

9.3 CITY OF ALLENTOWN

This section presents the jurisdictional annex for the City of Allentown.

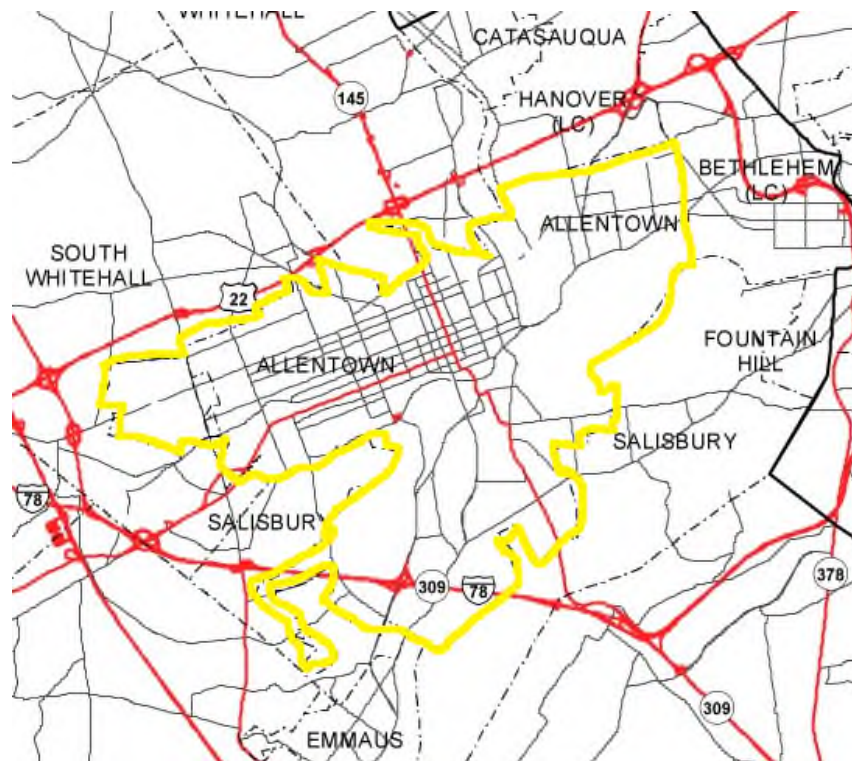
A. HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact		Alternate Point of Contact	
<u>Name</u>	Robert Scheirer	<u>Name</u>	Lee Laubach
<u>Title/</u>	Fire Chief/EMC	<u>Title/</u>	Assistant Fire Chief/DeputyEMC
<u>Department</u>	City of Allentown Fire	<u>Department</u>	City of Allentown Fire
<u>Address</u>	Fire Administration 641 S 10 th Street Allentown, PA 18103	<u>Address</u>	Fire Administration 641 S 10 th Street Allentown Pa.
<u>Telephone</u>	610-437-7765	<u>Telephone</u>	610-437-7765
<u>Email</u>	Robert.Scheirer@allentownpa.gov	<u>Fax</u>	610-437-7765
		<u>Email</u>	Lee.laubach@allentownpa.gov

B. MUNICIPAL PROFILE

With an estimated population of 118,032 (2010 Census), the City of Allentown is the third largest city in Pennsylvania, and is the county seat of Lehigh County. Located on the Lehigh River in southeastern Lehigh County, Allentown is the largest of three adjacent cities creating the urban core of the Lehigh Valley, encompassing an area of approximately 18 square miles. As shown in Figure 1, the City is bordered by the City of Bethlehem and Fountain Hill Borough to the east; Salisbury Township and Emmaus Borough to the south; Upper Macungie Borough to the west; and South Whitehall Township, Whitehall Township, and Coplay Borough to the north.

Figure 1



(Source: <http://www.lvpc.org/pdf/maps/baseMap-LehighNorthamptonCounties.pdf>)

The Jordan Creek and its tributary, the Little Lehigh Creek, join within the city limits and empty into the Lehigh River. Other bodies of water within the city limits include Lake Muhlenberg in Cedar Creek Parkway and a pond in Trexler Park.

The City is served by four major expressways, and is connected to the Interstate Highway System by Interstates 78 and 476, which run adjacent to the City, as well as the Northeast Extension of the Pennsylvania Turnpike. U.S. Route 22, the Lehigh Valley Thruway, also provides a limited access east-west highway connection to the Interstate Highway System to the northern parts of the city. There are nine major inbound roads going into Allentown, with Lehigh Street and SR 145 (MacArthur Road) being the primary north-south roadways, and SR 222 (Hamilton Boulevard) and SR 1002 (Tilghman Street) serving a main east-west corridors. Other major roadways through the City include Airport Road, Cedar Crest Boulevard, Fullerton Avenue, Mauch Chunk Road, and Union Boulevard.

Lehigh Valley International Airport, is located three miles northeast of Allentown in Hanover Township, serving as the City's primary airport. Allentown is a regional center for commercial freight rail traffic, and is home to Norfolk Southern's primary hump classification yards. The city is also served by the R.J. Corman Railroad Group.

D. HAZARD RISK/VULNERABILITY RISK RANKING

The following relative ranking of natural and non-natural hazard risks in this municipality was developed using PEMA’s Risk Factor methodology described in Section 4, “Risk Assessment”

HAZARD RISK	NATURAL HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Flood	3	3	2	3	3	2.8
	Winter Storm	3	2	4	1	3	2.7
MODERATE	Subsidence / Sinkholes	2	3	3	2	1	2.4
	Radon Exposure	4	1	2	1	4	2.4
	Extreme Temperatures	4	1	2	1	3	2.3
	Drought	2	1	4	1	4	2.2
	Wildfire	3	1	2	3	3	2.2
	Hailstorm	3	1	3	2	1	2.1
	Wind, incl. Tornado	1	3	2	4	1	2.1
	Lightning	4	1	1	2	1	2
LOW	Earthquake	1	1	4	4	1	1.9
	Landslide	1	1	1	4	1	1.3

HAZARD RISK	MAN-MADE HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Fire (Urban / Structural)	4	2	1	4	2	2.6
	Env. Hazard and Explosion	3	2	2	4	3	2.6
	Utility Interruption	3	1	3	4	3	2.5
MODERATE	Levee Failure	1	3	2	4	3	2.3
	Transportation Accident	4	1	1	4	1	2.2
	Mass Gathering and Civil Disturbance	3	1	1	4	2	2
LOW	Terrorism	1	3	1	4	1	1.9
	Building Collapse	1	3	1	4	1	1.9
	Dam Failure	1	2	2	4	2	1.9
	Nuclear Incident	1	1	1	4	2	1.4



E. CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Planning and Regulatory Capability
- Administrative and Technical Capability
- Fiscal Capability
- Community Classifications

E.1 Planning and Regulatory Capability

Tool / Program	Status			Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
	In Place	Date Adopted or Updated	Under Development				
Hazard Mitigation Plan	X	7/2006		Lehigh County	+	+	Updating 2012
Emergency Operations Plan	X	4/9/2011		Allentown Emergency Management Agency (EMA)	+	+	
Disaster Recovery Plan			X				
Evacuation Plan	X	4/9/2011		Allentown EMA	0	-	
Continuity of Operations Plan	X	4/9/2011		Allentown EMA	0	-	
NFIP							
NFIP – Community Rating System							
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)							
Floodplain Management Plan	X	4/9/2011		Public Works	0	-	
Zoning Regulations	X	On-going		City Zoning			
Subdivision Regulations	X	On-going		City Zoning			
Comprehensive Land Use Plan (or General, Master or Growth Mgt.	X	On-going		City Zoning			



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Tool / Program	Status			Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
	In Place	Date Adopted or Updated	Under Development				
Plan)							
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X	On-going		City Parks and Recreation			
Stormwater Management Plan / Ordinance	X	On-going		City Water Department			
Natural Resource Protection Plan							
Capital Improvement Plan	X	On-going		City Administration			
Economic Development Plan	X	On-going		Community and Economic Development			
Historic Preservation Plan	X	On-going		Historic SEC			
Farmland Preservation							
Building Code	X	On-going		Building Safety and Standards			
Fire Code	X	On-going		Fire Administration			
Firewise							
Storm Ready							
Other							



E.2 Administrative and Technical Capability

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Public Works	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Public Works	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	X		Public Works	
Emergency Manager	X		Fire	
NFIP Floodplain Administrator				
Land Surveyors				
Scientists or staff familiar with the hazards of the community				
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Public Works	
Grant writers or fiscal staff to handle large/complex grants	X		City Admin	
Staff with expertise or training in Benefit-Cost Analysis	X		Human Resources	
Other				



E.3 Fiscal Capability

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Economic Development	
Community Development Block Grants (CDBG)	X		Economic Development	
Special Purpose Taxes	X		Economic Development	
Gas / Electric Utility Fees	X		Finance	
Water / Sewer Fees	X		Public Works	
Stormwater Utility Fees	X		Public Works	
Development Impact Fees	X		Public Works	
General Obligation, Revenue, and/or Special Tax Bonds	X		Finance	
Partnering Arrangements or Intergovernmental Agreements	X		City Administrator	
Other				



E.4 Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	TBD
Public Protection	TBD	TBD
Storm Ready	Lehigh County	TBD
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. TBD = To Be Determined.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station. Storm Ready communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

F. MITIGATION STRATEGY

F.1 Past Mitigation Activities/Efforts

The following table provides a summary of the disposition of mitigation activities identified in the 2006 plan for the City of Allentown.

2006 Initiative		Status	Review Comments
Description	Location		
Flood control	Water filtration plant - Martin Luther King Blvd.	Continuous	
Flood control	Wastewater treatment plant - Union St.	Continuous	
Nursing home/adult care facility and businesses impacted by flooding	Lehigh St. Corridor	Continuous	

Flood control - intersection floods routinely	Martin Luther King Blvd corridor (300-2500)	Continuous	
Flood control - intersection floods routinely	3rd and Union Sts.	Continuous	
Flood control - intersection floods routinely	2100 Walnut St.	Continuous	
Flood control - Park office floods routinely	2700 Parkway Blvd.	Discontinued	City is in the process of relocating the facility.
Flood control - Park/storage/fueling center flood routinely	Linden St.	Discontinued	City is in the process of relocating the facility.
Flood control - Park office floods routinely	3000 Parkway Blvd.	Discontinued	City is in the process of relocating the facility.
Flood control - Allentown Golf Course	3400 Tilghman St.	Continuous	
Flood control - Adams Island floods routinely impacting 183 residents	1-66 Adams Island	Continuous	
Flood control - businesses and roadway impacted by flooding	2002-2027 Hamilton St.	Continuous	
Flood control - 7 businesses impacted by flooding	Mill St. (600-700 block)	Continuous	
Flood control - Humane Society at risk	640 Dixon St.	Continuous	
Flood control -Wharf St. Boat Club floods routinely	2 Wharf St.	Discontinued	To be under new development soon / corrective actions to be addressed during the design and planning stage
Flood control - 5 businesses at risk from flooding	1 Allen St.	Discontinued	To be under new development soon / corrective actions to be addressed during the design and planning stage
Flood control - business impacted by flooding	1 Pump Place	Discontinued	To be under new development soon / corrective actions to be addressed during the design and planning stage

F.2 Hazard Vulnerabilities Identified

It is estimated that in the City of Allentown, 798 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). Of the municipality's total land area, 9.8% is located within the 1% annual chance flood area. \$459,623,347 (2.2%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area.

There are 171 NFIP policies in the community. While there are 314 structures located within the 1% annual chance flood area, there are only 107 policies issued to property owners in the 1% annual chance flood area. FEMA has identified 15 Repetitive Loss (RL) including 6 Severe Repetitive Loss (SRL) properties in the municipality.

HAZUS-MH estimates that for a 1% annual chance flood, \$87,951,767 (.04%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 1,751 people may



be displaced, 1,236 people may seek short-term sheltering, and an estimated 10,668 tons of debris could be generated.

HAZUS-MH estimates the following damage and loss of use to critical facilities in the community as a result of a 1% annual chance flood event:

Critical Facilities Located in the DFIRM 1% and 0.2% Flood Boundaries and Estimated Potential Damage from the 1% Flood Event

Name	Type	Exposure		Potential Loss from 1% Flood Event		
		1% Event	0.2% Event	Structure Damage	Content Damages	Days to 100-Percent Functional
CITY OF ALLENTOWN	User Defined (Gov)	X	X	5.7	37.0	NA
LEHIGH COUNTY HUMANE SOC	User Defined (Gov)	X	X	5.7	37.0	NA
CITY OF ALLENTOWN	User Defined (Gov)	X	X	2.0	11.7	NA
CITY OF ALLENTOWN	User Defined (Gov)	X	X	0.0	0.0	NA
CITY OF ALLENTOWN	User Defined (Gov)	X	X	0.0	0.0	NA
SALISBURY HOUSE OF NORTHEAST PA INC	User Defined (Res)	X	X	27.6	35.9	NA
COMMONWEALTH OF PA	User Defined (Gov)	X	X	37.1	100.0	NA
COMMONWEALTH OF PA	User Defined (Gov)	X	X	36.0	100.0	NA
COMMONWEALTH OF PA	User Defined (Gov)	X	X	47.4	100.0	NA
COMMONWEALTH OF PA	User Defined (Gov)	X	X	55.0	100.0	NA
COMMONWEALTH OF PA	User Defined (Gov)	X	X	47.8	100.0	NA
OCASIO RAYMOND S & BERTHA L	User Defined (Edu)	X	X	0.0	0.0	NA
U G I CORP-LEHIGH DIV	Electric Power	X	X	-	-	-
PENNA POWER & LIGHT CO	Electric Power		X	-	-	-
Union Terrace Elementary School	School		X	-	-	-

Source: FEMA, 2004; FEMA, 2011; HAZUS-MH 2.1

Notes:

X = indicates the facility location as provided by Lehigh Valley is located in the DFIRM flood zone.

NA = HAZUS-MH 2.1 does not estimate the days to 100-percent functional for user-defined facilities.

- = There is no damage estimate either because the 0.2% annual chance flood event potential loss estimates were not run in HAZUS or HAZUS did not calculate potential loss estimates for some facilities located in the DFIRM flood hazard zone. This is because even though these facilities are located within the boundary of the flood depth grid generated by HAZUS the depth of flooding does not amount to any damages to the structure or contents according to the depth damage function used in HAZUS.

The following vulnerabilities have been identified by the community, within the risk assessment, or in other plan, reports and documents (e.g. FEMA Flood Insurance Studies, Act 167 Stormwater Management Plans):

- None identified.

Please refer to the Hazard Profiles in Section 4 for additional vulnerability information relevant to this jurisdiction.



F.3 Hazard Mitigation Strategy

Note some of the identified mitigation initiatives in Table F are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities.

Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
1	Water Filtration Plant – 1300 MLK Blvd.: Increase the structural stability and drainage around the water plant. Insure the water filtration plant remains running 24/7 under the most adverse conditions (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing
2	Wastewater Plant – 101 Union Street: Increase the structural stability and drainage around the wastewater plant. Insure the plant remains running 24/7 under the most adverse conditions (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Longterm DOF	Existing
3	Lehigh Street and Mill Road Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Lehigh Street and Mill Road to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the residential properties along this street. Lehigh Street is a main artery through the area and is identified as a critical evacuation and response	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	route (from 2006 Plan). This project will address flooding at the Nursing Home at 401 Lehigh Street and 600 Mill Road (specific projects identified in the 2006 Plan).								
4	3 rd and Union Streets Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Union Street and 3 rd Street to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business properties along this Street. Union Street is a main artery through the area and is identified as a critical evacuation and response route (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing
5	300 to 2200 MLK Blvd. Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along MLK Blvd. to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business and residential properties along this street. MLK Blvd. is a main artery through the area and is	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	identified as a critical evacuation and response route (from 2006 Plan).								
6	2100 Walnut Street Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Walnut Street and Elm Street to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business and residential properties along this street. Walnut Street is a main artery through the area and is identified as a critical evacuation and response route (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing
7	3400 Tilghman Street Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Tilghman Street and some type of work along the small streams in the golf course to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business and residential properties and golf course along this street. Tilghman Street is a main artery through the area and is	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	identified as a critical evacuation and response route (from 2006 Plan).								
8	2200 to 2207 Hamilton Street Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Hamilton Street and some type of work along the small stream to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business and residential properties along this street. Hamilton Street is a main artery through the area and is identified as a critical evacuation and response route (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing
9	640 Dixon Street Drainage Improvements: Increase the structural stability and drainage capacity of the culvert along Dixon Street and some type of work along the small stream to alleviate stormwater and small stream flooding. The increased capacity will prevent excess water from undermining the road and flooding the business and residential properties along this street (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
10	1-66 Adams Island Drainage Improvements and Structural Elevations: Increase the structural stability and drainage; attempt to elevate the residents on the Island (from 2006 Plan).	Property Protection; Structural Projects	Flood	High	High	FEMA HMA Grant Funding with City budget or bonding for match	Public Works	Long Term DOF	Existing
11	Work with Lehigh County EMA to install backup power at the City of Allentown Fire Station, 164 West Susquehanna Avenue. This project part of the Lehigh Countywide Generator Project, funded through 2008 LPDM.	Emergency Services	All Hazards	High	Medium	2008 LPDM grant; municipal budget for match	Municipal public works, working with Lehigh County EMA	Short Term	Existing
12	Retrofit (e.g. elevate) structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Specifically identified are the following: - Residential Structures on Adams Island Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation. Phase 2: Where retrofitting is determined to be a viable option, work with property owners toward	Property Protection	Flood	High	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Long-term DOF	Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	implementation of that action based on available funding from FEMA and local match availability.								
13	<p>Purchase, or relocate structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.</p> <p>Phase 1: Identify appropriate candidates for relocation based on cost-effectiveness versus retrofitting.</p> <p>Phase 2: Where relocation is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.</p>	Property Protection	Flood	High	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Long-term DOF	Existing
14	<p>Maintain compliance with and good-standing in the NFIP including adoption and enforcement of floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community.</p> <p>Further, continue to meet</p>	Property Protection	Flood	High	Low - Medium	Local Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, ISO FEMA	Ongoing	New & Existing



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified below.								
15	Conduct and facilitate community and public education and outreach for residents and businesses to include, but not be limited to, the following to promote and effect natural hazard risk reduction: <ul style="list-style-type: none"> • Provide and maintain links to the HMP website, and regularly post notices on the County/municipal homepage(s) referencing the HMP webpages. • Prepare and distribute informational letters to flood vulnerable property owners and neighborhood associations, explaining the availability of mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation. • Use email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures. • Work with neighborhood associations, civic and business groups to disseminate information on flood insurance and the availability of mitigation grant funding. 								
	See above.	Public Education and Awareness	All Hazards	High	Low-Medium	Municipal Budget	Municipality with support from Planning Partners, PEMA, FEMA	Short	N/A
16	Begin the process to adopt higher regulatory standards to manage flood risk (i.e. increased freeboard, cumulative substantial damage/improvements) and sinkhole risk (e.g. carbonate bedrock standards).	Prevention	Flood; Subsidence / Sinkholes	High	Low	Municipal Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA. LVPC for Carbonate Bedrock Standard model ordinance.	Short Term	New & Existing
17	Determine if a Community Assistance Visit (CAV) or Community Assistance Contact (CAC) is needed, and schedule if needed.	Prevention, Property Protection	Flood	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short (year 1)	N/A



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Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
18	Have designated NFIP Floodplain Administrator (FPA) become a Certified Floodplain Manager through the ASFPM, and pursue relevant continuing education training such as FEMA Benefit-Cost Analysis.	Public Education and Awareness	Flood	High	Low	Municipal Budget	NFIP Floodplain Administrator	Short (DOF)	N/A
19	Participate in the Community Rating System (CRS) to further manage flood risk and reduce flood insurance premiums for NFIP policyholders. This shall start with the submission to FEMA-DHS of a Letter of Intent to join CRS, followed by the completion and submission of an application to the program once the community's current compliance with the NFIP is established.	Prevention, Property Protection, Public Education and Awareness	Flood	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short (year 1)	NA
20	Archive elevation certificates	Public Education and Awareness	Flood	High	Low	Local Budget	NFIP Floodplain Administrator	On-going	NA
21	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	All Categories	All Hazards	High	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Municipality (via mitigation planning point of contacts) with support from Planning Partners (through their Points of Contact), PEMA	Ongoing	New & Existing
22	Complete the ongoing	Emergency	All Hazards	High	Low	Local	Municipality	Ongoing	New &



Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	updates of the Comprehensive Emergency Management Plans	Services				Budget	with support from PEMA		Existing
23	Create/enhance/ maintain mutual aid agreements with neighboring communities for continuity of operations.	Emergency Services	All Hazards	High	Low	Local Budget	Municipality with support from Surrounding municipalities and County	Ongoing	New & Existing
24	Identify and develop agreements with entities that can provide support with FEMA/PEMA paperwork after disasters; qualified damage assessment personnel – Improve post-disaster capabilities – damage assessment; FEMA/PEMA paperwork compilation, submissions, record-keeping	Public Education and Awareness, Emergency Services	All Hazards	High	Medium	Local budget	Municipality with support from County, PEMA, FEMA	Short	NA
25	Work with regional agencies (i.e. County and PEMA) to help develop damage assessment capabilities at the local level through such things as training programs, certification of qualified individuals (e.g. code officials, floodplain managers, engineers).	Public Education and Awareness, Emergency Services	All Hazards	Medium	Medium	Local budget, FEMA HMA and HLS grant programs	Municipality with support from County, PEMA	Short – Long-term DOF	NA

Notes:

*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (NA) is inserted if this does not apply.

Costs:

Where actual project costs have been reasonably estimated:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where actual project costs cannot reasonably be established at this time:

Low = Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.



Medium = Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

High = Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Potential FEMA HMA Funding Sources:

PDM = Pre-Disaster Mitigation Grant Program

FMA = Flood Mitigation Assistance Grant Program

RFC = Repetitive Flood Claims Grant Program

SRL = Severe Repetitive Loss Grant Program

HMGP = Hazard Mitigation Grant Program

Timeline:

Short = 1 to 5 years. Long Term= 5 years or greater. OG = On-going program.

DOF = Depending on funding.

G. ANALYSIS OF MITIGATION ACTIONS

Municipal mitigation actions were evaluated and prioritized primarily using the PA STEEL methodology discussed in Section 6 of this plan. Per the cost-benefit weighted PA STEEL methodology, those actions receiving 20 or more favorable ratings were generally considered high-priority actions. However, other factors beyond the PA STEEL numeric ranking may have been considered by the municipality during project prioritization. For example, a project might be assigned a medium priority because of the uncertainty of a funding source, and could be changed to high once a funding source has been identified such as a grant.

Mitigation Action		PA STEEL CRITERIA CONSIDERATIONS																				Results				
		(+) Favorable					(-) Less favorable					(N) Not Applicable														
		P Political			A Administrative				S Social		T Technical			E Economic				E Environmental						L Legal		
Political Support	Local Champion	Public Support	Staffing	Funding Allocation	Maintenance / Operations	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Benefit of Action (x3)	Cost of Action (x3)	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Site	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	State Authority	Existing Local Authority	Potential Legal Challenge				
1	Water Filtration Plant – 1300 MLK Blvd.	+	+	+	N	+	+	+	+	+	+	-	+	+	+	+	N	N	N	N	N	N	+	-	14 / 2 / 7	18 / 2 / 7
2	Wastewater Plant – 101 Union Street	+	+	+	N	+	+	+	+	+	+	-	+	+	+	+	N	N	N	N	N	N	+	-	14 / 2 / 7	18 / 2 / 7
3	Lehigh Street and Mill Road Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
4	3 rd and Union Streets Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)



SECTION 9.3: CITY OF ALLENTOWN

5	300 to 2200 MLK Blvd. Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
6	2100 Walnut Street Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
7	3400 Tilghman Street Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
8	2200 to 2207 Hamilton Street Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
9	640 Dixon Street Drainage Improvements	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	+	N	N	+	+	+	+	-	17 (+) 2 (-) 4 (N)	21 (+) 2 (-) 4 (N)
10	1-66 Adams Island Drainage Improvements and Structural Elevations	+	+	+	+	-	+	+	+	+	+	N	+	+	N	+	-	-	N	-	+	N	+	+	15(+) 4(-) 4(N)	19(+)) 4(-) 4(N)
11	Generators	+	+	-	N	+	+	N	N	+	+	N	+	+	N	+	N	N	N	N	+	N	+	N	11+ 1- 11N	17+ 1- 11N
12	Retrofit Vulnerable Properties	+	+	+	-	-	+	+	+	+	+	+	+	+	+	-	+	+	+	N	+	N	+	+	18 (+) 3 (-) 2 (N)	22 (+) 3 (-) 2 (N)
13	Acquire Vulnerable Properties	+	+	+	-	-	-	+	-	+	+	+	+	+	-	+	+	+	+	+	N	+	+	17 (+) 5 (-) 1 (N)	21 (+) 5 (-) 1 (N)	
14	Maintain NFIP compliance	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	-	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)	
15	Public Education and Outreach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	N	N	+	+	17 (+) 0 (-) 6 (N)	21 (+) 0 (-) 6 (N)	



SECTION 9.3: CITY OF ALLENTOWN

16	Higher Regulatory Standards	+	+	-	+	+	-	-	-	+	+	+	+	+	+	+	+	N	N	+	+	+	+	-	16 (+) 5 (-) 2 (N)	20 (+) 5 (-) 2 (N)
17	Community Assistance Visit	+	+	+	+	+	-	+	+	+	N	N	+	+	+	+	N	N	N	N	+	N	+	-	14 (+) 2 (-) 7 (N)	18 (+) 2 (-) 7 (N)
18	NFIP FPA become a Certified Floodplain Manager	+	+	+	+	-	+	+	+	+	N	+	+	+	+	+	N	N	N	N	N	N	+	+	15 (+) 1 (-) 7 (N)	19 (+) 1 (-) 7 (N)
19	Join Community Rating System	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	+	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)	
20	Archive Elevation Certificates	+	+	+	+	+	+	+	+	+	N	+	+	+	N	+	N	N	N	N	+	N	+	+	17 (+) 0 (-) 7 (N)	20 (+) 0 (-) 7 (N)
21	Support Plan Maintenance and Update	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	+	+	+	+	19 (+) 0 (-) 4 (N)	23 (+) 0 (-) 4 (N)	
22	Update CEMP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	+	+	+	20 (+) 0 (-) 3 (N)	24 (+) 0 (-) 3 (N)	
23	Enhance Mutual Aid Agreements	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	N	+	+	19 (+) 0 (-) 3 (N)	23 (+) 0 (-) 3 (N)	
24	Identify Post-Disaster Capabilities	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	N	N	N	+	N	+	+	18 (+) 1 (-) 4 (N)	22 (+) 4 (-) 4 (N)	
25	Develop Post-Disaster Capabilities	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	N	N	+	N	+	+	15 (+) 4 (-) 4 (N)	17 (+) 6 (-) 4 (N)



H. FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

A more detailed flood loss analysis could be conducted on a structural level (versus the Census block analysis conducted for the HMP). The location of each building, details regarding the building (see additional data needed below) and the assessed or fair market value could be included in HAZUS-MH. The FEMA DFIRM boundaries, FEMA Flood Insurance Study detailed studies, base flood elevations and available Light Detection and Ranging (LiDAR) data or digital elevation models (DEM) could be used to generate a more accurate flood depth grid and then integrated into the HAZUS model. The flood depth-damage functions could be updated using the U.S. Army Corps of Engineer damage functions for residential building stock to better correlate HAZUS-MH results with FEMA benefit-cost analysis models. HAZUS-MH would then estimate more accurate potential losses per structure.

Additional data needed to perform the analysis described above:

- Specific building information – first-floor elevation (elevation certificates), number of stories, foundation type, basement, square footage, occupancy type, year built, type of construction etc.
- Assessed or fair market value of structure
- LiDAR or high resolution DEM

I. HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map has been generated and is provided below for the City of Allentown to illustrate the probable areas impacted within the City of Allentown. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Allentown has significant exposure. The Planning Area maps are provided in the hazard profiles within Section 4, Volume I of this Plan.

J. ADDITIONAL COMMENTS

No additional comments at this time.

