



Appendix 6: Township of Hillside

This appendix is part of the 2016 Union County Hazard Mitigation Plan (HMP) update, and includes only jurisdiction-specific information about the Township of Hillside, which is one of the 20 municipalities within Union County that is participating in the plan update. Union County led the planning process and outreach for this update. For a detailed description of the planning process and the public outreach efforts for this update, see Section 3 of the 2016 HMP.

1. Planning Process and Participation

The County formed a Steering Committee, which was responsible for key decisions during the plan update. This committee sent a letter to the Mayor of each municipality within the County. The Mayors and local officials selected a single individual to represent the town in the broader process. This person was the point of contact for the plan update, but worked with other municipal employees, consultants, volunteers, and other stakeholders throughout the planning process. This collection of participants, considered the local planning committee, is listed below. The committee was responsible for various decisions that informed the development of this appendix, including: prioritizing the natural hazards that can affect the community, reviewing and prioritizing the mitigation actions, and informing community leaders about the status of the County mitigation plan update, including this appendix.

The Hillside Township Planning Committee evaluated and identified the hazards of concern, completed the request for information (RFI), reviewed the plan documents and vulnerability assessment, identified local stakeholders for outreach, and worked collectively to update the mitigation strategy. In order to complete the update process, Hillside Township attended the kickoff meeting held by Princeton Hydro in May 2014. To further the plan development, the Hillside Township Planning Committee met with the Consultant to review the plan documents and revise the mitigation strategy in a workshop format on August 8, 2014. The Planning Committee reviewed all drafts and provided input on all aspects of the appendix.

Table 6-1
Township of Hillside Planning Committee Members

Name	Title	Organization
Douglas Ferrigno	OEM Coordinator/Deputy Chief	Hillside Fire Department
Elizabeth Geminder	Director Health Department /Deputy OEM	Health Department
Nick LeMonte	Police Captain/Deputy OEM	Police Department
Rich Vondensteinen	Fire Captain	Fire Department



2. Community Profile

The Township of Hillside has a total area of 2.761 square miles and is located along the northern boundary of Union County, New Jersey. Major transportation routes in Hillside include Route 22, Route 78 and the Garden State Parkway. As of 2010, the population was estimated at 21,404¹. This is a 1.57 percent decrease from the 2000 population, which was estimated at 21,747.² Figure 6-1 is a map of Township of Hillside. See Section 2 of the 2016 Plan update for a map of Union County.

The Township of Hillside was formally incorporated in April 2013 from portions of Union County as well as Elizabeth and Newark in Essex County. The Woodruff House, owned by the Hillside Historical Society, is one of the oldest properties in the Township as a farmstead dated to the 1600's.³ After WWII, industry grew and Hillside has been home to both Bristol-Myers Squibb and Lionel Trains.

The Township of Hillside operates under a Mayor-Council system of government. The Mayor and seven Council member are elected, and the Council member served in staggered terms.

2.1 Land Use and Development

Hillside is a densely developed community, with 92.73 percent of its 2.78 square miles of land area classified as urban/developed. Over 87 percent of the parcels within Hillside are classified as residential, based on tax assessment data. Between 2004 and 2012, 112 building permits were issued for residential homes within the Township. This is 1.36 percent of the total building permits issued for Union County during this time period. Almost 98 percent of these permits were for 1- and 2-family homes. Hillside has a population density of 7699 people per square mile. The 2010 census estimates that 31.5 percent of the housing within the Township was renter-occupied, almost the same as the County average of 30.5 percent renter-occupied properties.

Table 6-2
Land Use/Land Cover Trends
(NJDEP GIS, 2007)

Land Cover Class	2002 (acres)	2007 (acres)	Percent Change	Percent of Total Land ⁴
Agriculture	-	-	-	-
Barren Land	1.34	0.94	-29.31%	0.05%
Forest	54.29	53.51	-1.43%	3.00%
Urban	1,653.14	1,654.30	0.07%	92.73%
Water	13.51	13.23	-2.08%	0.74%
Wetlands	57.58	57.88	0.51%	3.24%

¹ U.S. Dept. of Commerce, Bureau of the Census. American FactFinder, "Hillside Township, NJ".

<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk> Retrieved 10/14/14.

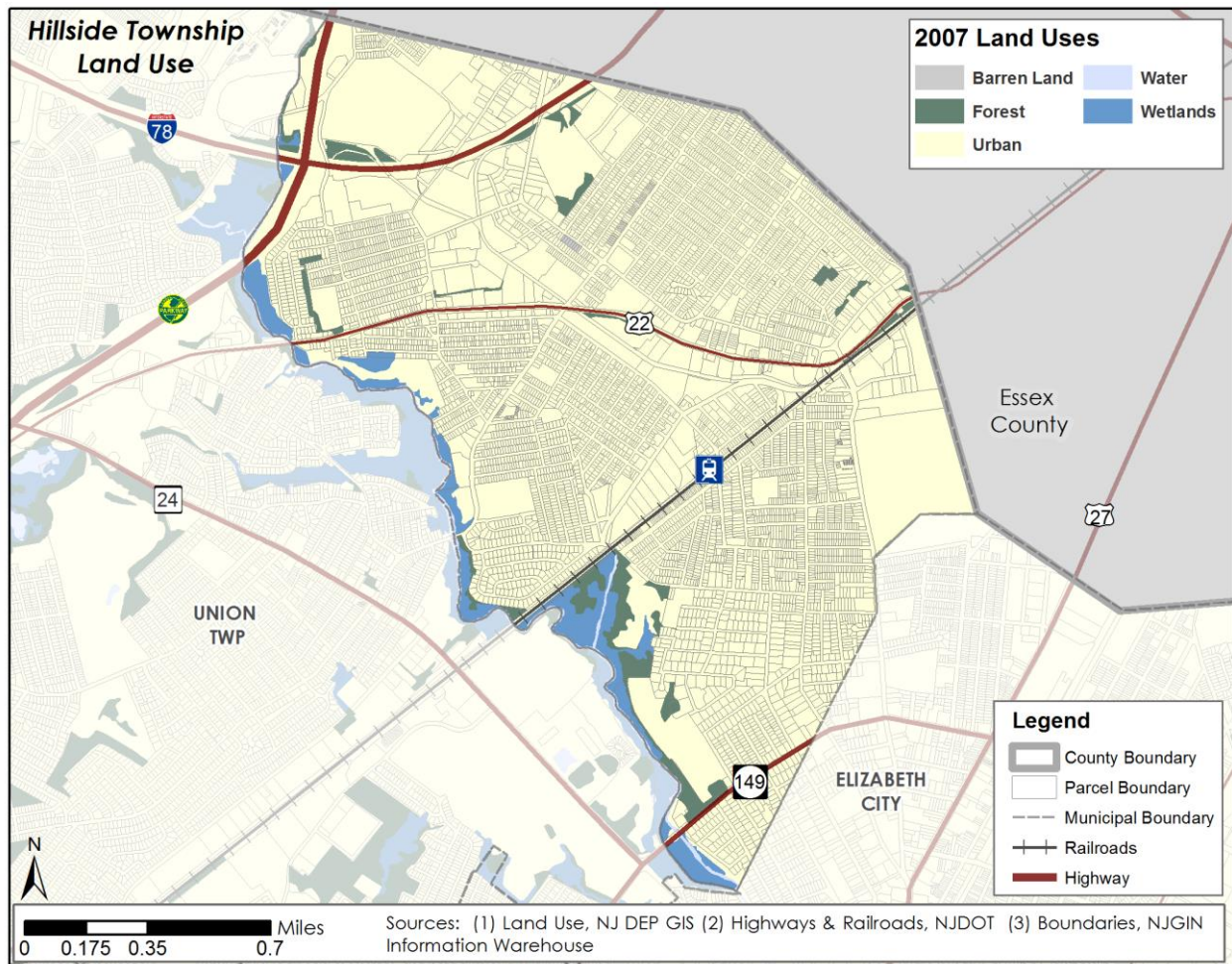
² Ibid. <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF> Retrieved 10/14/14.

³ Hillside Historical Society. Woodruffhouse.org "Historical Overview". <http://www.woodruffhouse.org/overview.htm> Retrieved 10/14/14.

⁴ Uses the 2007 land cover values



Figure 6-1
Land Use/Land Cover Map Township of Hillside





3. Hazard Identification and Risk Assessment

This section of the Hillside mitigation plan appendix describes the natural hazards and risks that can affect the community. It should be noted that -- in accordance with FEMA requirements -- only the hazards with aspects that are unique to the community are included in detail in this appendix.

3.1 Background and Hazard Rankings

Like all the other jurisdictions in Union County, the Township of Hillside is potentially subject to the effects of all the hazards that are considered in this mitigation plan. However, the majority of these hazards have minimal impacts on the area, and are discussed in detail in the County part of the 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 Union County HMP update includes separate appendices for each jurisdiction, this requirement is met in the appendices, while risks that affect the entire County uniformly are discussed in the County part of the HMP.

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. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern.

Table 6-3 shows Hillside’s hazard rankings. The level of discussion and detail about specific hazards in this section are based on these rankings. Hazards that are ranked *high* include the most detail, and to the extent possible include probabilistic assessments of risk, i.e. likely future damages in the community based on the likelihood of occurrence. Hazards that are ranked *medium* have less detail and may in some cases refer to the main part of the county mitigation plan; they usually do not have probabilistic risk assessments, although potential future losses are discussed based on best available data. Hazards ranked *low*

Table 6-3
Township of Hillside Hazard
Identification and Prioritization

Hazard	Priority
Flood	High
Hazmat release – fixed site	High
Hazmat release – transportation	High
High wind – straight-line winds	Med
Severe storm – winter weather	Med
Drought	Low
Earthquake / Geological	Low
Erosion	Low
Extreme temperature – cold	Low
Extreme temperature – heat	Low
Hail	Low
High wind – tornado	Low
Ice storm	Low
Landslide (non-seismic)	Low
Severe storm – lightning	Low
Storm surge	Low
Dam failure	None
Wildfire	None

**Only the hazards ranked high and medium are analyzed in this appendix*



and *none* are not addressed in this jurisdictional appendix because they are discussed in the County part of the HMP, and there are no significant differences in risk between the County and the municipality.

3.2 Flood Hazard

3.2.1 Type, Location and Extent of the Flood Hazard in the Community

Flooding in Hillside Township most often occurs during extreme rain events. These can be simply intense inland storms, tropical cyclones (including hurricanes and their remnants), and sometimes nor-easters. Floodprone areas include Yale and Harvard Avenues (west side of City) and west/northwest of Central Avenue in the area of Baltimore Avenue, etc. – see NFIP records to verify exact streets.

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.⁵ The effective FIRM date for Union County is September 20th, 2006, which is shown as Figure 6-2. The Preliminary FIRM has been released for Union County as of January 30th, 2015. The area within Hillside was not studied as part of this map update. Therefore, the Preliminary FIRM is not different than the Effective FIRM for this jurisdiction.

The Elizabeth River comprises the western boundary of this jurisdiction, and most of the floodplain in Hillside is around this flood source, although there is another area of floodplain and a concentration of flood insurance claims on Baker Street, west of Central Avenue and south of Long Avenue.

Current FEMA guidance uses the term *extent* as analogous to potential severity. The extent of the flood hazard in Hillside Township is relatively minor. The areas discussed above have experienced fairly shallow and low-velocity flooding at various times in the past, and in this case this is the best indicator of extent in the future. The most flood-prone areas of the jurisdiction can expect to experience flooding of a foot or two maximum (occasionally), with more frequent rain events causing a few inches of inundation at low spots, and those adjacent to culverts and stream channels. The current engineering design standard for the jurisdiction is a 25-year event i.e. one with a 4% annual chance of occurring), so events more significant than that have the potential to inundate specific areas.

Table 6-4
Number of Parcels with at least 60% of Area in the Floodplain, Hillside Township

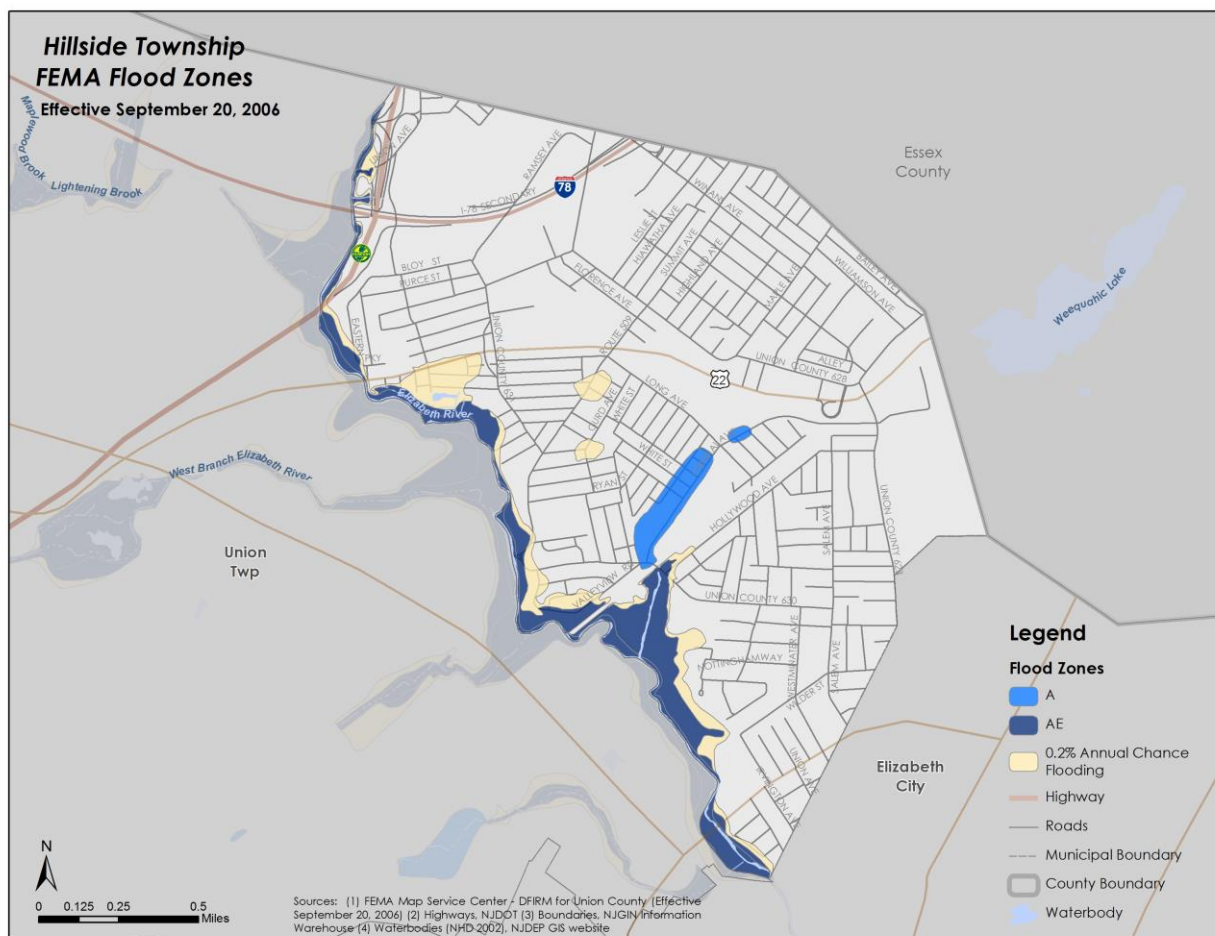
Flood hazard area	Number of Parcels
100-year (1%) floodplain	79
500-year (0.2%) floodplain	180

⁵ FEMA online - Floodplain Management. Flood Insurance Rate Map (FIRM) definition



Table 6-4 shows the number of parcels in Hillside Township with at least 60% of their area in the 100-year (1% annual) and 500-year (0.2% annual) floodplain. Although these figures offer some insight into the flood hazard in this jurisdiction, they are not particularly reliable as a risk indicator because in many cases structures and infrastructure (where the risk-producing impacts occur) are not located in the specific areas that are in the floodplain.

Figure 6-2
Effective FIRM Township of Hillside



3.2.2 Previous Flood Occurrences and the Probability of Future Floods

Minor flooding occurs in Hillside Township at least annually, although the severity of these frequent events is minimal. As discussed in the main (County) section of the mitigation plan, more significant events like tropical cyclones and nor'easters occur every few years (section citation to main plan), and can result in significant flooding. Notwithstanding the potential effects of climate change on weather patterns, the Township can probably expect to experience some level of flooding every year or two, with more significant events happening every five to ten years on average. The main (County) part of



this HMP discusses past occurrences in detail, and that history and statistics are generally the same as for Hillside.

3.2.3 Impacts on the Community, and Community Vulnerabilities to Flooding

As discussed elsewhere, flood impacts in Hillside Township are relatively minor based on various metrics such as NFIP claims, FEMA PA Program Project Worksheets, and the known history of flooding. There is no significant history of flood damage to critical facilities or populations in the jurisdiction.

As discussed below in the subsection on the NFIP, policyholders in Hillside have filed 207 flood insurance claims since 1978. The average of the claims is relatively low, suggesting that flooding in the affected areas is mostly limited to yards and basements.

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). The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. Hillside township has been a member of the NFIP since 1979.

FEMA NFIP statistics indicate that as of February 2014, federal flood insurance policies were in-force on 97 properties in Hillside Township. This represents a dollar value of property and contents coverage totalling \$26,312,300. Between 1978 and 2014, there have been a total of 207 NFIP insurance claims in Hillside Township with a total claims value of \$1,083,443.⁶ Table 6-5 compares the number of policies in-force and paid claims in the jurisdiction. The Table shows that Hillside Township comprises 1.6% of the NFIP policies in-force in Union County.

Table 6-5
Comparison of NFIP Policies and Claims for Hillside Township
and Union County
(Sources: FEMA – NFIP Statistics, February 2014, US Census Bureau, 2010)

City/County Name	# of Parcels	# of Policies In-Force	% of County Policies	# of Claims	Total Paid Claims (\$)
Hillside Township	6,459	97	1.6	207	\$1,083,443
Union County	199,489	6,009	----	5,560	\$96,782,279

⁶ FEMA – Policy and Claim Statistics for Flood Insurance



Hillside Township 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 discounted in increments of 5% based on creditable activities.⁷ 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 6-3 shows all NFIP claims in Hillside Township between 1978 and 2014.

FEMA requires a discussion of NFIP Repetitive Loss and Severe Repetitive flood loss statistics in hazard mitigation plans. The NFIP defines *repetitive loss* properties as those with two or more claims of more than \$1,000 each during any rolling ten-year period.

The flood risk assessment method is based on analysis of NFIP data on repetitive flood loss properties. The NFIP defines repetitive loss (RL) properties as those that have received at least two NFIP insurance payments of more than \$1,000 each in any rolling ten-year period. As of February 2014, Union County had 707 such properties based on a query of the FEMA BureauNet NFIP interface. Of this total, 34 properties were located within Hillside; this comprises 4.8% of the County total. Table 6-6 provides a comparison of the residential repetitive loss claims for Union County and Hillside Township. The tables below include the number of repetitive loss properties, building and contents damages, the total number of claims, and the average claim amounts. Hillside Township has properties, and the total of claims on them is relatively small, as shown in Table 6-6. These properties are also shown in Figure 6-3.

Table 6-6
Summary of NFIP Repetitive Loss Statistics, Union County
and Hillside Township
(Source: FEMA NFIP query, February, 2014)

	Properties	Total Building	Total Contents	Total Losses	# Claims	Average Claim
Hillside Township	34	\$625,346	\$81,643	\$706,990	97	\$7,289
Union County	707	\$16,597,500	\$3,787,671	\$20,385,172	2,061	\$9,891

⁷ FEMA – Community Rating System (CRS).



The RL claims can be broken down by focusing on specific areas in the jurisdiction where flood losses are concentrated. Table 6-7 provides a summary of the four streets with the most cumulative repetitive loss flood insurance claims in Hillside. The table includes the building, contents, and total claims data for the properties. Address data about individual sites is omitted for reasons of confidentiality.

Table 6-7
Summary of Residential NFIP Repetitive Loss Statistics, Hillside Township ordered
by Total Claims Value
(Source: FEMA NFIP query February 2014)

Street Name	Building	Contents	Total	# Claims	Average
Baker Street	\$101,864	\$6,645	\$108,509	17	\$6,383
Cornell Place	\$89,459	\$14,394	\$103,853	13	\$7,989
Harvard Avenue	\$204,844	\$20,431	\$225,275	21	\$10,727
Yale Avenue	\$53,078	\$4,979	\$58,058	10	\$5,806

3.2.5 Flood Risk to Repetitive Loss Properties in Hillside Township

Residential flood risk is calculated by a simple methodology that uses the FEMA default present-value coefficients from the benefit-cost analysis software modules. To perform this calculation, the flood insurance claims data were reviewed to determine an approximate period over which the claims occurred. This method should be used only for very general estimates of flood risk because the NFIP data represents only part of the flood losses in any jurisdiction. This is because there are always properties that are uninsured or under-insured. Most of the flood claims in the most recent query occurred between 1992 and 2012, a period of 29 years.

As shown in Table 6-8, there have been 97 flood insurance claims in the 29-year period, for an average number of claims per year of 3.3. Based on a 100-year horizon and a present value coefficient of 14.27 (the coefficient for 100 years using the mandatory OMB discount rate of 7.0 percent), the projected flood risk to these properties is \$347,888. It must be understood that individuals can obtain and cancel flood insurance policies, and the flood hazard depends on many variables, including the weather, so this projection is simply an estimate of potential damages. Nevertheless, it offers a useful metric that can be used in assessing the potential cost effectiveness of mitigation actions, although in this case, site-specific loss estimates are fairly small, meaning that the amount of grant funds that could be expended on projects will probably be limited.



Table 6-8
Projected 100-year Flood Risk to NFIP Repetitive Loss Properties in Hillside Township
Based on Historic NFIP Claims
(Source: FEMA NFIP query February 2014)

Data	Value
Period in years	29
Number of claims	97
Average claims per year	3.3
Total value of claims	\$706,990
Average value of claims per year	\$24,379
Projected risk, 100-year horizon	\$347,888

3.2.6 Flood Risk to Severe Repetitive Loss Properties in Hillside Township

The definition of Severe Repetitive Flood Loss is included in the County portion of this mitigation plan. As of February 2014, Hillside Township had no NFIP severe repetitive flood loss properties.

3.3 Hazardous Materials Releases

The main section of this hazard mitigation plan includes more details about the hazardous materials hazards in the County as a whole, although by their nature such events are non-probabilistic. As such, it is impossible to estimate risk with any accuracy whatsoever. Hazardous materials releases are included in this appendix because the County required that it remain on the list of hazards, and Hillside Township indicated it as a hazard of high or medium concern. However, for reasons of security and a lack of open-source information, this subsection is necessarily short and very general.

This mitigation plan is a public document, and as such does not include any descriptions specific enough that they could be used for malicious purposes. As part of this HMP update, the planning team queried the New Jersey Department of Environmental Protection Right to Know database. The database includes reports of hazardous materials spills, listing their location, date of occurrence and the type of material. The database was queried from January 2000 to the present day. Results are a combination of occurrences on fixed sites and those related to transportation. For Hillside Township these tended to be in five categories:

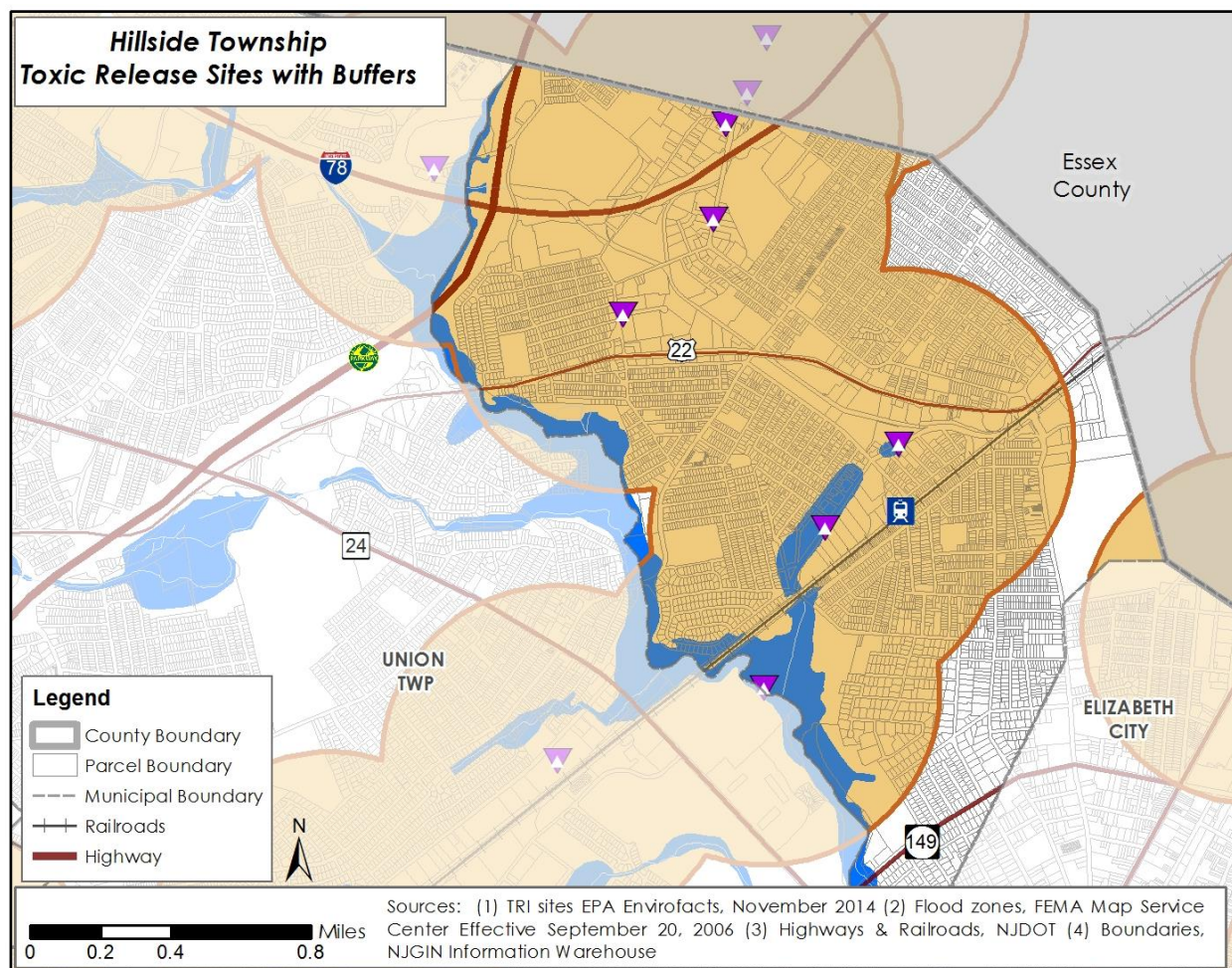
1. Soil contamination
2. Underground tanks (presumably leakage)
3. Illegal dumping
4. Improper storage/disposal
5. Abandoned containers

3.4 Hazardous Materials Releases – Transportation



Because of the large presence of the chemical and oil industries in eastern New Jersey, many major transportation routes and rail lines carry a high volume of hazardous materials, many of which could cause damage, death and injury to Union County under some circumstances. As noted, there are few open sources of information about the materials that are transported on these routes, the routes themselves, or the carriers' schedules. For more information, contact the New Jersey State Department of Environmental Protection or local Emergency Management offices.

Figure 6-4
TRI Site Map Township of Hillside





3.5 Straight-Line Winds

3.5.1 Type, Location and Extent of the Hazard in the Community

The high wind – straight-line wind hazard (including **type**, **location** and **extent**) is uniform across Union County, and is discussed in detail in the County portion of this mitigation plan (see Section 4). For reasons of brevity these details are not repeated here. There are no wind hazards that are unique to Hillside Township.

3.5.2 Previous Occurrences and the Probability of Future Occurrences

Previously occurrences and the probability of future events are the same for Hillside Township as for Union County. Refer to Section 4 for that information at a County level.

3.5.3 Impacts on the Community, and Community Vulnerabilities to the Hazard

Hillside Township is a typical residential community, predominated by balloon-frame and unreinforced masonry residential structures, the majority of which have gable or hip roofs. As discussed in the County part of the plan, wind profiles in this area of the country indicate a relatively low potential for severe events, and adequate construction techniques and building codes have generally sufficed to keep risks low. There are two main sources of potential wind damage in such communities: (1) structural damage to residential and non-residential buildings, and (2) power losses, mainly due to trees falling on above-ground lines. There are established methodologies for completing general risk assessments for these hazards. These are explained in detail in the County portion of the plan (see Section 4). Table 6-9 below summarizes annual straight-line wind risks and cumulative risks over 50- and 100-year planning horizons in Hillside Township. Risks are in seven discreet categories: building damages, contents damages, inventory loss, relocation costs, business income lost, rental income lost and wages lost.



Table 6-9
Straight-line Wind Risks for Range of Loss Types,
Hillside Township, Annualized and 50- and 100-year Planning Horizons

Occupancy Class	Total SF	Total Annualized Damages	50-year Risk	100-year Risk
Residential	\$9,959,538	\$251,080	\$3,465,155	\$3,582,661
Commercial	\$3,488,035	\$48,530	\$669,760	\$692,472
Industrial	\$1,999,485	\$30,990	\$427,699	\$442,203
Agricultural	\$15,330	\$216	\$2,983	\$3,084
Religious	\$135,674	\$2,018	\$27,856	\$28,801
Government	\$26,723	\$775	\$10,699	\$11,062
Education	\$251,785	\$3,827	\$52,811	\$54,602
Total	\$15,876,571	\$337,437	\$4,656,964	\$4,814,885

The next table shows power loss risks in Hillside Township, again annualized and for 50- and 100-year planning horizons. The methodology for these calculations (and additional jurisdiction-level data) can be found in Section 4 of the County plan.

Table 6-10
Straight-line Wind Risks for Power Losses,
Hillside Township, Annualized and 50- and 100-year Planning Horizons

Period	Risk Value
Annual	\$165,348
50-year planning horizon	\$2,281,926
100-year planning horizon	\$2,359,392

3.6 Severe Storms – Winter Weather, Ice Storms, Extreme Temperatures - Cold

3.6.1 Type, Location and Extent of the Hazards in the Community

Because the hazards severe storm – winter weather, ice storms and extreme temperatures – cold are closely related, they are combined in this subsection of the appendix. Severe storms and winter weather risks are discussed in detail in Section 4 of the County portion of this mitigation plan. There are no significant differences in the type, location or extent of this hazard between the County and Hillside Township, and there are no aspects of the hazard that are unique to this jurisdiction.

Previous **occurrences** of the severe storm-winter weather/ice storm/extreme temperature - cold hazards are discussed in detail in the County portion of this hazard mitigation plan (see Section 4), and for reasons of brevity are not repeated here. There are no meaningful differences between the County



as a whole versus Hillside Township with regard to occurrences or the **future probability** of these hazards.

3.6.2 Impacts on the Community, and Community Vulnerabilities to the Hazard

The **impacts** from these three hazards in Hillside Township are substantially similar to the County as a whole, and include lost productivity, traffic accidents, downed trees (and related power losses), medical events (such as heart attacks), and hypothermia (which rarely causes any significant or long-term problems). The community has no unique or pronounced **vulnerabilities** to these hazards. Like most established communities, over time Hillside Township has adapted its systems and infrastructure to minimize the effects of cold weather and associated meteorological effects. In rare cases, buildings may experience structural problems due to snow loads, and public or private infrastructure may fail due to freezing. However, these problems are usually minor and are addressed by private citizens (through their own work, or via insurance proceeds) or by the government in the case of infrastructure.

Perhaps the most significant potential impacts of winter weather are traffic accidents (with related injuries and fatalities), and power losses from ice and downed trees. For the most part, damage to vehicles is addressed via private insurance, records of which are proprietary. However, there are national statistics regarding injuries and deaths related to such weather. Local values for injuries and deaths can be deduced from national statistics. Figures for Hillside Township are displayed in the table below. Refer to the County portion of this mitigation plan for source citations and an explanation of the methodology.

Table 6-11
Winter Storm-related Risks (traffic injuries and fatalities), Hillside Township
50- and 100-year Planning Horizons

	Injuries (combined)	Deaths
Snow/sleet	\$2,939,749	\$333,842
Icy pavement	\$2,287,147	\$251,792
Snow/slush	\$2,204,546	\$221,838
Total annual risk (all hazards)	\$7,431,441	\$807,472
50-year risk	\$102,553,893	\$11,143,116
100-year risk	\$106,046,670	\$11,522,628

An additional source of risk from cold and winter weather is hypothermia deaths. Although the risk from this hazard is relatively small, it can nevertheless be calculated by deduction from national statistics. Annual deaths nationwide were obtained from a U.S. Centers for Disease Control report (National Health Statistics Reports, *Deaths Attributed to Heat, Cold and Other Weather Events in the United States, 2006-2010*).



Table 6-12
Risks from Hypothermia Hillside Township
Annually and 50- and 100-year Planning Horizons

2010 Population	% of US	Annual Death \$	50-year Horizon	100-year Horizon
21,404	0.0068%	\$577,560	\$7,970,323	\$8,241,776

3.7 Lightning

3.7.1 Type, Location and Extent of the Lightning Hazard in the Community

Lightning weather risks are discussed in detail in Section 4 of the County portion of this mitigation plan. There are no significant differences in the type, location or extent of this hazard between the County and Hillside Township, and there are no aspects of the hazard that are unique to this jurisdiction.

3.7.2 Previous Lightning Occurrences and the Probability of Future Occurrences

Previous **occurrences** of the lightning hazard are discussed in detail in the County portion of this hazard mitigation plan (see Section 4), and for reasons of brevity are not repeated here. There are no meaningful differences between the County as a whole versus Hillside Township with regard to occurrences or the **future probability** of this hazard.

3.7.3 Impacts on the Community, and Community Vulnerabilities to the Hazard

Lightning **impacts** in Hillside Township are substantially similar to the County as a whole. These include occasional impacts on electrical systems, and (very infrequently) damage to structures. The most common impact is damage to trees. The community has no unique or pronounced **vulnerabilities** to lightning, but it is possible to complete a basic quantitative estimate of potential risks from lightning deaths and damages based on open source information found in a publication entitled *Lightning Fires and Lightning Strikes*

(Marty Ahrens, June 2013; National Fire Protection Association, Fire Analysis and Research Division). The County portion of this hazard mitigation plan includes citations and further discussion of the methodology and figures (See Section 4). The table below provides estimated risks in Hillside Township from lightning deaths and damages based on statistics described in this publication.

Table 6-13
Lightning-related Risks, Hillside Township
Annual, 50- and 100-year Planning Horizons

Horizon	Deaths	Damages
Annual risk	\$11,891	\$7,633
50-year risk	\$163,538	\$105,341
100-year risk	\$169,107	\$108,929



3.8 Critical and Public Facilities

Building	Address
P.O. 07205	397 Hillside ave.
Trinity Temple Sch.	1500 Maple Ave.
G. Washington Sch.	1530 Leslie St.
Police H.Q.	
Fire Sta.	
Mun. Bldg.	
Fire H.Q.	
Fire Sta.	1420-1424 Maple Ave
A.P. Morris Sch.	143 Coe Ave.
Hillside H.S.	1085 Liberty Ave.
C. Coolidge Sch.	614 Tillman St.
Hurden-Looker Sch.	1261 Liberty Ave.
Pub. Lib.	
W.O. Krumbiegel M.S.	145 Hillside Ave.
Hillside Catholic Academy	397 Columbia Ave.
Saybrook Sch.	100 Woodruff Ave.
P.O. 07205	1146 Liberty Ave.



4. Township of Hillside Mitigation Strategy

This section contains hazard mitigation goals, objectives, and action items for the Township of Hillside. The goals are similar to the goals outlined in the County plan, but the objectives are adjusted for the jurisdiction. The definitions for these terms can be found in Section 5 of the Union County Plan Update.

4.1 Goals

- Goal 1: Improve **LOCAL KNOWLEDGE** about the potential impacts of hazards, and the identification of specific measures that can be taken to reduce their impacts
- Goal 2: Improve **DATA COLLECTION, USE, AND SHARING** to reduce the impacts of hazards
- Goal 3: Improve **CAPABILITIES, COORDINATION, AND OPPORTUNITIES** to plan and implement risk reduction projects, programs, and activities
- Goal 4: Pursue a range of **MITIGATION OPPORTUNITIES**, including addressing NFIP repetitive and severe repetitive loss properties, and reducing risk to public properties and infrastructure

4.2 Objectives

- Objective 1.A: Increase risk awareness among officials and citizens.
- Objective 1.B: Maintain and improve jurisdiction-level awareness regarding funding opportunities for mitigation, including that provided by FEMA and other federal and State agencies.
- Objective 2.A: Improve the availability and accuracy of risk- and mitigation-related data at the local level, as the basis for planning and development of risk-reduction activities.
- Objective 2.B: Ensure that government officials and local practitioners have accurate and current information about best practices for hazard mitigation planning, project identification, and implementation.
- Objective 2.C: Develop and maintain detailed data about critical facilities, as the basis for risk assessment and development of mitigation options.
- Objective 3.A: Continue support of hazard mitigation planning, project identification, and implementation at the municipal level.
- Objective 3.B: Continue close coordination with the County in a range of risk-related areas, such as FEMA programs, mitigation planning, development of hazard mitigation projects, etc.
- Objective 3.C: Increase property owner participation in the National Flood Insurance Program.
- Objective 3.D: Implement activities to improve the community's CRS rating.
- Objective 3.E: Work towards increasing the integration of mitigation principles and activities in a range of local regulations, plans, ordinances and activities.
- Objective 3.F: Maintain and improve coordination with surrounding communities with regard to understanding and reducing risks.
- Objective 4.A: Facilitate development and timely submittal of project applications meeting state and federal guidelines for funding (1) for RL and SRL properties and (2) for hardening/retrofitting infrastructure that is at the highest risk.
- Objective 4.B: Maintain and enhance local planning and regulatory standards related to future development and investments.



4.3 Mitigation Strategy

The table below lists prioritized mitigation projects and actions identified by the Township of Hillside.

4.3.1 Existing Mitigation Strategies

Mitigation Action, Program, or Project	Hazard	Priority	Implementation Mechanism	Responsible Party	Target Start Date	Project Duration	Estimated Cost	Current Status
Construct additional basins to protect the Town Hall which houses the Police Department and the community library (recommendation following engineering study)	Flood	High	Capital Improvement	Hillside Municipality		1-month	\$300,000	<i>Not started. Projected 2017</i>
Upgrade and improvement of storm-water management system for Guard Street/Baker Street-1st, 2nd, and 3rd/Liberty Avenue/Hillside Avenue	Flood	High	Capital Improvement	Hillside Municipal OEM		1-2 years	\$700,000	Completed study. Work not started.
Retrofit the North Avenue station that houses 3 pumps	Flood	Medium	Capital Improvement	Hillside Municipal OEM		1-year	\$200,000	Not started.
Conduct all-hazards public education and outreach program for hazard mitigation and preparedness.	All	High	Emergency Management	OEM Coordinator, in coordination with County OEM		One Year	Staff Time	Ongoing



4.3.2 New Mitigation Strategies

Mitigation Action, Program, or Project	Hazard	Priority	Implementation Mechanism	Responsible Party	Target Start Date	Project Duration	Estimated Cost
Emergency backup generators at the Community Center (274 Hillside Ave) and Senior Center (265 Hollywood Ave.).	Flood/High Wind/Sever Storms/Winter weather- Ice Storm	High	Federal Funding	Department of Public Works	2015	1-year	\$184,800
Tree maintenance and survey along Township ROWs. Analysis and maintenance program.	High Wind/ Ice Storm	High	Local funding	Department of Public Works	2015	ongoing	\$50,000
Join Union County First Alert System. . Develop telephone emergency based system to notify residents, including facebook and twitter.	All-Hazards	Medium	Emergency Management	Fire Department/OEM	2015	2-year	Staff time



4.4 Capability Assessment

As part of this plan update each town self-assessed their existing planning and regulatory tools, communication and emergency response capabilities, staff and personnel, and their capabilities to leverage municipal funds to achieve hazard mitigation planning objectives. This capability assessment should be updated as part of the ongoing maintenance process.

4.4.1 Planning and Regulatory

Tool	Township Has (y/n)
Zoning Ordinance	Y
Subdivision Ordinance	Y
Flood Damage Prevention Ordinance (per NFIP)	Y
Special Purpose Ordinances (e.g. wetlands, critical or sensitive areas)	Y
Stormwater Management Plan/Ordinance	Y
Comprehensive Plan / Master Plan	Y
Capital Improvements Plan	N
Site Plan Review Requirements	Y
Habitat Conservation Plan	N
Economic Development Plan	N
Local EOP	Y
Continuity of Operations Plan	N
Post Disaster Recovery Plan or Ordinance	N
Wildfire Protection Plan	N/A
Real Estate Disclosure req.	Y – State min
Other (e.g. steep slope ordinance, local waterfront revitalization plan)	N
Freeboard	N
Cumulative Substantial Damages	N
Shoreline Management Plan	N/A

4.4.2 Communication and Emergency Response

Does the Township have this (y/n)	
Outdoor warning system	N
Nixle	N
Auto-Dialer/Reverse 911/Emailer	Y
Social Media	Y
Website Updates	Y
Other Emergency Communications	N
Mutual Aid Agreements	Y
Emergency Operations Center	Y
Evacuation Vehicles	Y
Swift-water rescue	N
Shallow water boats	N



4.4.3 Staff/Personnel

	Does this Township have this expertise on staff?
Staff with expertise or training in benefit/cost analysis	Y
Grant Writer(s)	N
Emergency Manager	EM Coordinator
Professionals trained in conducting damage assessments	Y
Scientist familiar with natural hazards in the municipality.	N
Personnel skilled or trained in "GIS" applications	N
Surveyor(s)	N
NFIP Floodplain Administrator	Y
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y

4.4.4 Fiscal Capabilities

Fiscal Mechanism	Does the Township have this capability?
Community development Block Grants (CDBG)	Y
Capital Improvements Project Funding	Y
Authority to Levy Taxes for specific purposes	N
User fees for water, sewer, gas or electric service	Y
Impact Fees for homebuyers or developers of new development/homes	N
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	Y
Incur debt through private activity bonds	N
Withhold public expenditures in hazard-prone areas mitigation grant programs	Y



5. Plan Maintenance and Adoption

5.1 Plan Maintenance

The Township of Hillside 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 G. 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 Township retains the discretion to implement minor changes to the document without formal procedures involving the Township Council subject to local policies and regulations.

In addition to the annual progress report, the Township of Hillside will provide Union County with a copy of the written notice of any changes to the jurisdictional appendix at the time such changes are implemented.

The LPC shall document, as needed and appropriate:

- Hazard events and losses in Linden 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,
- Any changes to local capabilities,
- Efforts to integrate the information included in this plan into other local planning mechanisms including, but not limited to, the comprehensive plan, capital improvement planning, budgeting, zoning amendments, and variance approvals,
- All public and stakeholder input and comment on the Plan that has been received by the Township.
- Copies of any grant applications filed on behalf of the Township



5.1.2 Continued Public Input

The Township of Hillside 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. The Township will post a link to the plan on the municipal website.

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: Union County Office of Emergency Management c/o All Hazards Pre-Disaster Mitigation Plan Coordinator 300 North Ave East, Westfield, NJ 07090.

The Township of Hillside's LPC shall ensure that:

- Copies of the latest approved Plan are available for review at Town 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 Township of Hillside will post a notice on the Township's website and invite the public to review and comment.
- For major changes involving Town Council approval, the Town will use its standard public notice procedures inviting the public to review the document and provide feedback.

5.2 Plan Integration

The Hazard Mitigation Plan is a critical tool to help identify vulnerabilities and develop specific projects to reduce studied risk within the jurisdiction. However, it is not the only tool that may help minimize the impact of future hazard events on the people, infrastructure, and economy in the community. Using the data included in this Plan update to inform future updates of its Comprehensive Plan, Capital Improvement Planning and annual budget, stormwater management, zoning and code updates, and variance and subdivision applications will improve the resiliency of the community and reduce future risk to persons and property. All efforts to integrate the plan into other local mechanisms can be reported to the Plan Coordinator at each annual update.

5.3 Plan Adoption

On [insert date] Union County submitted the initial draft of the 2016 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 Union County Board of Chosen Freeholders for adoption, which occurred on [insert date].



The Town Council approved the plan on [insert date]. The Township's resolution for adoption and the County's adoption resolution are provided as Appendix E of the 2016 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 D.