

## Section 1: Introduction

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### 1.1 Mitigation Plan for Four New Jersey Counties

On October 30, 2000, President Clinton signed the Disaster Mitigation Act of 2000, also known as “DMA 2000”. DMA 2000 established a requirement that local and state governments must develop and adopt hazard mitigation plans (HMPs) to maintain eligibility for federal hazard mitigation grants and programs. On February 26, 2002, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (IFR) that provides specific requirements for the content of HMPs and detailed descriptions of the planning process that states and localities are required to observe. In addition, DMA 2000 stipulates that HMPs for counties and municipalities must be updated and reapproved every five years.

The *Mitigation Plan for Four New Jersey Counties* (NJ4 HMP) responds to those requirements for the participating jurisdictions within Camden, Gloucester, Salem, and Cumberland Counties in southwestern New Jersey. In April 2014, the counties initiated a project to update multi-jurisdictional HMPs that were approved by FEMA in 2010 and 2011. Direct participation in the project was open to all recognized government entities within these four counties. Seventy-six municipalities, one university, and four counties participated in the NJ4 HMP planning process for a total of 81 separate jurisdictions. More than 900 individuals were directly involved in the planning process. There were also opportunities for participation by the public and interested parties.

The respective county Offices of Emergency Management led the plan update effort with the assistance of Stuart Wallace LLC, hazard mitigation planning consultants. The project was funded by a grant from FEMA. The non-federal share of the FEMA planning grant was covered by the participation of individuals representing the counties, municipalities, and institutions.

Important terms related to the NJ4 HMP include:

- *Hazards* cause loss of life or injuries, property damage, and economic hardship. The NJ4 HMP addresses a range of natural hazards including floods, high winds, severe winter weather, and dam or levee failures.
- *Hazard mitigation* reduces or eliminates risk of death, injury, or damage to private or public property potentially caused by hazards.
- *Hazard mitigation plans* evaluate potential risk factors and identify hazard mitigation measures to address identified risks.
- *Hazard mitigation measures* include activities, programs, or projects such as improving public awareness about hazard risk and mitigation; improving regulations and codes that lead to safer structures; and construction projects to directly reduce potential impacts of hazards.

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The NJ4 HMP has three main components:

1. *Regional Hazard Mitigation Plan* – includes summary information that is common to all participating jurisdictions in the NJ4 HMP.
2. *Annexes* – compiles detailed information supporting the Regional HMP.
3. *Appendices* – identifies hazard priorities, critical facilities, and mitigation measures for each participating county, municipality, and institution.

The *Regional Hazard Mitigation Plan* (and supporting detailed information in the Annexes and Appendices) is organized in four discrete sections:

*Section 1: Introduction*

*Section 2: Planning Process*

*Section 3: Hazard Identification and Risk Assessment*

*Section 4: Mitigation Measures*

Explanations are included in each Section regarding how IFR requirements are met by the content of the Regional HMP. *Annexes* provide supporting materials:

*Annex A: Acronyms*

*Annex B: Sources*

*Annex C: Planning Process* – including documentation for key meetings and public participation opportunities supporting descriptions of the planning process in Section 2 of the Regional HMP and Part 2 of the Appendices

*Annex D: Hazard Profiles and Risk Assessments* – providing detailed information for the identified natural hazards supporting summary information in Section 3 of the Regional HMP

*Annex E: Mitigation Measures* – describing common aspects of mitigation measures and projects identified in Part 4 of the Appendices

*Annex F: Plan Implementation* – cataloging information about implementation strategies and funding sources for mitigation measures

*Appendices* for the 81 individual counties, municipalities, and institutions have a similar organizational structure as the Regional HMP Sections but the components are designated as “Parts.”

*Part 1: Overview*

*Part 2: Participation*

*Part 3: Hazard Identification and Risk Assessment*

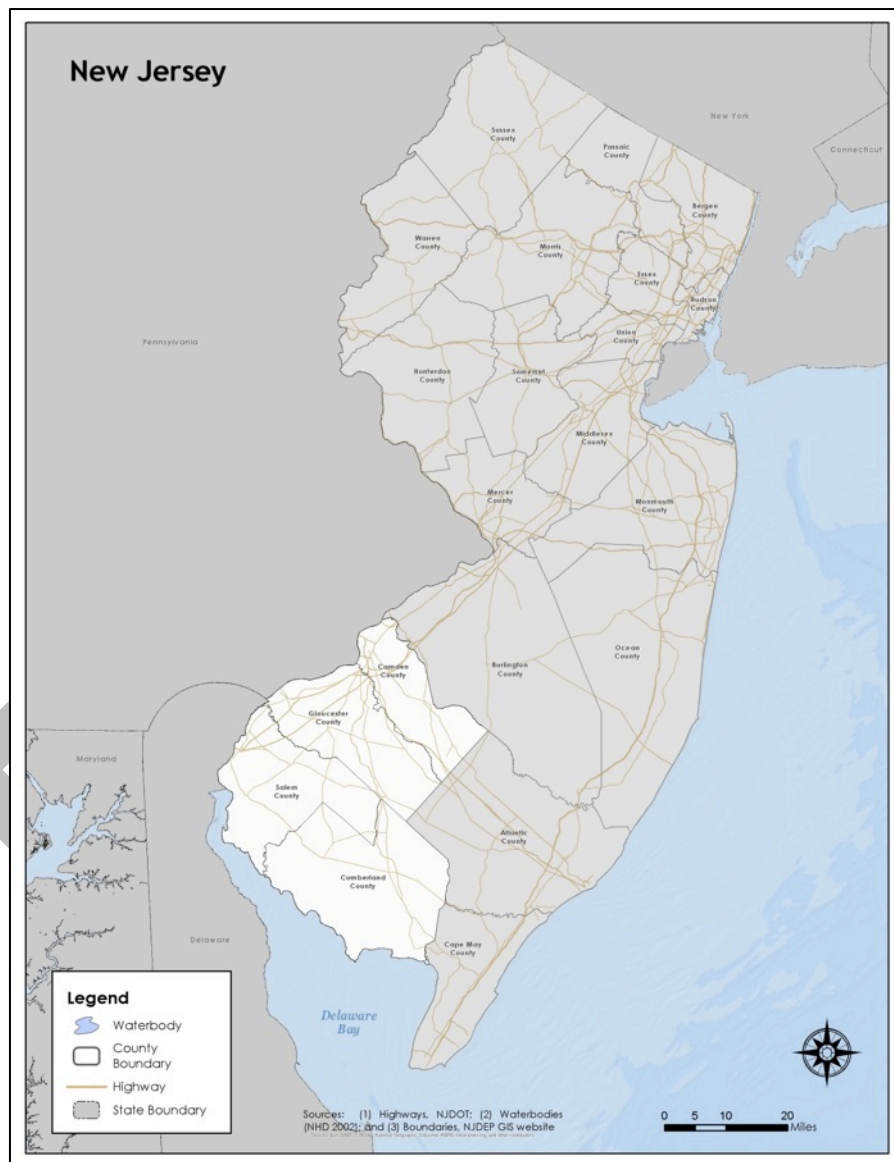
*Part 4: Mitigation Measures*

Appendices for individual jurisdictions are grouped within their respective counties for review purposes but the organizational structure provides an actionable document for each of the participating counties, municipalities, and institutions.

## 1.2 Context

The NJ4 HMP includes participating jurisdictions in Camden, Gloucester, Salem, and Cumberland Counties in the southwest corner of New Jersey (See Figure RP.1-1), sometimes referred to as the “Southern Delaware Valley Region.” The region encompasses a highly diverse mix of land uses ranging from densely populated urban and suburban communities to the north within Camden and Gloucester Counties to smaller scattered cities and more sparsely settled agricultural and bayshore communities in Salem and Cumberland Counties in the south and west.

Figure RP.1-1: NJ4 HMP Region Location Map



Much of the region is considered part of the Philadelphia metropolitan area, which exerts a strong economic influence on the area. While a few discrete areas have experienced growth and development, much of the built assets in the region have not changed dramatically for several decades. For example, according to the 2010 US Census, almost two-thirds of the housing stock was built between 1940 and 1990 with less than 20% in the last two decades.

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Table RP.1-1 is a compilation of demographic information for the region and comparison with the State of New Jersey and the United States.

**Table RP.1-1: NJ4 HMP Region Demographics**  
(Source: Census DP-1, 2010 ACS 5-Year Estimates, DP 3, 4)

	Camden County	Gloucester County	Salem County	Cumberland County	Region	New Jersey	United States
2000 Population	508,932	254,673	64,285	146,438	974,328	8,414,350	281,421,906
2010 Population	513,657	288,288	66,083	156,898	1,024,926	8,791,894	308,745,538
Percent Change	0.93%	13.20%	2.80%	7.14%	5.19%	4.49%	9.71%
Population Density (per square mile)	2321.51	895.3	199.11	324.37	754.25	1,195.5	87.3
Land Area (square miles)	221.26	322.00	331.90	483.70	1,358.86	7,354.22	3,534,905.43
% of Population under 18 years	24.0	24.4	23.5	24.0	24.1	23.5	24.0
% of Population 18 – 64	63.0	63.2	61.5	63.4	62.7	63.0	63.0
% of Population 65 and older	13.0	12.4	15.0	12.6	13.2	13.5	13.0

Table RP.1-2 illustrates how the four counties rank in the region and New Jersey.

**Table RP.1-2: NJ4 HMP Region Ranking (Demographics)**

	Camden County		Gloucester County		Salem County		Cumberland County	
	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)
Population Rank	1	8	2	14	4	21	3	16
Land Area Rank	4	17	3	10	2	9	1	4
Population Density Rank	1	7	2	13	4	21	3	17
Population Change Rank	4	-	1	-	3	-	2	-

Table RP.1-3 compares information related to economic and housing statistics for the four counties, the region, New Jersey, and United States.

**Table RP.1-3: NJ4 HMP Region Economics and Housing**  
(Source: USDA ERS, Census DP-1, 2010 ACS 5-Year Estimates, DP 3, 4; NJ LWD 2010)

	Camden County	Gloucester County	Salem County	Cumberland County	Region	New Jersey	United States
Median Household Income	\$60,976	\$72,664	\$59,441	\$50,651	\$60,209	\$69,811	\$51,914
Total Number of Housing Units	204,943	109,796	27,417	55,834	397,990	3,529,033	131,704,730
Occupied Housing Units	190,980	104,271	25,290	51,931	372,472	3,176,069	116,716,292
Vacant Housing Units	13,963	5,525	2,127	3,903	25,518	352,964	14,988,438
Owner Occupied Housing Units	130,355	83,525	18,091	34,622	266,593	2,126,279	75,986,074
Renter Occupied Housing Units	60,625	20,746	7,199	17,309	105,879	1,049,790	40,730,218
Building Permits	487	716	105	246	1,554	13,535	594,800

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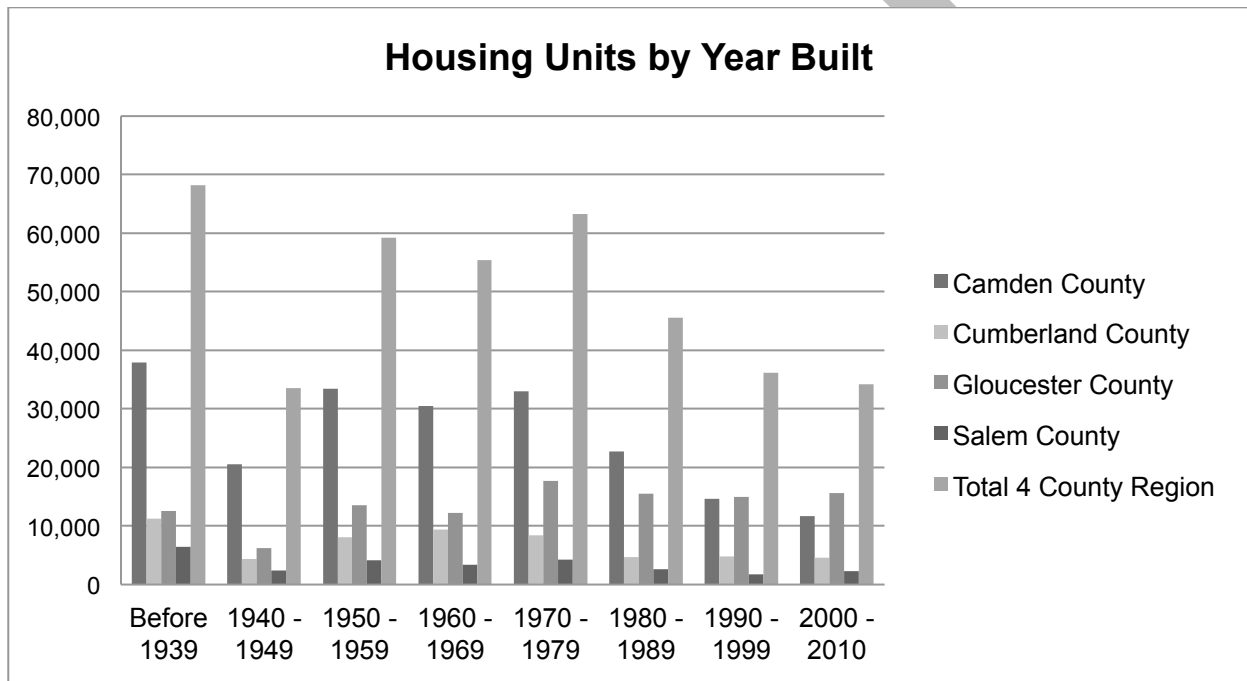
Table RP.1-4 illustrates how the four counties rank in the region and New Jersey.

**Table RP.1-4: NJ4 HMP Region Ranking (Economics and Housing)**

	Camden County		Gloucester County		Salem County		Cumberland County	
	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)	Region (n=4)	NJ (n=21)
Median Household Income Rank	2	15	1	12	3	20	4	21
Vacant Housing Units Rank	1	11	2	17	4	20	3	18
Renter Occupied Housing Units Rank	1	7	2	15	4	21	3	16
Building Permits Rank	2	14	1	7	4	21	3	18

Figure RP.1-2 illustrates development patterns in the region by examining housing units by year built. About one in six homes in the NJ4 HMP region were built prior to 1939.

**Figure RP.1-2: NJ4 HMP Region Housing Units by Year Built**  
(Source: 2010 ACS 5-Year Estimates, DP 4)



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The region consists of an equally diverse landscape. Per Figure RP.1-3, major water bodies include the Delaware Bay which transitions from south to north into the Delaware River and forms the northern, western, and southern borders of the region. The river is considered tidal along the entire boundary of the region and large expanses of the bayshore in Cumberland and Salem Counties are considered important marshlands. For example, Cumberland County includes part of an area designated by the New Jersey Department of Environmental Protection (NJDEP) as a Natural Heritage Priority Site.

**Figure RP.1-3: NJ4 HMP Region**



Other key water features include the Salem and Maurice Rivers and Union Lake in the southern counties and several smaller water courses run inland including Stow Creek, Alloway Creek, and the Cooper River. The eastern margin of the region is also considered part of the New Jersey Pinelands National Reserve, a combination of vegetation unique to the Atlantic seaboard.

The land is generally flat to gently rolling; the highest point in any of the four counties is only slightly more than 200 feet above sea level in inland Camden County. Major ground transportation routes include Interstates 295 and the New Jersey Turnpike, i.e., Interstate 95; US Routes 30, 40, 130, and 322; and New Jersey Route 55.

*Note: Additional information about relevant characteristics of individual municipalities is included in Part 3 of the Appendices.*

### 1.3 Hazards and Risk

The NJ4 HMP region is vulnerable to a range of natural hazards. Since the original HMPs for the four counties were approved in 2010 and 2011, the region has experienced a large number of hazard events including seven that warranted presidential disaster declarations.

The NJ4 HMP Hazard Identification and Risk Assessment (HIRA) focused on 12 natural hazards:

- Coastal Erosion and Sea Level Rise
- Dam Failure
- Drought
- Earthquake
- Extreme Temperature
- Flood
- High Wind
- Geologic Hazards
- Levee Failure
- Severe Weather-Summer
- Severe Weather-Winter
- Wildfire

For each of these hazards, Annex D includes:

- Location of the Hazard
- Severity and Extent of the Hazard
- Occurrence and Future Probability of Hazard
- Risk Assessment
- Hazard Rankings

In addition, Section 3 of the Regional HMP explains the steps involved in the Critical Facility Hazard Exposure Assessment and follow-up efforts that are included in the mitigation measures for the participating counties and municipalities. The NJ4 HMP focused on identification and evaluation of critical facilities relative to the identified hazards at the municipal level. The intent was to make sure important emergency functions and facilities with vulnerable populations are adequately prepared for potential natural hazards.

The Regional HMP HIRA and related information in the Appendices indicate the following key conclusions regarding hazards and risk in the NJ4 HMP region:

- Within the NJ4 HMP region, municipalities located along the Delaware Bay and Delaware River (and its tributaries) are at greatest risk from flooding, coastal erosion and sea level rise, and storm surge.
- Due to projections of continuing Sea Level Rise, municipalities adjacent to the Delaware Bay, Delaware River, and its tributaries are, and will increasingly be, vulnerable to periodic inundation.
- Municipalities with the highest percentage of parcels in the 1% annual chance flood area are predominately located along or in close proximity to the Delaware Bay and Delaware River.

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- As of August, 2014 the NJ4 HMP region had 312 Repetitive Loss (RL) and 13 Severe Repetitive Loss (SRL) properties, which accounts for only about 2% of the total RL and SRL properties in the state of New Jersey. The projected 1% annual chance flood risk to the repetitive loss properties in the NJ4 HMP region was calculated at \$5,929,269.
- The top four municipalities within the NJ4 HMP region with the highest potential earthquake, high wind, and winter weather risk (based on the percentage of building permits issued prior to 1975) were all located in Camden County.
- Levees are located in a total of 19 municipalities in the NJ4 HMP region, predominately within Cumberland and Salem Counties. The potential risk is greatest in Pennsville Township in Salem County where there are eight levees and 730 parcels within 1,000 feet of the levees.
- Areas at greatest risk from wildfire are predominately located in central to eastern Camden, Gloucester, and Cumberland counties. Camden County has the highest amount of land with potential wildfire fuel sources in proximity to developed areas.

Section 3 of the Regional HMP and Annex D also include descriptions of the process used to identify, prioritize, and assess risk from these natural hazards. In addition, Part 3 of the County and Municipal Appendices provide more detailed information from the municipal perspective regarding hazard priorities as well as the results of the Critical Facility Exposure Assessment.

### 1.4 Mitigation Measures

Common goals are included in the Regional HMP and the Appendices. The goals are broad policy statements representing desired long-term results:

- Goal 1: **Improve education and outreach efforts**
- Goal 2: **Improve data collection, use, and sharing**
- Goal 3: **Improve capabilities and coordination**
- Goal 4: **Plan and implement projects**

In addition, overarching strategy statements are included in Appendices that articulate objectives for each participating jurisdiction. Because risk and hazard mitigation issues across the region have common roots in predominant natural hazards and constraints on capabilities and resources, many of these strategy statements are similar. However, where community representatives participating in the planning process identified specific areas of interest, the strategy statements have been refined.

Participating municipalities in the four counties have identified hundreds of mitigation measures. Consistent with the identified goals, hazard mitigation measures include:

- Commitments to improving public awareness about hazard
- Identifying and evaluation critical facilities and risk-prone areas
- Promoting regulations and codes that lead to safer structures
- Enhancing capabilities and coordination between and within different levels of government
- Implementing construction projects to directly reduce hazard impacts

Annexes E and F include general descriptions of mitigation measures included in the NJ4 HMP. In addition, Part 4 of the County and Municipal Appendices provide more detailed information about the mitigation measures and implementation strategies for the participating counties, municipalities, and institutions.