



## Appendix 7: Borough of Highland Park

The Borough of Highland Park participated in the 2015 Middlesex County Hazard Mitigation Plan (HMP) update. This appendix includes the locally-specific information about the Borough. The following sections detail the planning process and participants; the current population, building stock, and land development trends; hazards that specific to the Borough and corresponding risk assessments; the Borough’s mitigation strategy, and a local capability assessment.

### 1. Plan Development

On March 15<sup>th</sup>, 2015, the OEM Coordinator signed an “Intent to Participate” letter as the Point of Contact for the Plan Update. The Borough Administrator worked with other municipal employees, consultants, volunteers, and other stakeholders through the formation of a Local Planning Committee (LPC), as listed below. The LPC filled out the municipal worksheets included in Appendix E and worked to gather the necessary information to support the plan update. The LPC also reviewed all drafts of this municipal appendix prior to review.

**Table 7-1: Borough of Highland Park Local Planning Committee Members**

Name	Title	Organization
Kathleen Kovach	Administrator	Highland Park Borough
Allan Williams	Environmental Commission	Highland Park Borough
Scott Luthman	Construction Official	Highland Park Borough
Bruce Koch	Engineer	CME Associates
Alan Schectel	Planner	Alan Schectel
Joan Hullings	Clerk	Highland Park Borough
Don Rish	Superintendent of Public Works	Highland Park Borough
Chief Stephen Rizco	Police Chief	Highland Park Police
Kathleen Kovach	Administrator	Highland Park Borough
Allan Williams	Environmental Commission	Highland Park Borough
Scott Luthman	Construction Official	Highland Park Borough
Bruce Koch	Engineer	CME Associates
Alan Schectel	Planner	Alan Schectel



## 2. Community Profile

### 2.1 Physical Location

The Borough of Highland Park has a total area of 1.82 square miles and is located in the west-central region of Middlesex County, New Jersey. Highland Park is located on the north bank of the Raritan River, and is bordered by Edison and Piscataway to the north, east and west, and New Brunswick to the south across the Raritan River. Primary transportation routes include Route 18, Route 27, County Routes 514, 622, 676, and 692. New Jersey Transit provides bus service. There are no commuter rails in Highland Park.

#### 2.1.1 Hydrography and Hydrology

Highland Park is part of the Lower Raritan Watershed, within the Raritan Basin. The Raritan River flows along the Borough's southern border. The river is tidal through this stretch, as the head of tide is located in the adjacent Township, Piscataway, north of the Borough. There are a few tributaries to the Raritan that flow through the Borough, including the Mill Brook.

### 2.2 History and Governance

The Borough of Highland Park was formally incorporated on March 15, 1905 from Raritan Township (now called Edison). Highland Park is governed under the Borough form of government, and has an elected Mayor and six Council members. The Mayor is elected directly to a four-year term of office. Town Council members are elected to serve three-year terms on a staggered basis, with two seats coming up for election every year. The Borough Council holds monthly meetings open to the public where it discusses legislation under consideration.

### 2.3 Demographics

#### 2.3.1 Population Trends

According to the U.S. Census Bureau, the population in 2010 was 13,982.<sup>1</sup> This is a 0.1% decrease from 2000. The Borough of Highland Park has a population density of 7,728 persons per square mile. It is the 3rd densest municipality within the County. A summary of major population and household characteristics may be found in the following tables.

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<sup>1</sup> U.S. Bureau of the Census. American Fact Finder "Highland Park Borough, NJ". <http://factfinder.census.gov/>. Retrieved 8/17/15.



**Table 7-2: Borough of Highland Park Population Summary Estimates (2010 Census) <sup>2</sup>**

Population	Quantity	Percent of Municipal Population
Total Population	13,982	100
Median Age	34.8	N/A
17 years and under	2,957	21.1
65 years and over	1,619	11.6
Race		
White	9,544	68.3
Black/African-American	1,095	7.8
Native American/Alaskan Native	20	0.1
Asian	2,495	17.8
Note: Chinese population	1,014	7.3
Native Hawaiian/Pacific Islander	4	0
Other Race (unspecified)	458	3.3
Two or More Races	366	2.6
Hispanic or Latino	1,252	9.0

Population statistics may further reveal potential vulnerabilities in the community. The following table details the distribution of two groups included in vulnerable population analyses (children and the elderly) according to household description. Residents living alone, particularly the elderly, may have fewer coping mechanisms and resource than those in household groups, therefore may constitute a demographic that could require assistance in mitigating their vulnerability.

**Table 7-3: Borough of Highland Park Household Characteristics Summary Estimates (2010 Census) <sup>3</sup>**

Households	Quantity	Percent of Total
Total Households	5,875	100
Family Households (related)	3,266	55.6
Family Households w children under 18	1,527	26.0
Non-Family Households (unrelated)	2,609	44.4
Non-Family Households, living alone	1,297	22.9
Non-Family Households, living alone Male over 65 years	147	2.5
Non-Family Households, living alone Female over 65 years	410	7.0

### 2.3.2 Vulnerable Populations

Vulnerable populations include those groups that may require special assistance, considerations, accommodation or other needs during emergency events to facilitate their effective and safe compliance with emergency instructions. This includes, but is not limited to, those individuals needing

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.



mobility assistance (strollers, wheelchairs, etc.), those with financial needs (cannot afford hotel rooms, food, necessities, during evacuation periods, etc.), those requiring translation or interpretation services to understand emergency information (non-English-speaking populations, Deaf and hard of hearing), persons considered legal minors, those persons with cognitive impairments, persons with specialized medical needs (electric dependent equipment, refrigerated medications, use of Personal Assistants for routine and basic care, medical transportation needs, etc.), and populations with social disadvantages other needs that may require unique considerations during emergency events.

Identifiable vulnerable populations in Highland Park include (but may not be limited to) the following:

**Table 7-4: Borough of Highland Park Vulnerable Population Estimates (2010)**

Population Type	Population Estimate (2010 Census) <sup>4</sup>
Under 5 years of age	814
Under 18 years of age	2,957
Over 65 years of age	1,619
Limited English Proficiency (LEP)	1,423 (equals 10.9% of population over 5 years old) <sup>5</sup>
Institutionalized	0
Living in Group Quarters	6

In addition to these statistics, Highland Park has a high rate of renter-occupied properties (58.8%), aging building stock, and approximately 11.5% of the population lives below the poverty line. The mean household income is \$96,923, with the per capita income at approximately \$39,800 (2013 estimates).<sup>6</sup>

## 2.4 Land Use and Development

Highland Park is an established community with a strong commercial center surrounded by a mixture of residential types. The 2013 American Community Survey estimates that over 94 percent of the houses are occupied by the owners.

The NJDEP Land Use/Land Cover shows that the land development trends in the Borough over the past several years have been relatively static. Though there has been change within the community, as the Borough has reported a number of recent and expected developments. These projects are details in Section 2.4.3.

<sup>4</sup> Ibid.

<sup>5</sup> 2013 American Community Survey Estimate

<sup>6</sup> U.S. Bureau of the Census. American Fact Finder "Highland Park Borough, NJ". <http://factfinder.census.gov/> . Retrieved 8/16/15.



**Table 7-5: Borough of Highland Park Land Cover Summary**

Land Cover Class	Percent of Total Land <sup>7</sup>	2002 (acres)	2007 (acres)	2012 (acres)	Percent Change <sup>8</sup>
Agriculture	0	0	0	0	0
Barren Land	0.15%	2.27	4.45	1.73	-23.74%
Forest	11.28%	149.73	140.26	131.98	-11.86%
Urban	77.97%	894.15	902.12	912.20	2.02%
Water	0.58%	6.57	6.78	6.82	3.81%
Wetlands	10.02%	117.31	116.4	117.29	-0.02%

### 2.4.1 Open Space

The Borough, along with Middlesex County, has been prioritizing efforts to preserve land along the Raritan River. This effort continues to provide access to the river, while protecting property within the Borough. County parks include Donaldson Park and Johnson Park, which covers over 100 acres along the waterfront.

### 2.4.2 Buildings and Development

Highland Park is an older community with a majority of the houses built before 1960. A small percentage of the houses, 4 percent, were built after 2000. The Borough anticipates several hundred more units to be built in the near future.

**Table 7-6: Borough of Highland Park Housing Statistics**

Housing Characteristics	Estimate
Total Occupied Housing Units	6,028
Percent Owner-occupied	94.6%
Percent Renter-occupied	5.4%
Percent built after 2000	.04%
Percent built before 1979	84.8%

<sup>7</sup> Percent based on acres of land in 2012

<sup>8</sup> Change is calculated between 2002 and 2012



### 2.4.3 Recent and Expected Development

Project Name	Type	Number of Structures	Locations	Known Hazards	Description/Status
The Crossings at Highland Park	Single Homes and Town Houses	94	River Road	None	Preliminary and Final Subdivision Approval; Not yet Built
The Overlook at Highland Park	Town Houses	82	River Road	None	Approved, under construction
Highland Cliffs	Town Houses	23	1 South Adelaide Ave	None	Complete
Merriwald (Kaplan)	1-3 Story Apt building	196	433 River Road	None	Preliminary and Final Subdivision Approval; Not yet Built
	3- 4 story Apt Buildings				
Heritage at Highland Park (American Home Properties Highland Park)	Town Houses	210	Cleveland Avenue	None	Concept plan approved, litigation-Builders remedy, not yet built

## 2.5 Critical Facilities and Infrastructure

### 2.5.1 Essential Facilities

The Borough operates a municipal building, a fire station, public library, and rescue squad.

### 2.5.2 Transportation

Highland Park is connected to surrounding jurisdictions by Route 27 and County Roads 514, 676, 622, 807, and 692. There is also a passenger train line that runs through the northern area of the Borough. Stations for this line are located in the neighboring towns of Edison and New Brunswick.

### 2.5.3 Critical Utilities and Infrastructure

The Borough of Highland Park manages the town’s water and sewer infrastructure. The Middlesex Water Company services the Borough with water, while the wastewater is treated by the Middlesex County Utilities Authority.



### 3. Hazard Identification and Risk Assessment

This section describes the natural hazards and risks that can affect Borough of Highland Park. Like all the other municipalities in Middlesex County, the Borough of Highland Park is potentially subject to the effects of all the hazards that are considered in this mitigation plan. However, only a few of these hazards have significant impacts that are unique to the community. The remaining hazards are discussed in detail in the County part of this mitigation plan. FEMA mitigation planning guidance requires that County mitigation plans include a risk assessment section that “assess[es] each jurisdiction’s risks where there vary from the risks facing the entire planning area” (44CFR 201.6 (c) (2) (iii)). Because the Middlesex County HMP update includes separate appendices for each municipality, this requirement is met in the appendices, while risks that affect the entire County uniformly are discussed in the County part of the HMP.

#### 3.1 Background and Hazard Rankings

One of the first steps in developing jurisdictional appendices was for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. The planning team also reviewed hazard-specific data at the jurisdiction level to provide communities with insight about which hazards would be afforded detailed risk assessments. Municipalities ranked the list of hazards as high, medium, low, or no concern.

Table 7-7 shows community hazard rankings. To the extent possible, the level of discussion and detail about specific hazards in this section are based on these rankings. However, in many cases there is insufficient hazard information available at the level of the jurisdiction to allow detailed discussion or risk estimates. For some hazards there is limited jurisdiction-level tabular data included in the County portion of the HMP, and users should refer to those subsections for more detail. The hazards marked with asterisks in the table above are included in this appendix; the others are included in the County portion of this HMP, but not discussed in detail here.

**Table 7-7**  
**Borough of Highland Park**  
**Hazard Identification and Prioritization**

<b>Hazard</b>	<b>Priority</b>
Coastal Erosion	Low
Dam/Levee Failure	Low
Drought	Medium
Earthquakes	Low
Extremely High Temps	High
Extremely Low Temps	Low
Floods	High*
Hurricanes/Tropical Storms	High*
Nor’easters	High
Power Outages	High
Severe Weather	High
Hazardous Substances	Medium
Wildfire	Low
Winter Storm	Medium

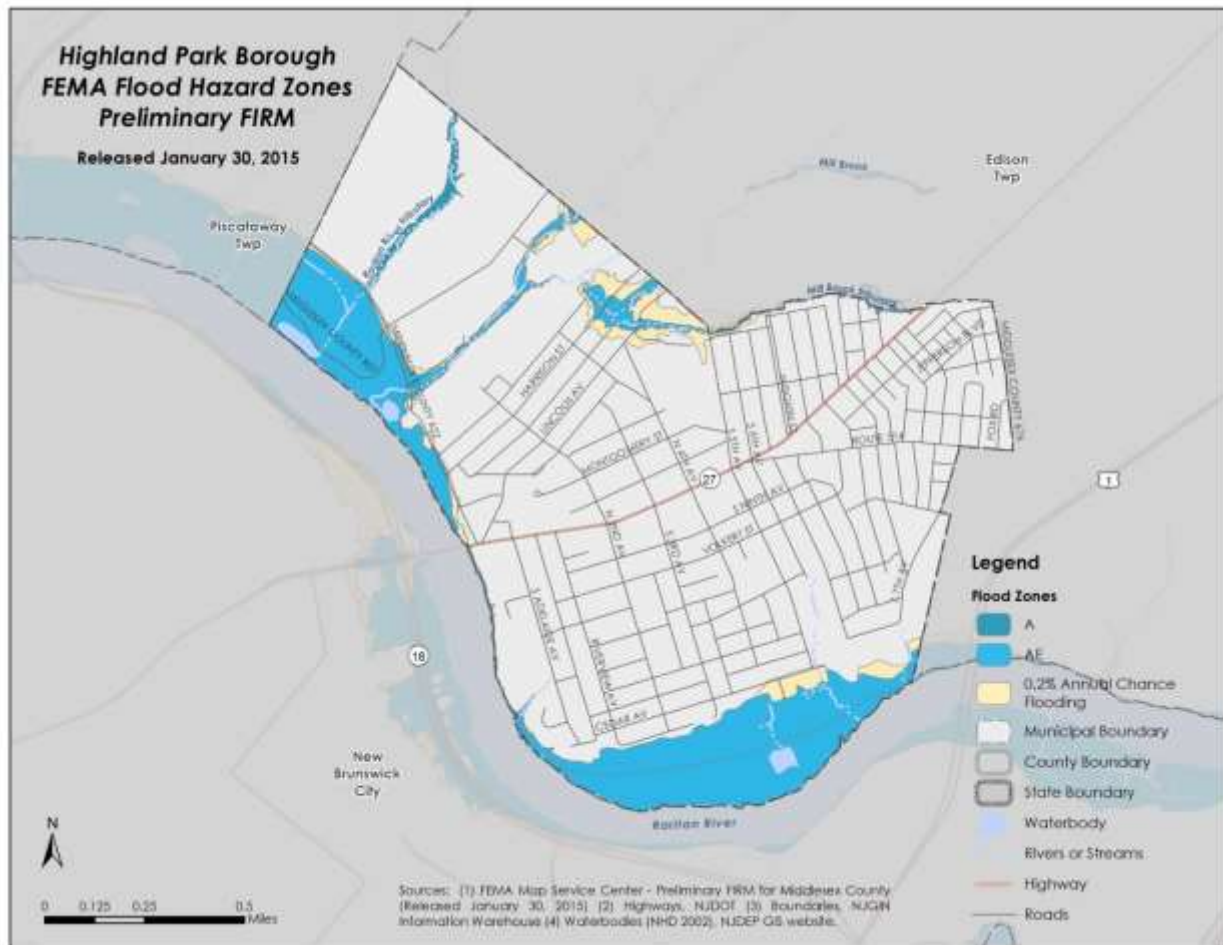


## 3.2 Flood Hazard

### 3.2.1 Type, Location, and Extent

The Borough Highland Park is located in west-central Middlesex County. The southern border of the Borough is formed by the Raritan River, which runs west to east and drains into Raritan Bay and the Atlantic Ocean. There are several areas of floodplain in the community. The largest of these is adjacent to the Raritan River. Although some streets and neighborhoods are in proximity to the floodplain in this area, there is almost no development in the floodplain itself.

**Figure 7-1**  
**Highland Park Borough portion of FEMA Revised Preliminary Flood Insurance Rate Map (January, 2015)**  
(Source: FEMA Region II, Coastal Analysis and Mapping, Preliminary FIRM, September 19, 2014)







The only other notable areas of floodplain are in the northern part of the Borough. These are Buell Brook and Mill Brook, which run roughly north to south, eventually draining into the Raritan. There also exists a tributary to Mill Brook, which runs east to west and drains into Mill Brook in the area of Harrison Street and Lincoln Avenue. As discussed below, most of the flood risk in the community is in this area.

Table 7-8 provides basic information about floodplain and parcels subject to flooding within the jurisdiction based on the Preliminary FIRM. Although a relatively high percentage of the jurisdiction is in the floodplain, only slightly more than one percent of parcels are within the Special Flood Hazard Area (SFHA).

**Table 7-8**  
**Floodplain and Parcel Data for the Borough of Highland Park**  
(Source: FEMA Region II, Coastal Analysis and Mapping, Preliminary FIRM, September 19, 2014)

Data Type	Value
Jurisdiction area in square miles	1.82
Square miles within 100-year floodplain	0.28
Percentage of jurisdiction within 100-year floodplain	15.32%
Number of parcels in jurisdiction	4,878
Number of parcels with centroids within 100-year floodplain	53
Percentage of parcels with centroids within 100-year floodplain	1.09%

[Note: the table refers to centroids, which are the geographic center of a parcel. This is a better indicator of flood exposure than simple intersection with the floodplain, although it does not necessarily mean that any structures or infrastructure are within the boundaries of the Special Flood Hazard Area].

One of the best resources for determining flood risk in a jurisdiction is Flood Insurance Rate Maps (FIRMs), which are produced by FEMA. The FIRM is the official map of a community on which FEMA has delineated both the special flood hazard areas (1% annual chance of flooding) and the risk premium zones applicable to the jurisdiction.<sup>9</sup> At the time the Middlesex County HMP was being updated, the effective FIRM for the Borough of Highland Park is dated July 6, 2010. While the effective FIRM is the approved map and is used for regulatory purposes, the Middlesex County hazard mitigation plan update was developed in 2015, and the best available flood mapping at that time was the FEMA revised Preliminary Flood Map (released on January 30, 2015).

Current FEMA guidance uses the term *extent* as analogous to potential severity. As noted, most of the flood history in Highland Park is related to Mill Brook overbank events. The extent of flooding in Highland Park is relatively limited, meaning that floods are generally of a low elevation, and are related to overbank events from Mill and Buell Brooks (and the tributary to the former).

<sup>9</sup> FEMA online - Floodplain Management. Flood Insurance Rate Map (FIRM) definition



### 3.2.2 Previous Occurrences and the Probability of Future Floods

Based on a review of insurance claims, flooding in Highland Park has been relatively infrequent, and not strongly correlated with significant events such as Hurricanes Irene and Sandy. Claims are spread over a fairly long period of time. If there are no changes to the Buell and Mill Brooks, presumably the probability of future floods will remain about the same as it has been in the past.

### 3.2.3 Flood Impacts and Vulnerabilities to Flooding

The impacts from past floods in this jurisdiction have not been especially significant compared to other communities in Middlesex County. Most of the impacts have been confined to specific areas on and around Harrison Street. During the early phase of this HMP, Highland Park provided some details about damages from Superstorm Sandy and Hurricane Irene. The community reported high winds, heavy rain and localized flooding during Irene, with resulting road closures and barriers (trees and power lines) that made some roads impassable. During Sandy, the community experienced heavy precipitation, substantial tree damage, downed power lines and localized flooding.

**Table 7-9  
NFIP Policies and Claims**

<b>Number of Parcels:</b>	
Highland Park:	4,878
Middlesex County:	283,276
<b>Number of Policies In-Force:</b>	
Highland Park:	66
Middlesex County:	4,489
<b>Number of Claims:</b>	
Highland Park:	45
Middlesex County:	3,478
<b>Total Paid Claims</b>	
Highland Park:	\$382,951
Middlesex County:	\$109,727,837

### 3.2.4 National Flood Insurance Program and Repetitive Loss Properties

To provide a sense of the flood risk in a community it is also beneficial to summarize the policies in force and claims statistics from the National Flood Insurance Program (NFIP). There is a discussion of the NFIP in the County section of this hazard mitigation plan. The Borough of Highland Park has been a member of the NFIP since 1978.

FEMA NFIP statistics indicate that as of February 2015, federal flood insurance policies were in-force on 66 properties in Highland Park. Between 1978 and 2015, there have been a total of 45 NFIP insurance claims in Highland Park, with a total claims value of \$382,951.<sup>10</sup> Table 7-9 compares the number of policies in-force and paid claims in the jurisdiction. The Table shows that Highland Park comprises 1.5% of the NFIP policies

in-force in Union County.

The Borough of Highland Park is not presently a member of the Community Rating System (CRS), a voluntary program for communities participating in the NFIP. The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. For CRS participating communities, flood insurance premium rates are

<sup>10</sup> FEMA – Policy and Claim Statistics for Flood Insurance



discounted in increments of 5% based on creditable activities.<sup>11</sup> CRS communities are ranked between 1 and 10, with Class 1 communities receiving a 45% premium discount.

It should be noted that NFIP claims are not a direct or completely accurate proxy for flood risk in a community. The data does not include flood damages to structures that had no flood insurance. Also, in some cases, structures or contents may have been underinsured. The NFIP claims data also does not include any damages to public facilities, which may be insured via other means (such as self-insurance or non-FEMA policies); such damages may also be addressed through other federal programs such as FEMA's Public Assistance Program.

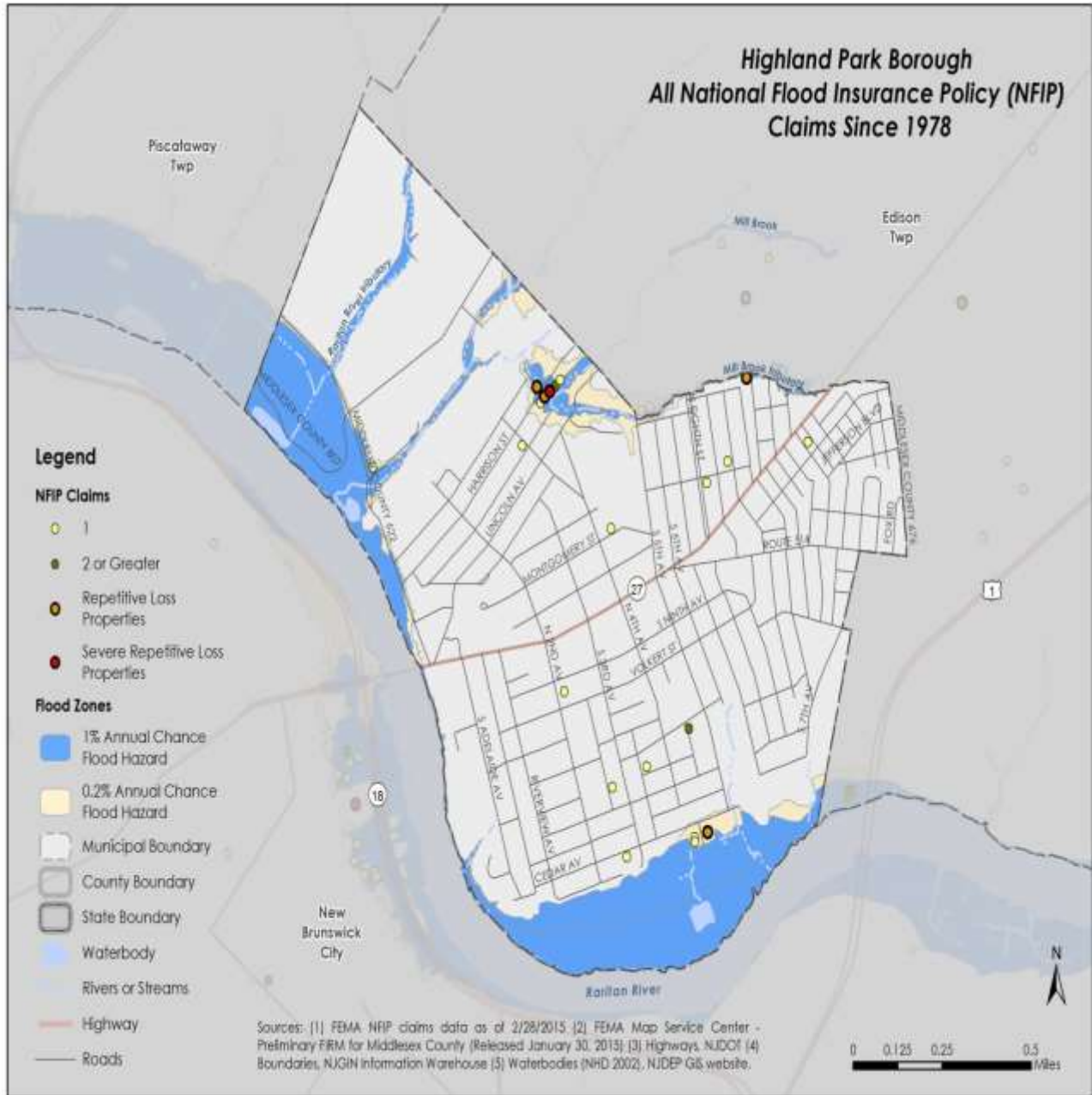
Figure 7-2 shows all NFIP claims in Highland Park between 1977 and 2015. Note the concentration of claims near the confluence of Mill Brook and its tributary to the east. These are discussed in the subsections below.

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<sup>11</sup> FEMA – Community Rating System (CRS).



**Figure 7-2**  
**Map of NFIP Claims in the Borough of Highland Park (1978 to 2015),**  
**Including Repetitive Loss and Severe Repetitive Loss Properties**  
(Source: FEMA Region II, Coastal Analysis and Mapping, Preliminary FIRM, September 19, 2014)





### 3.2.5 Flood Risk to Repetitive Loss Properties in Highland Park

FEMA requires a discussion of NFIP Repetitive Loss and Severe Repetitive flood loss statistics in hazard mitigation plans. A repetitive loss property is a structure covered by a contract for flood insurance made available under the NFIP that has incurred flood-related damage on two occasions, in which the cost of

**Table 7-10**  
**NFIP Policies and Claims**

**Repetitive Loss (RL) Properties:**

Highland Park:	5
Middlesex County:	429

**Total Building (RL)**

Highland Park:	\$148,941
Middlesex County:	\$44,015,885

**Total Contents (RL)**

Highland Park:	\$52,538
Middlesex County:	\$5,106,609

**Number of Claims (RL)**

Highland Park:	18
Middlesex County:	1,322

**Average Claim (RL)**

Highland Park:	\$11,193
Middlesex County:	\$37,158

**Severe Repetitive Loss (SRL)**

**Properties:**

Highland Park:	1
Middlesex County:	77

**Total Building (SRL)**

Highland Park:	\$78,536
Middlesex County:	\$14,512,761

**Total Contents (SRL)**

Highland Park:	\$37,241
Middlesex County:	\$910,122

**Number of Claims (SRL)**

Highland Park:	9
Middlesex County:	385

**Average Claim (SRL)**

Highland Park:	\$12,864
Middlesex County:	\$40,059

the repair, on average, equaled or exceeded 25% of market value of the structure at the time of each such flood event. (Note that the data about Repetitive Loss properties in this subsection are based on the previous definition. Under the revised definition above, Highland Park t has no RL properties.)

The flood risk assessment in this section is based in part on analysis of NFIP data on repetitive flood loss properties. As of February 2015, Middlesex County had 429 such properties based on a query of the FEMA BureauNet NFIP interface. (Note that under the revised definition, Middlesex County has 47 RL properties.) Of this total, five properties were located within Highland Park; this comprises about one percent of the County total.

Table 7-10 provides a comparison of the residential repetitive loss claims for Middlesex County and Highland Park. The tables below include the number of repetitive loss properties, building and contents damages, the total number of claims, and the average claim amounts.

The five repetitive loss properties in Highland Park were responsible for a total of 18 insurance claims, totaling \$11,193. Table 7-11 provides summary repetitive loss statistics for the community. The jurisdiction accounts for a very low number of the repetitive loss claims in the County, and the average claim is less than one-third of the County average, suggesting relatively low flood levels at these properties.



**Table 7-11**  
**Repetitive Loss Statistics in the Borough of Highland Park Middlesex County**  
(Source: FEMA National Flood Insurance Program, February 2015)

City/County Name	Properties	Total Building	Total Contents	Total Losses	# of Claims	Average Claim
Borough of Highland Park	5	\$148,941	\$52,538	\$201,480	18	\$11,193
Middlesex County	429	\$44,015,885	\$5,106,609	\$49,122,494	1,322	\$37,158

The next table shows summary statistics for Harrison Street, which has by far the most repetitive flood loss claims in this jurisdiction. For reasons of confidentiality, this mitigation plan does not show specific addresses.

**Table 7-12**  
**Summary of Repetitive Loss Statistics on Harrison Street in the Borough of Highland Park**  
(Repetitive Loss Properties)  
(Source: FEMA National Flood Insurance Program, February 2015)

Street Name	Building	Contents	Total	# Claims	Average
Harrison Avenue	\$123,083	\$52,538	\$175,622	14	\$12,544

The next table provides the results of a simple risk projection for repetitive loss properties. This is done by annualizing past insurance claims and using this as the basis for estimating future losses. This method employs standard FEMA statistical techniques, and may be used for developing a sense of flood risk, i.e. total future losses over the 100-year planning horizon. The results below should be considered general and preliminary. It is possible to complete more accurate risk assessments for specific projects using FEMA software and methodologies, combined with information about sites and facilities.

**Figure 7-13**  
**100-Year Risk Projection for NFIP Repetitive Loss Properties in the Borough of Highland Park**

Data	Value
Period in years	30
Number of claims	9
Average claims per year	0.30
Total value of claims	\$115,777
Average value of claims per year	\$3,859
<b>Projected risk, 100-year horizon</b>	<b>\$55,071</b>

### 3.2.6 Flood Risk to Severe Repetitive Loss Properties in Highland Park

Severe Repetitive Flood Loss was also redefined in the Biggert Waters Act as properties that have “incurred flood-related damage for which four or more separate claims payments have been made under flood insurance coverage under this title, with the amount of each claim exceeding \$5,000, and



with the cumulative amount of such claims payments exceeding \$20,000; or for which at least two separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the value of the insured structure.” The data about Severe Repetitive Loss properties in this subsection are based on the previous definition. Under the revised definition above, Highland Park has one SRL property.

Table 7-13 provides basic information about the SRL properties in this jurisdiction. SRL properties are also shown graphically in Figure 7-3 above. Note that the average claim amount for this property is far below the County average, again suggesting low-level flooding. There is, however, an unusually large number of claims for this property – nearly twice the County average of 4.8.

**Table 7-13**  
**Statistics on NFIP Severe Repetitive Loss Properties in the Borough of Highland Park**  
(Source: FEMA National Flood Insurance Program, February 2015)

City/County Name	Properties	Total Building	Total Contents	Total Losses	# of Claims	Average Claim
Borough of Highland Park	1	\$78,536	\$37,241	\$115,777	9	\$12,864
Middlesex County	77	\$14,512,761	\$910,122	\$15,422,883	385	\$40,059

The next table shows the results of a simple risk (future losses) projection for severe repetitive loss properties. This is done by annualizing past losses and using this as the basis for estimating future losses. This method uses standard FEMA techniques, and may be used for developing a sense of flood risk. The results below should be considered general and preliminary. It is possible to complete more accurate risk assessments for specific projects using FEMA software and methodologies.

**Table 7-14**  
**100-Year Risk Projection for NFIP Severe Repetitive Loss Properties in the Borough of Highland Park**

Data	Value
Period in years	30
Number of claims	9
Average claims per year	0.30
Total value of claims	\$115,777
Average value of claims per year	\$3,859
<b>Projected risk, 100-year horizon</b>	<b>\$55,071</b>



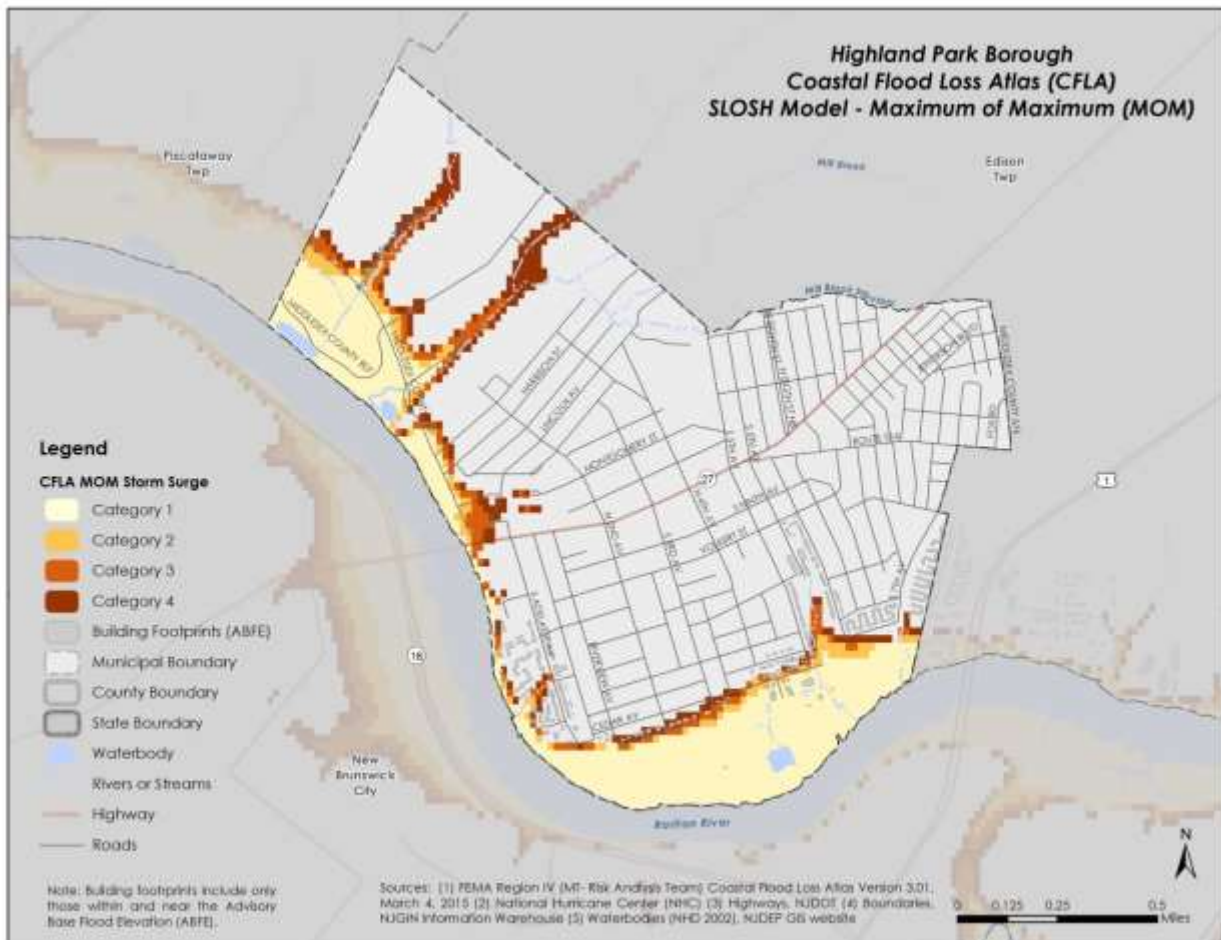


### 3.2.7 Storm Surge

Of the 25 jurisdictions in Middlesex County, 13 have some risk from storm surge. Potential surge in Highland Park is related to the Raritan River, and by extension Raritan Bay. However, it is useful to discuss statistics that are clearly related to surge. Various studies and GIS analysis provide information about the jurisdiction’s exposure to various levels of storm surge. Table 7-14 provides basic information.

Figure 7-4 is a map of storm surge zones 1 through 4 in Highland Park. Category 1 events impact an area substantially similar to the Special Flood Hazard Areas. Even in events up to Category 4, only a relatively limited area of the jurisdiction is impacted by surge.

**Figure 7-4**  
**Map of Storm Surge Zones, Categories 1-4, Highland Park**  
(Source: FEMA Region IV, Coastal Flood Loss Atlas (CFLA) SLOSH – March, 2014)







SLOSH inundation zones from the FEMA Coastal Flood Loss Atlas (CFLA) were used to complete the storm surge vulnerability assessment for Highland Park. The initial analysis included calculating the land area and parcels within Categories 1 - 4 for the jurisdiction. This portion of the risk assessment approach matches the vulnerability assessment completed for the State of New Jersey 2014 Hazard Mitigation Plan. Knowing the land area within each zone can help determine the overall impact to buildings and other infrastructure in the region a result of storm surge.

**Table 7-15**  
**Storm Surge Exposure Statistics for the Borough of Highland Park**  
(Source: FEMA Region IV, Coastal Flood Loss Atlas (CFLA) SLOSH – March, 2014, County GIS)

Storm Surge Category	Square Miles Impacted	Parcels Exposed
1	0.28	62
2	0.31	106
3	0.36	172
4	0.42	250

There is no reliable open-source information that allows assignment of specific probabilities to surge categories, so certain assumptions must be made in order to complete a risk assessment. The next table shows the assumptions used in a simple risk calculation for storm surge.

**Table 7-16**  
**Assumptions for Storm Surge Risk Assessment, Borough of Highland Park**

Data Type	Value
Structures per parcel	1
Structure replacement value/s.f.	\$150
Contents replacement value/s.f.	\$75
Assumed square footage of average structure	2,000

**Table 7-17**  
**Flood Risk in Storm Surge Scenarios, Borough of Highland Park**

	Category 1	Category 2	Category 3	Category 4
Assumed annual probability	2%	1%	0.5%	0.01%
Assumed flood depth (feet)	1	2	3	4
Number of parcels impacted	62	106	172	250
Scenario risk	\$8,091,000	\$13,833,000	\$22,446,000	\$32,625,000
Annual risk	\$161,820	\$138,330	\$112,230	\$32,625
100-year risk	\$2,309,171	\$1,973,969	\$1,601,522	\$465,559



The risk assessment is then based on FEMA depth-damage functions, i.e. indications of the percentage damage at a given flood depth for structure and contents. The main section of the mitigation plan includes a detailed description of the methodology. The results are intended only to provide a general sense of potential losses.

### 3.3 Hurricanes and Tropical Storms

#### Wind Risk Estimates

There are three significant hazards related to hurricanes, tropical storms, and to a lesser extent, nor'easters. These are: floods, storm surge, and high winds. Both floods and storm surge are addressed in the flood section of the present municipal appendix, as well as the County section of the hazard mitigation plan update. This subsection provides a preliminary quantification of hurricane wind risk based that was generated by FEMA's HAZUS-MH software (version 2.1, 2014). The calculations in Table 7-18 show a range of loss categories across the top row versus "occupancy classes" on the first column. The occupancy classes are various land uses that are represented in HAZUS. The last two columns indicate the projected 50-year and 100-year risks, i.e. the total amount of damage over those planning horizons. The figures are based on annualizing losses, then discounting them to present value using the software. There is more detailed information about the calculations and County-wide results in the main section of this HMP update.

#### FEMA Project Worksheets from Tropical Storm Irene and Hurricane Sandy

Following many natural disasters, FEMA engineers and field teams complete formal assessments of damage to community assets, and document these in project worksheets (PWs). The PWs are the basis of FEMA Public Assistance grants for repairs. There are seven categories of damage, indicated by the letters A through G. These are: A – debris removal; B – emergency protective measures; C – roads and bridges; D – water control facilities; E – public buildings; F – utilities, and; G – recreational facilities/other. The categories and amounts of the PWs are listed in Table 7-20 below for Tropical Storm Irene and Hurricane Sandy. Note that in some cases there are multiple different organizations in a community that are applicants for FEMA Public Assistance. In order to simplify the table, the PW amounts for all applicants in a community are combined.



**Table 7-18**  
**Probabilistic Wind Risk in Highland Park, 50- and 100-year Planning Horizons**  
(Source: FEMA, HAZUS-MH version 2.1)

Occupancy Class	Total SF	Building Damages	Contents Damages	Inventory Loss	Relocation Cost	Business Income Loss	Rental Loss	Lost Wages
Residential	6,634,503	\$147,935	\$37,765	\$0	\$8,892	\$3	\$7,292	\$6
Commercial	1,723,217	\$13,596	\$5,566	\$80	\$2,276	\$1,488	\$1,347	\$1,667
Industrial	155,380	\$813	\$522	\$65	\$67	\$8	\$8	\$14
Agricultural	13,486	\$97	\$49	\$6	\$15	\$1	\$1	\$0
Religious	161,847	\$1,404	\$477	\$0	\$196	\$102	\$17	\$240
Government	17,191	\$123	\$65	\$0	\$27	\$1	\$6	\$140
Education	176,215	\$1,198	\$491	\$0	\$217	\$50	\$9	\$118
<b>Totals</b>	<b>8,881,840</b>	<b>\$165,168</b>	<b>\$44,934</b>	<b>\$151</b>	<b>\$11,689</b>	<b>\$1,653</b>	<b>\$8,680</b>	<b>\$2,186</b>

**Table 7-19**  
**Probabilistic Wind Risk in Highland Park, 50- and 100-year Planning Horizons**  
(Source: FEMA, HAZUS-MH version 2.1)

Occupancy Class	Total Annualized Loss	50-year Risk	100-year Risk
Residential	\$201,893	\$2,786,327	\$2,880,813
Commercial	\$26,020	\$359,100	\$371,278
Industrial	\$1,498	\$20,669	\$21,370
Agricultural	\$169	\$2,331	\$2,410
Religious	\$2,436	\$33,621	\$34,761
Government	\$362	\$4,998	\$5,167
Education	\$2,083	\$28,744	\$29,719
<b>Totals</b>	<b>\$234,461</b>	<b>\$3,235,790</b>	<b>\$3,345,517</b>

**Table 7-20**  
**FEMA Public Assistance Expenditures in Tropical Storm Irene and Hurricane Sandy, by Category**  
(Source: FEMA Region II, Public Assistance)

Event Name/Public Assistance Category	A	B	C	D	E	F	G	Total
Tropical Storm Irene	\$21,331	\$38,891	\$0	\$0	\$0	\$0	\$0	\$60,223
Hurricane Sandy	\$99,235	\$79,728	\$0	\$0	\$1,000	\$0	\$0	\$179,963
<b>Total</b>	<b>\$120,566</b>	<b>\$118,619</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$240,186</b>



## 4. Capability Assessment

Each community within the planning area has a unique set of capabilities and priorities that affect its mitigation strategy. The following tables detail the capabilities assessed for the Borough of Highland Park during this plan update.

### 4.1.1 Planning and Regulatory

Tool / Program (code, ordinance, plan)	( Yes/No)	Code Citation and Comments
Master Plan	Y	Re-examination of Master Plan, January 2010
Capital Improvements Plan	Y	Plan being completed
Floodplain Management / Basin Plan	N	
Stormwater Management Plan	Y	
Open Space Plan	N	
Stream Corridor Management Plan	Y	
Watershed Management or Protection Plan	N	
Economic Development Plan	N	
Comprehensive Emergency Management Plan	N	
Emergency Operation Plan	N	
Post-Disaster Recovery Plan	N	
Transportation Plan	N	
Strategic Recovery Planning Report	N	
Zoning Ordinance	Y	
Subdivision Ordinance	Y	
NFIP: Cumulative Substantial Damages	Y	
Growth Management Ordinances	N	
Site Plan Review Requirements	Y	
Stormwater Management Ordinance	Y	§178-187
Municipal Separate Storm Sewer System (MS4)	Y	
Combined Sewer Overflows (CSO)	N	
Natural Hazard Ordinance	N	
Post-Disaster Recovery Ordinance	N	
Real Estate Disclosure Requirement	N	
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Y	

### 4.1.2 Staff/Personnel

Resources	Is this in place? (Y/N)	Department/ Agency/Position
Planning Board	Y	Planning Board and Construction Office
Mitigation Planning Committee	N	
Environmental Board/Commission	Y	Environmental Commission
Open Space Board/Committee	N	
Economic Development Commission/Committee	Y	
Maintenance Programs to Reduce Risk	N	
Mutual Aid Agreements	Y	



Resources	Is this in place? (Y/N)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Borough Engineer and Borough Planner (CME and Schectel Associates)
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Construction Office, Scott Luthman
Planners or engineers on staff with a strong understanding of natural hazards	Y	
NFIP Floodplain Administrator	Y*	
Surveyors	N	
GIS layers and maps	N	
Personnel trained in GIS	N	
Personnel trained in HAZUS	N	
Emergency Manager	Y	
Grant Writer	N	
Staff with expertise in cost/benefit analysis	N	
Professionals trained in conducting damage assessments	N	

#### 4.1.3 Education/Outreach and Community Classifications

Program	Do you Participate in/Use this Program (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	N		
Building Code Effectiveness Grading Schedule (BCEGS)	N		
Public Protection (ISO Fire Protection Classes 1 to 10)	N		
Storm Ready	N		
Firewise	N		
Disaster/Safety Programs in/for Schools	N		
Organizations with Mitigation Focus (advocacy group, non-government)	N		
Public Education Program/Outreach (through website, social media)	Y		
Public-Private Partnerships	N		

#### 4.1.4 Fiscal Capabilities

	Yes/No
Do you have a line item in your operating budget for mitigation project funding?	N
If no, will you look at mitigation actions when allocating funding in the future?	Y
Do you have a line item in the Capital Improvement Budget for mitigation project funding?	N
Have you provided funding for mitigation projects identified in the hazard mitigation plan?	N
Does your town have the authority to Levy Taxes for specific purposes?	Y
Does your town have user fees for water, sewer, gas or electric service?	Y
Do you impose impact Fees for homebuyers or developers of new development/homes?	N
Does your community have an open space acquisition fund?	N
Do you use bonds to finance projects (general obligation bonds, special tax bonds, private activity bonds)	Y



## 5. Mitigation Strategy

This section describes what projects, initiatives, and other actions the Borough has undertaken or plans to implement to reduce risk and loss within its jurisdiction. This includes the status of previously identified actions and any other projects that have been completed since the 2010 Plan was adopted. The additional actions were determined by the LPC based on self-determined priorities and experience.

### 5.1 Past Mitigation Actions

The table below lists the mitigation projects and actions that were included in the original 2010 Plan.

Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority	Status
<b>Highland Park 1:</b> Based on jurisdiction determination work with NJDOT to eliminate flooding on Montgomery Street near Lincoln Avenue	Flood	Existing	Capital Improvement Plan	Municipal Department of Public Works	Based on jurisdiction determination	<\$500,000	NJDOT FMA, PDM-C & HMGP if available <i>Note #2</i>	High	Storm water management, the drains were cleaned
<b>Highland Park 2:</b> Backup power (generator) and/or utility protective measures for Highland Park Borough Hall (serves as EOC) and adjacent Senior Center	All	Existing	Capital Improvement Plan	Municipal OEM	1 year	<\$250,000	HMGP (5% initiative), PDM, Capital Improvements	High	Feasibility Analysis being performed



<b>Highland Park 3:</b> Notification System such as reverse 911 and/or warning sirens	All	NA	Capital Improvement Plan	Municipal OEM	1 to 2 years	To be decided by system specs chosen at time of application	HMGP (5% initiative)	High	The Borough uses "Code Red" as their reverse 911 system, Nixle, Borough Web-site and Kiosks around town
<b>Highland Park 4:</b> Bring Police, Fire Station, First Aid Squad up to current codes and standards	All	Existing	Capital Improvement Plan	Municipal Public Safety Committee	3 years	\$100,000	HMGP, PDM, Capital Improvements	High	Built a new Police Station and renovated the Fire House. The First Aid Squad updated their building

## 5.2 Other Mitigation Activities

The Borough did not report any activities in addition to those included in Section 5.1.

## 5.3 Proposed Mitigation Actions

The table below details the mitigation initiatives the Borough of Highland Park would like to pursue to minimize future effects of hazard events. These actions have been determined through a local assessment of current risk and needs. The LPC met with the Plan Consultant to review all hazard and risk assessment data and evaluate the strategy. These initiatives are dependent upon funding and may change based on municipal priorities and future hazard events.

For each new mitigation action, the Borough has ranked as 'High', 'Medium', or 'Low', based on the evaluation criteria outlined in Section 5.



Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
Elevation or acquisition of repetitive loss properties.	Flood	Existing	OEM	1-3 years	Varies	Grants	High
Pursue CRS application	Flood	Existing	OEM	1-2 years	Staff time	Grants/County Support	High





## 6. Plan Implementation

The LPC shall document, as needed and appropriate:

- Hazard events and losses in Highland Park and the effects that mitigation actions have had on impacts and losses,
- Progress on the implementation of mitigation actions, including efforts to obtain outside funding for projects,
- Any obstacles or impediments to the implementation of actions,
- Additional mitigation actions believed to be appropriate and feasible,
- All public and stakeholder input and comment on the Plan that has been received by the Borough.
- Copies of any grant applications filed on behalf of the Borough

### 6.1 Continued Public Input

The City of Highland Park is committed to incorporating public input into its ongoing hazard mitigation planning. The public will have an opportunity to comment on the Plan prior to any changes and during the 5-year plan update. The annual progress reports will be posted on the County mitigation website in addition to the adopted Plan.

All public comments and input on the plan will be recorded and addressed, as appropriate. Opportunity to comment on the plan will be provided directly through the County's website. Public comments can also be submitted in writing to the County's HMP Coordinator. All public comments shall be addressed to: Middlesex County Office of Emergency Management c/o All Hazards Pre-disaster Mitigation Plan Coordinator, 1001 Fire Academy Drive, Sayreville, NJ 08872.

The City of Highland Park's LPC shall ensure that:

- Copies of the latest approved Plan are available for review at City Hall along with instructions to facilitate public input and comment on the Plan.
- Public notices are made as appropriate to inform the public of the availability of the Plan, particularly during Plan update cycles.
- For minor changes to this appendix, the City of Highland Park will post a notice on the City's website and invite the public to review and comment.
- For major changes involving City Council approval, the City will use its standard public notice procedures inviting the public to review the document and provide feedback.

### 6.2 Plan Adoption

On [insert date] Middlesex County submitted the initial draft of the 2015 Plan Update to NJOEM for review and comment. After addressing NJOEM comments in the document, the HMP was resubmitted



for final consideration and approval by NJOEM and FEMA. FEMA approved the plan on [insert date], and the Plan update was forwarded to the Middlesex County Board of Chosen Freeholders for adoption, which occurred on [insert date].

The Township Council approved the plan on [insert date]. The Township resolution for adoption is provided below, the County's adoption resolution is provided as Appendix F of the 2014 HMP update. Following adoption, the plan update was resubmitted to FEMA for final approval, which occurred on [insert date]. The FEMA approval letter is included as Appendix G.

### 6.3 Plan Maintenance

The Borough of Highland Park will review this Appendix of the County's hazard mitigation plan appendix each year and give the County's HMP Coordinator an annual progress report. The Emergency Management Coordinator is responsible for convening the LPC, initiating the plan review, and submitting the annual progress report. The LPC may use worksheets #1 and #3 in the FEMA 386-4 guidance document, to facilitate the review and progress report. FEMA guidance worksheets are provided in Appendix H. Local progress reports shall be provided to the County HMP Coordinator at least two weeks prior to the annual plan review meeting.

Additionally, the LPC will convene and review the plan when major hazard events impact the jurisdiction, potentially yielding opportunities for mitigation grant funding, or when new information suggests that plan elements do not accurately reflect the community's risk or its mitigation priorities.

If necessary, the Emergency Management Coordinator will convene a meeting of the LPC to review and approve all changes. The Borough retains the discretion to implement minor changes to the document without formal procedures involving the Borough Council subject to local policies and regulations.

In addition to the annual progress report, the Borough of Highland Park will provide Middlesex County with a copy of the written notice of any changes to the jurisdictional appendix at the time such changes are implemented.