- Managing infrastructure



THE DEVIL IS IN THE DELTA



PAUL SHIGLEY - January 2012
<https://www.planning.org/planning/2012/jan/waterwarrior1.htm>
 Date Accessed: 8 January 2016

PROTECTING CULTURAL RESOURCES IN COASTAL U.S. NATIONAL PARKS FROM CLIMATE CHANGE

MARIA CAFFREY AND REBECCA BEAVERS

2008
<http://www.georgewright.org/252caffrey.pdf>
 Date Accessed: 4 January 2016

Caffrey and Beavers provide a quick investigation into how the National Park Service is addressing the effects of climate change.

In addition to a short literature review and a summary of the predicted impact of climate change, Caffrey and Beavers provide two case studies of sites threatened by sea-level rise: Fort Massachusetts, Mississippi and Cape Hatteras Lighthouse National Historic Landmark, North Carolina. The study examines the difficulties involved in enacting protective measures and the success of those measure once executed by park managers.

Protecting Cultural Resources in Coastal U.S. National Parks from Climate Change

Maria Caffrey and Rebecca Beavers

THE U.S. NATIONAL PARK SERVICE MANAGES OVER 84 MILLION ACRES OF LAND on which are located around 26,000 historic structures. One hundred fifty areas under Park Service management are designated as "cultural landscapes." The impact of climate change on cultural resources will challenge many resource managers, in particular those responsible for protecting America's heritage in national parks. Rising sea level and projected increases in average annual temperatures will undoubtedly impact many parks' natural resources, which have led some to ask, "What is being done to protect cultural resources from climate change?"

This paper will discuss what steps have already been taken to uphold the Park Service's mission to "preserve unimpaired the natural and cultural resources and values of the national park system..." (NPS 2007a). In particular, we discuss how cultural resources are being impacted by observed changes in climate and discuss how we expect cultural resources to be affected over the next century, based on projections by the Intergovernmental Panel on Climate Change (IPCC).

Fort Massachusetts in Gulf Islands National Seashore and Cape Hatteras Lighthouse in Cape Hatteras National Seashore will be used here as examples of large-scale measures that are being taken to preserve cultural resources that would otherwise be lost to a changing climate.

Literature review

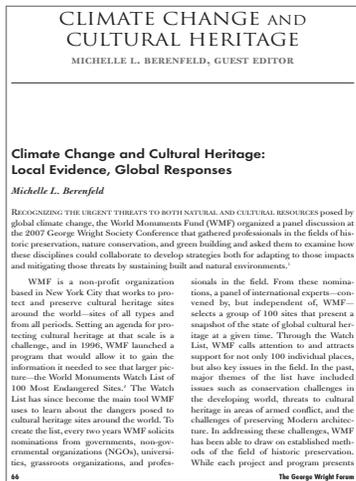
When many of us think of climate change and cultural resources, we may think of the cultural resources that are currently endangered by rising sea level in

some of the oldest cities of the world, such as Venice or London. In early 2007, UNESCO listed twenty-six examples of World Heritage sites (out of 830 total) that are threatened by climate change (UNESCO 2007). These sites represent areas of global significance that are immediately at risk from changing climatic conditions. The list is categorized based on whether the sites are (1) glaciers, (2) areas of high marine biodiversity, (3) areas of high terrestrial biodiversity, (4) archeological sites, or (5) historic cities and settlements.

While these sites are important, they are merely examples of well-known sites that need protection. The question of how we protect those sites has been the subject of a number of reports and research conducted by various players, including those at multinational (e.g., UNESCO 2006, 2007), national (e.g., Cassar 2005) and academic (e.g., Dietz et al. 2003; Wallach 2005; Hassler 2006) scales. However, while the ecological impacts of climate change have been discussed extensively in the liter-

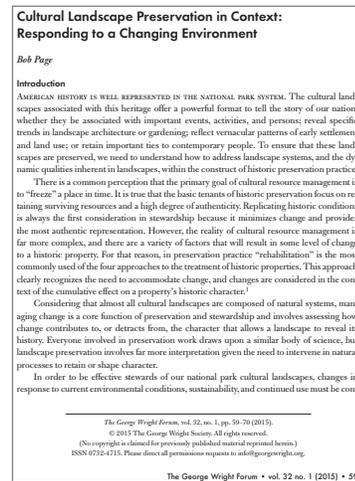


CLIMATE CHANGE AND CULTURAL HERITAGE: LOCAL EVIDENCE, GLOBAL RESPONSES



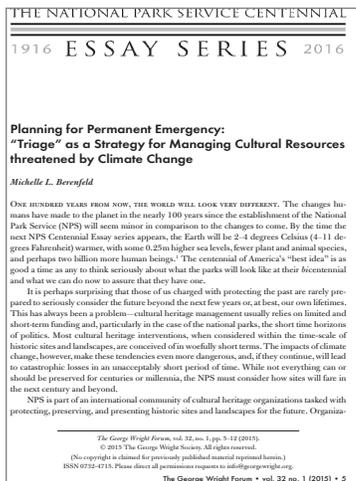
MICHELLE L. BERENFELD - 2008
<http://www.georgewright.org/252berenfeld.pdf>
 Date Accessed: 18 July 2016

CULTURAL LANDSCAPE PRESERVATION IN CONTEXT: RESPONDING TO A CHANGING ENVIRONMENT



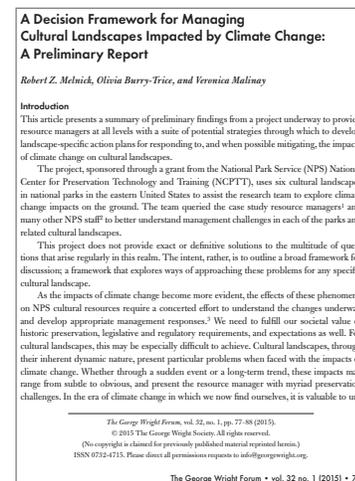
BOB PAGE - 2016
<http://www.georgewright.org/321page.pdf>
 Date Accessed: 19 July 2016

PLANNING FOR PERMANENT EMERGENCY: "TRIAGE" AS A STRATEGY FOR MANAGING CULTURAL RESOURCES THREATENED BY CLIMATE CHANGE



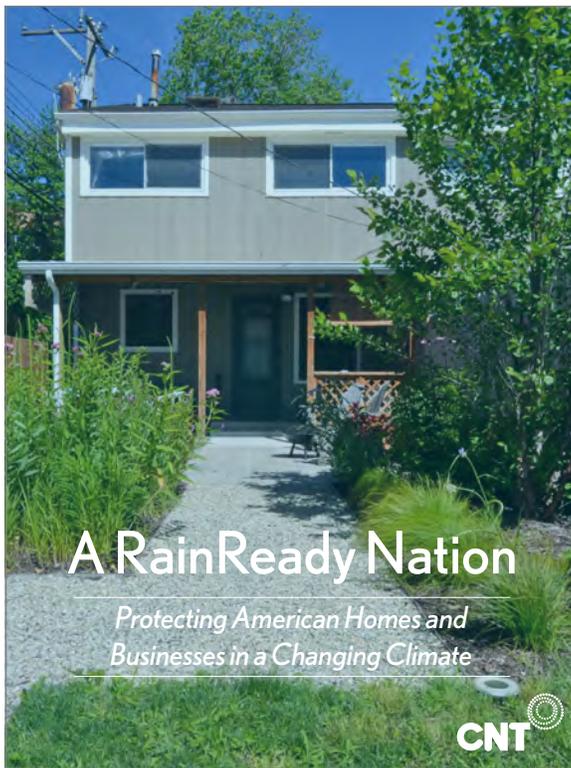
MICHELLE L. BERENFELD - 2015
<http://www.georgewright.org/321berenfeld.pdf>
 Date Accessed: 19 July 2016

A DECISION FRAMEWORK FOR MANAGING CULTURAL LANDSCAPES IMPACTED BY CLIMATE CHANGE: A PRELIMINARY REPORT



ROBERT Z. MELNICK, OLIVIA BURRY-TRICE AND VERONICA MALINAY - 2015
<http://www.georgewright.org/321melnick.pdf>
 Date Accessed: 19 July 2016

A RAINREADY NATION: PROTECTING AMERICAN HOMES AND BUSINESSES IN A CHANGING CLIMATE



HARRIET FESTING, ET AL

January 2015

http://www.cnt.org/sites/default/files/publications/CNT_RainReadyNation_0.pdf

Date Accessed: 22 January 2016

Festing's report on flooding touches not just on flooding due to climate change but "urban flooding" which she defines as flooding that results when water overwhelms the existing water management infrastructure. The intent of this report is to review the issues and related challenges of flooding and to provide solutions. The Center for Neighborhood Technology, the organization responsible for publishing this report, also outlines what makes a "rainready" home and recommends improvements to reduce the occurrence of floods.

The report also reviews how policies can be enacted to improve flood mitigation and describes the economic benefits of preparation. Ten principles define the "rainready" approach, which include:

- Easily implementable and replicable services
- Market-based approaches
- Community-wide efforts
- Evidence-based plans

THE PREVALENCE AND COST OF URBAN FLOODING: A CASE STUDY OF COOK COUNTY, IL

HARRIET FESTING, ET AL

May 2014

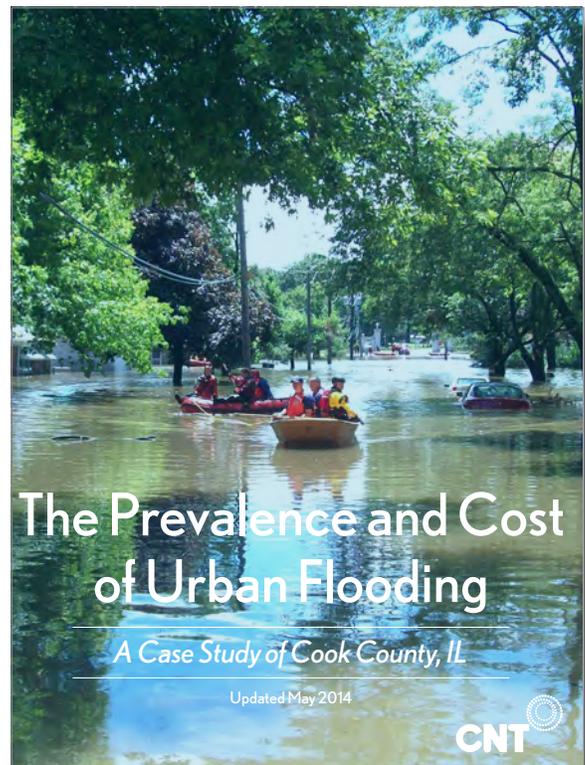
http://www.cnt.org/sites/default/files/publications/CNT_PrevalenceAndCostOfUrbanFlooding2014.pdf

Date Accessed: 22 January 2016

This report, published by the Center for Neighborhood Technology, is an analysis of data collected from insurance claims (including flood insurance), geographic data and individual survey responses. For this report, the geographical area is limited to Cook County, Illinois. From this information, the report lists "key points" that the data represent:

- Flooding in the county is chronic, as are the associated costs
- Those impacted by flooding suffer social and economic consequences
- There has been no clear relationship between claims and floodplain
- All income groups are affected
- Flood insurance does not cover a homeowner's needs

Respondents to the survey could not report that any mitigation efforts were effective during the following flood event.



REBUILD BY DESIGN

JOHN GENDALL, CONSULTANT EDITOR

2015

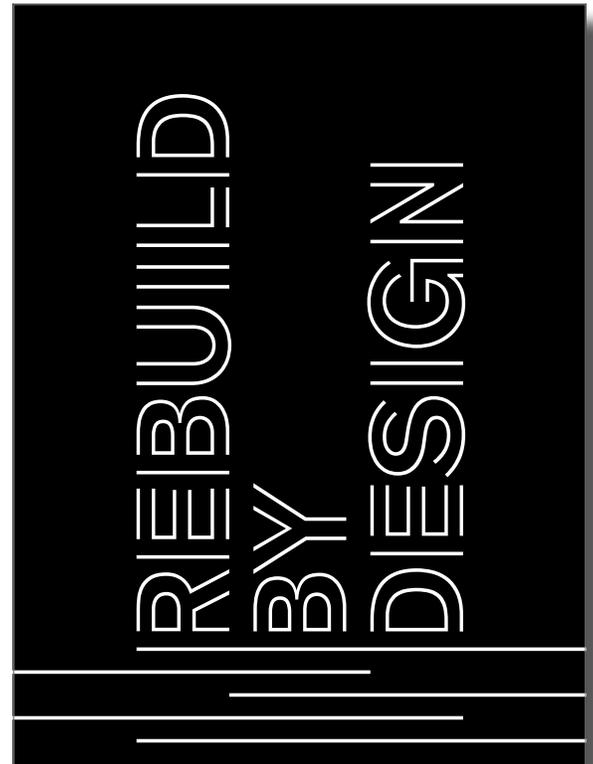
<http://www.rebuildbydesign.org/book/>

Date Accessed: 23 December 2015

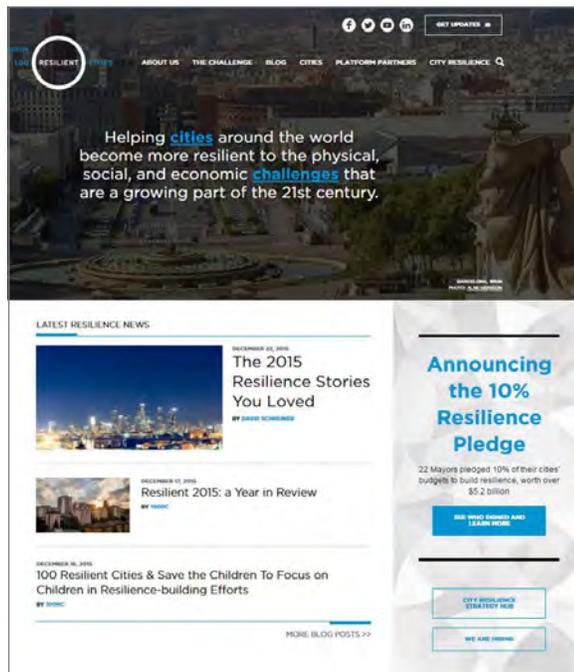
Rebuild by Design was an undertaking, spearheaded by HUD Secretary Shaun Donovan, to rethink the response to Hurricane Sandy and to develop tools for resiliency that can be implemented in areas affected by the storm. This eponymous book documents the research and final proposals of the ten teams that participated.

Proposals differed in terms of location and scope. Each team aimed to produce innovative approaches to flooding in New York City and northern New Jersey.

The Rebuild by Design effort also includes a discussion on resilience policy.



100 RESILIENT CITIES



2016

www.100resilientcities.org

Date Accessed: 4 January 2016

Supported by the Rockefeller Foundation, 100 Resilient Cities is a network that offers cities resources for creating resiliency plans. As described on the organization's website, there are "four main pathways" to achieving resilience:

- Financial and logistical guidance
- Expert support
- Access to solutions, service providers and partners from the private, public, and NGO sectors
- Membership in a global network of member cities

The Rockefeller Foundation's goal is to encourage resilience planning at the city level. The organization does not define resilience only in terms of disaster preparation, but as a means of responding to stresses that include violence, high unemployment, and overburdened transit systems.

BUILDING RESILIENT REGIONS



THE UNIVERSITY OF CALIFORNIA BERKELEY

2013

<http://brr.berkeley.edu/>

Date Accessed: 8 January 2016

The Building Resilient Regions project focuses on how metropolitan areas can positively impact the surrounding regions to meet the challenges faced by those regions. Although the blog has been retired, the website stands as resource for regions and policymakers. The site has been organized into five topic areas:

- Economic Insecurities
- Economic Resilience
- Infrastructure
- Governance
- Immigration

In addition to addressing key questions with which all regions must grapple, the site also provides recommended resources and publications.

AMPHIBIOUS ARCHITECTURES: THE BUOYANT FOUNDATION PROJECT IN POST-KATRINA NEW ORLEANS

ELIZABETH VICTORIA FENUTA

2010

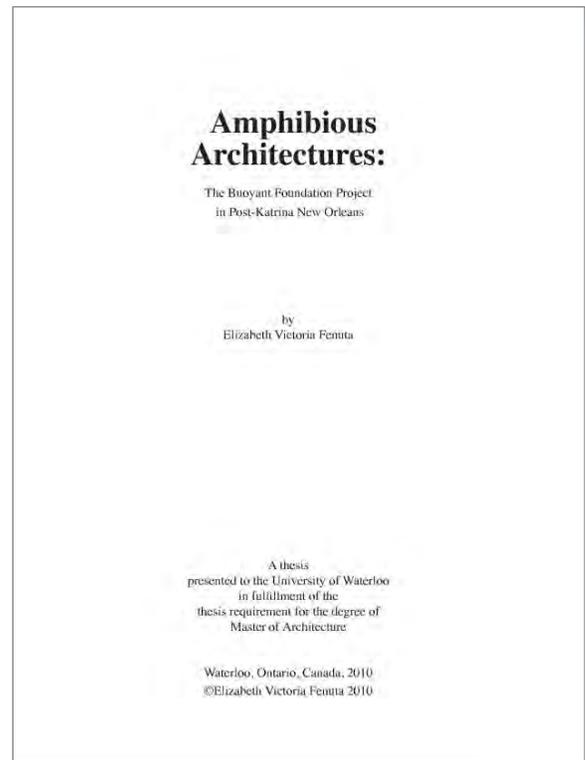
http://issuu.com/lizfenuta/docs/amphibious_architectures_thesis

Date Accessed: 14 January 2016

Fenuta's research into amphibious foundations focuses on the Lower Ninth Ward in New Orleans. In cooperation with the Buoyant Foundation Project, this investigation examines the application of an amphibious foundation system to the typical "shotgun" house.

This research intends to demonstrate the benefits of retrofitting existing structures with these foundations, benefits which include cultural, economic, and sustainability considerations. Fenuta divides her investigation into the following categories:

- Challenges
- Context
- The Buoyant Foundation Project
- Technical Feasibility
- Efficiency
- The Future of the Buoyant Foundation Project
- Conclusions



ADAPTATION TOOLKIT: SEA-LEVEL RISE AND COASTAL LAND USE

VIRGINIA INSTITUTE FOR MARINE SCIENCE

January 2013

<http://tinyurl.com/q22p77s>

Date Accessed: 5 January 2016

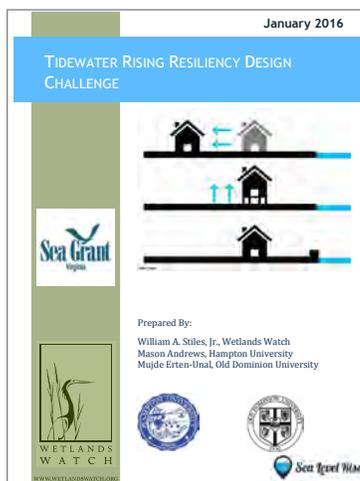
A response to the effects of greenhouse gas emissions, the Adaptation Toolkit speaks directly to policymakers. The Toolkit provides landuse methods that respond to, and limit the impact of, sea-level rise. Each of the eighteen methods, or tools, identified is examined with regard to economic, environmental, and social costs and benefits.

The Toolkit is divided into four categories:

- Planning Tools
- Regulatory Tools
- Spending Tools
- Tax and Market-Based Tools



TIDEWATER RISING RESILIENCY DESIGN CHALLENGE



WILLIAM A. STILES, MASON ANDREWS AND MUJDE ERTEN-UNAL - January 2016
<http://wetlandswatch.org/Portals/3/MW%20documents/Publications/report-chesterfield-heights.pdf>
 Date Accessed: 19 July 2016

FROM CONFLICT TO DIALOGUE, FROM DIALOGUE TO COOPERATION, FROM COOPERATION TO PRESERVATION



DIRK H.R. SPENNEMANN AND DAVID W. LOOKS - 1998
<http://csusap.csu.edu.au/~dspennem/PDF-Articles/SFO-25-Final.pdf>
 Date Accessed: 8 February 2016

FLOOD CONTROL PROPOSAL FOR THE FARNSWORTH HOUSE: INFLATABLE STOWABLE BARRIER

**FLOOD CONTROL PROPOSAL for the FARNSWORTH HOUSE
INFLATABLE STOWABLE BARRIER**

Submitted by Sigrid Adriaenssens, October 27, 2015

SUMMARY

We propose to block abrupt water elevation change and inundation of the site of the Farnsworth House by protecting it with a linear, stowable, air-supported barrier, positioned at a distance from the house's perimeter. A pneumatic barrier is a flexible closed membrane that is pre-stressed by internal air and/or water pressure and loaded by external hydrodynamic and hydrostatic forces. Such a barrier can deform while retaining its functionality. When not in use, such a barrier could be stowed in a recess in the foundation constructed below ground level, and would not obstruct the views from and to the house. This minimal intervention in the landscape would not alter the original house and its site location.

PRECEDENT STUDIES

This proposal builds upon existing pneumatic barrier technology, developed for smaller dams and our research on large storm surge barriers, positioned along vulnerable populated coast lines. In our research we have demonstrated that such barriers can be successfully subjected to extreme water loads and inhibit inland flooding. Our study investigated the feasibility of such a barrier for the Rockaway Peninsula (NYC) (see figure 1a). These studies further built on the construction and operation of the only pneumatic storm surge barrier, the Ramspl Bialgstuw (Netherlands, 2002), which achieves a crest height of 10m under storm surges (see figure 1b)



Figure 1a: Our visualisation of a pneumatic storm surge barrier positioned along the Rockaway Peninsula (NYC) and b the inflation of the Ramspl Bialgstuw between two lakes (clockwise image credit maritiemnieuws.nl)

CONCEPT

The membrane of the inflatable barrier is stored in a recess in the foundation of the barrier. The membrane is clamped to its foundation, which is designed to also prevent water seepage underneath the barrier. In case of an expected high water level, the barrier is inflated and forms a watertight

SIGRID ADRIAENSSENS

27 October 2015

Adriaenssens's proposal for the Farnsworth House is an overview of an alternate method for mitigating flooding at this Historic Landmark. In her proposal, Adriaenssens explains how an inflatable barrier system would be deployed and how the system can be applied to the house. Discussion is included on how the system is anchored and describes the merits of inflating the system with air versus water.

As this is a novel system, Adriaenssens points to the only existing use of the system in the Netherlands as a case study, where the barriers can resist a 10 meter (approximately 33 feet) storm surge. Despite the capacity of the barriers when in use, the advantage is that, as Adriaenssens explains, the barriers do not interfere with the surrounding context when not deployed. That the system does not significantly alter its context is an important consideration for the Farnsworth House.

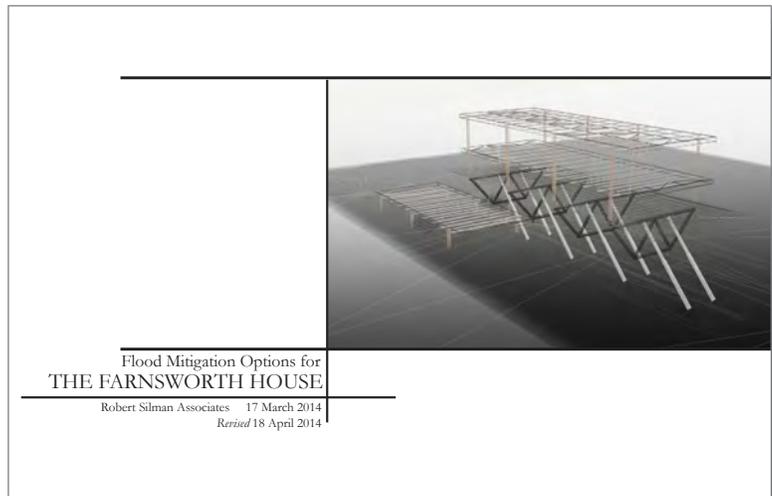
FLOOD MITIGATION OPTIONS FOR THE FARNSWORTH HOUSE

Flood Mitigation Options for the Farnsworth House is a report that examines three possible methods for alleviating flooding around Mies van der Rohe's iconic house. The three methods Robert Silman Associates reviews are:

- Raising the house
- Moving the house to a less flood-prone location
- Installing hydraulic lifts to raise the house during a flood event

Following an extended discussion regarding the implications of each option, the report finds that the most attractive solution is to install a hydraulic system under the house. It is presented as the solution that least intrudes on this Historic Landmark since any change would be temporary, only visible during a flood event.

The report includes a fairly in-depth description of how such a hydraulic system would be installed and how the system would deploy.



ROBERT SILMAN ASSOCIATES

2014

http://farnsworthproject.org/wp-content/uploads/RSA_Farnsworth_Report.pdf

Date Accessed: 14 January 2016

FLOOD DAMAGE IN HISTORIC BUILDINGS FLOODING RISK AND REMEDIATION



TIM HUTTON & CHRISTOPHER MARSH - No Date
http://www.buildingconservation.com/articles/flood/flood_damage.htm
 Date Accessed: 11 August 2016



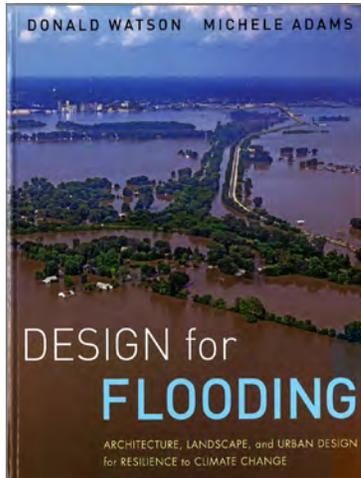
RUTH NICHOLLS - No Date
<http://www.buildingconservation.com/articles/flooding/flooding.htm>
 Date Accessed: 11 August 2016

EMERGENCY RESPONSE AND SALVAGE WHEEL



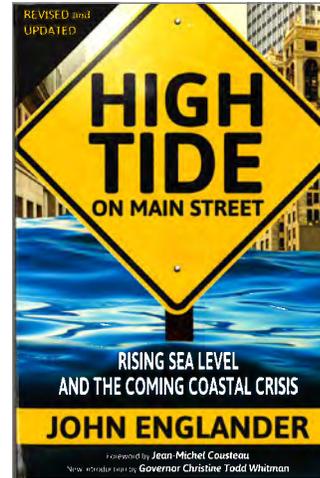
<https://www.heritagepreservation.org/catalog/Wheel1.htm>

DESIGN FOR FLOODING



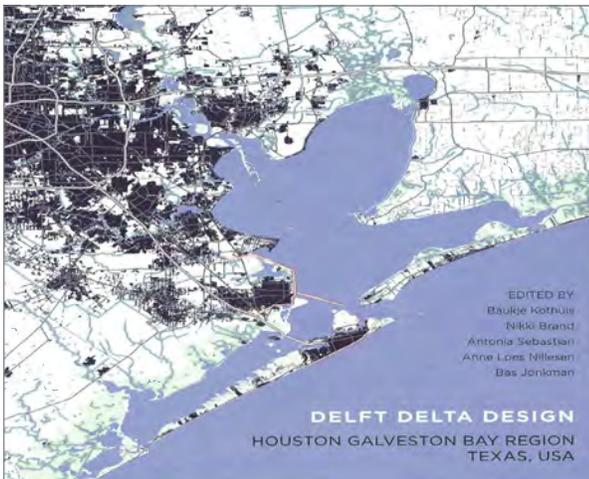
DONALD WATSON AND MICHELE ADAMS - 2011
John Wiley & Sons

HIGH TIDE ON MAIN STREET



JOHN ENGLANDER - 2013
The Science Bookshelf

DELFT DELTA DESIGN: HOUSTON GALVESTON BAY REGION, TEXAS, USA



BAUKJE KOTHUIS, NIKKE BRAND, ANTONIA SEBASTIAN,
ANNE LOES NILLESEN AND BAS JONKMAN - 2015
Delft University Publishers