

9.25 WHITEHALL TOWNSHIP

This section presents the jurisdictional annex for Whitehall Township.

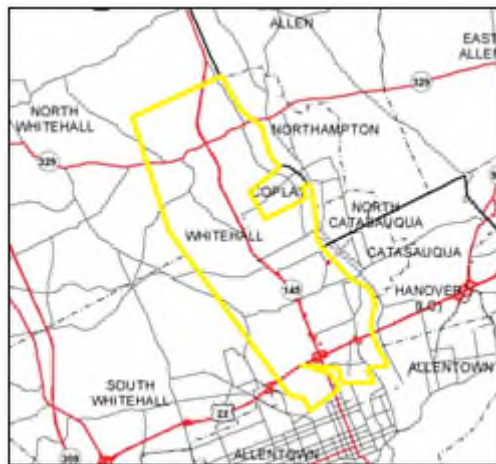
A. HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact		Alternate Point of Contact	
<u>Name</u>	Christopher Grim	<u>Name</u>	Ann Freyman
<u>Title/</u>	Emergency Management Coordinator	<u>Title/</u>	Deputy Emerg. Mgt. Coordinator
<u>Department</u>		<u>Department</u>	
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B. MUNICIPAL PROFILE

Whitehall Township is a rural-suburban township located in east-central Lehigh County, along the border with Northampton County. The township encompasses a land area of 12.8 square miles, and has a population of 26,738 (2010 Census). As shown in Figure 1, Whitehall Township is bordered by Coplay Borough, Catasauqua Borough, Hanover Township (all in Lehigh County), Northampton Borough, and North Catasauqua Borough (both Northampton County) to the east; the City of Allentown (Lehigh County) to the south; South Whitehall Township (Lehigh County) to the west and southwest; and North Whitehall Township (Lehigh County) to the west and northwest.

Figure 1



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

Whitehall Township is situated along the western bank of the Lehigh River. The township drains to the Lehigh River, which separates it from Northampton County and Catasauqua Borough. Three tributaries of the Lehigh River drain the township: Spring Creek in the northern-most area, Coplay Creek for the central and majority of the township, and Jordan Creek in the southern area bordering South Whitehall and Allentown.

The township's main north-south road is Route 145 (MacArthur Road,) which has an interchange with Highway 22 in the southern-most part of the township, and crosses Route 329 in the north. Route 329 runs east-west across the northern part of the township, connecting to Northampton County in the east and North Whitehall Township in the west. In the south, Route 22 crosses east-west through Whitehall, connecting points in eastern PA to Allentown, and continuing west through Pittsburgh and beyond. Locally, Mechanicsville Road and Lehigh Street bisect the center of the township, running east-west to points west to South Whitehall and east to North Catasauqua, Northampton County, respectively.

B.1 Known or Anticipated Future Development

The following table summarizes major residential/commercial development and major infrastructure development that are identified for the next five (5) to ten (10) years in the municipality. Refer to the map at the end of this annex which illustrates the hazard areas within the municipality.

Property Name	Type (Residential or Commercial)	Number of Structures	Location	Known Hazard Zone*	Description / Status
No known or anticipated development in the Township identified at this time.					

* Only location-specific hazard zones or vulnerabilities identified. With the exception of flood, wildfire, landslides, and land subsidence/sinkholes, all locations within the Lehigh Valley are exposed to the natural hazards addressed in this plan.

C. NATURAL HAZARD EVENT HISTORY SPECIFIC TO WHITEHALL TOWNSHIP

Type of Event and Date	FEMA Disaster # (if applicable)	Local Damage and Losses
Hurricane Irene 8-28-11	DR-4025	Road Closure – 9,700 ADT-6 days
Tropical Storm Lee 9-05-11	DR-4030	Road Closure – 9,700 ADT 12days
Rain Event 9-27-11		Road Closure -9,700 ADT-5 days
Rain Event – Water St culvert blocked 10-14 -11		Road closure -9,700 ADT 2 days
Rain Event – Water St. Culvert blocked 10-19-11		Road Closure 9,700 ADT-2 days

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	Winter Storm	3	2	4	1	3	2.7
	Flood	3	2	2	3	3	2.5
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
MOD-ERATE	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
	Levee Failure	0	0	0	0	0	0



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	2006		Lehigh County and Whitehall Twp. Emergency Management Agency (EMA)	+		Updating 2012
Emergency Operations Plan	X	1/1/2010		Whitehall Twp. EMA			
Disaster Recovery Plan			X				
Evacuation Plan	X	1/1990					
Continuity of Operations Plan			X				
NFIP	X			Planning, Zoning and Development (PZ & D)			
NFIP – Community Rating System	X			PZ & D			
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	X			PZ & D			
Floodplain Management Plan	X			PZ & D			
Zoning Regulations	X			PZ & D			
Subdivision Regulations	X			PZ & D			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X			PZ & D			

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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				
Open Space Management Plan (or Parks/Rec or Greenways Plan)	X			PZ & D & Recreation			
Stormwater Management Plan / Ordinance	X			PZ & D			
Natural Resource Protection Plan			X	PZ & D			
Capital Improvement Plan	X			Whitehall Twp. Admin.			
Economic Development Plan							
Historic Preservation Plan							
Farmland Preservation			X	PZ & D			
Building Code	X			PZ & D			
Fire Code	X		X	PZ & D			
Firewise							
Storm Ready	X	3/1/2012		Whitehall Twp. EMA			
Carbonate Bedrock Standard	X				+	+	



E.2 Administrative and Technical Capability

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

E.3 Fiscal Capability

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Whitehall Twp. Admin.	
Community Development Block Grants (CDBG)	X		Varied grant opportunities; Primarily through Planning, Zoning & Development however	Primarily used for housing, nuisance abatement and accessibility; the Township has not yet used these funds for other approved projects
Special Purpose Taxes				
Gas / Electric Utility Fees				
Water / Sewer Fees				
Stormwater Utility Fees	X		Planning, Zoning & Development	Only for new systems reviews and tri annual inspections
Development Impact Fees	X		Planning, Zoning & Development	Recreation & Traffic
General Obligation, Revenue, and/or Special Tax Bonds	X		Whitehall Twp. Admin.	
Partnering Arrangements or Intergovernmental Agreements	X		Whitehall Twp. Admin.	
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 summarizes progress on the mitigation strategy identified by the Township in the 2006 plan.

2006 Initiative		Status	Review Comments
Description	Location		
Bridge replacement	SR 1014 at Coplay Creek	In Progress / Not Yet Complete	Penn Dot bridge to be under construction by year end 2012
Storm drainage improvements	Overlook Basin	No progress / Unknown	Funding not available

Improvements to existing culvert	Norfolk Southern culvert at Coplay Creek - Water St.	No progress / Unknown	Second cell collapsed and is blocked. Bridge engineer will be evaluating.
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Further details on mitigation activities in the Township include:

- Road reconstruction and bridge expansion in Darktown.
- Bridge replacement at SR 1014 and Coplay Creek, anticipated to be under construction by year end 2012.
- Improvements to existing Norfolk Southern culvert at Coplay Creek and Water Street needed but not initiated. Second cell collapsed and is blocked. A bridge engineer is currently evaluating.
- The Township has included links to the www.floodsmart.gov website on their website.
- The Township adopted a Carbonate Bedrock Standard to mitigate the risk of sinkholes on new construction.

F.2 Hazard Vulnerabilities Identified

It is estimated that in Whitehall Township, 216 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). Of the municipality's total land area, 7.1% is located within the 1% annual chance flood area. \$55,257,330 (1%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area.

There are 56 NFIP policies in the community. While there are 85 structures located within the 1% annual chance flood area, there are only 25 policies issued to property owners in the 1% annual chance flood area. FEMA has identified 2 Repetitive Loss (RL) and no Severe Repetitive Loss (SRL) properties in the municipality.

HAZUS-MH estimates that for a 1% annual chance flood, \$3,547,116 (.1%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 977 people may be displaced, 795 people may seek short-term sheltering, and an estimated 4,617 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
WHITEHALL TWP	User Defined (Gov)	X	X	-	-	-
Coplay-Whitehall Sewer Authority	WWTF		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):

- Flooding issues in Darktown
- Flooding on Creekside Road.
- Flash Flooding
 - o Business loss due to flooded Road – SR 1010 – due to Coplay Creek. Access to home and businesses restricted. Rescues in the past.
 - o Limited fire response for homes on Water Street.
- Individual residential property affected by sinkhole.
- Tornado/windstorms lead to power outages in many cases. In one case traffic lights on 145 intersections were out for 24 hours. Township does not have enough generator resources to provide full back-up coverage.
- Salt storage capacity limits ability to address back-to-back winter storm events.
- Transportation Accidents – when streets close due to accidents, traffic flow can be backed up or halted completely for 24 hours. Removal of 5th Street Bridge will worsen these occurrences.

Please refer to the Hazard Profiles 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	Norfolk Southern Culvert over Coplay Creek – Engineering and removal of flow restriction from the original 1910 design of the culvert. At present, SR 1010 ADT of 15,000 closes. Water Street homes are without fire services during flooding due to the weight restriction and poor condition of the bridge to the north (SR 1014) that is the only other access to Water Street. 5 businesses in the area of Eberhart Road must close during times of flooding.								
	See above.	Structural Projects; Property Protection	Flood	High	Medium	TBD	Whitehall Township with support from Twp. Public Works	Long Term DOF	Existing
2	Overlook Basin Upgrades at Overlook Road – Upsize the existing outfall piping to keep flows underground to the Jordan Creek. The emergency spillway for this basin uses three township roads and Rt.145 to convey the stormwater to the Jordan Creek during overtop conditions. The roadways are mass transit and school bus routes coupled with high pedestrian traffic; such exposure in this corridor would be eliminated.								
	See above.	Structural Projects; Property Protection	Flood	Medium	High	TBD	Whitehall Township	Long Term DOF	New
3	Whitehall Police Department Emergency Generator replacement/upgrade- Presently the PD emergency generator only provides emergency lighting during power outages. The goal is to replace the generator upgrading to full stand-alone operation of the PD with 24 hours operation of 50 employees.								
	See above.	Emergency Services; Property Protection	Severe Storm (wind); Severe Winter Storm; Utility Interruption	Medium	High	TBD	Whitehall Public Works and Police Department	Long Term DOF	Existing
4	Sinkhole on Florida Avenue – sinkhole remediation to protect infrastructure which has caused substantial damage to one residential structure and threatens neighboring homes, streets and infrastructure.	Property Protections; Structural Projects	Sinkholes	High	High	TBD	Whitehall Township Planning and Development	Long Term DOF	Existing

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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*
5	Traffic/Evacuation/Emergency Route flooding	Critical facilities are the malls and nursing facilities	All Hazards	Medium	Low	Federal, State, Municipal funding	Whitehall Twp. Police, Fire and Public Works	Long Term	Existing
6	Development of Emergency Mgt. Office and EOC	Emergency Services	All Hazards	Medium	Low	TBD	Whitehall Twp. Office of Emergency Mgt.	Long Term DOF	N/A
7	Work with PennDOT to conduct additional studies of the impacts of removing the 5 th Street bridge which is adjacent and parallels SR 1015.	Structural Projects	Traffic Accidents	Low	Low	Federal, State funding	Twp. Engineering with PennDOT	Long Term DOF	Existing
8	Work with Lehigh County EMA to install backup power at the Whitehall Township Authority, 1901 Schadt Avenue. This project part of the Lehigh Countywide Generator Project, funded through 2008 LPDM.	Emergency Services	All Hazards	High	Low – Medium (local share of LPDM grant)	2008 LPDM grant; local budget for match	Municipal public works, working with Lehigh County EMA	Short Term	Existing
9	Retrofit 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: - Residences on Creekside Road (incl. 2 Repetitive Loss) Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation.	Property Protection	Flood	Medium-High*	Medium	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



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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*
	Phase 2: Where retrofitting 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.								
10	<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>Specifically identified are the following: - Residences on Creekside Road (incl. 2 Repetitive Loss) - Sinkhole remediation to protect infrastructure near private home which has suffered significant sinkhole damage. Twp will follow procedures to mitigate future involvement of neighboring homes, streets, and infrastructure.</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</p>	Property Protection	Flood	Medium-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



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	implementation of that action based on available funding from FEMA and local match availability.								
11	<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 and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified below.</p>	Property Protection	Flood	High	Low - Medium	Municipal Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, ISO FEMA	On-going	New & Existing
12	<p>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:</p> <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. • Have already recommended sinkhole insurance to residents through the Township Newsletter. 								
	See above.	Public Education and Awareness	All Hazards	High	Low-Medium	Municipal Budget	Municipality with PEMA, FEMA	Short	N/A
13	Begin the process to adopt higher regulatory standards to	Prevention	Flood	High	Low	Municipal Budget	Municipality (via Municipal	Short Term	New & Existing



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	manage flood risk (i.e. increased freeboard, cumulative substantial damage/improvements).						Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA		
14	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 Term	N/A
15	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 Term DOF	N/A
16	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 Term	NA
17	Archive elevation certificates	Public Education and Awareness	Flood	High	Low	Municipal Budget	NFIP Floodplain Administrator	On-going	NA
18	Continue to support the implementation, monitoring,	All Categories	All Hazards	High	Low – High (for	Municipal Budget,	Municipality (via mitigation	On-going	New & Existing



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	maintenance, and updating of this Plan, as defined in Section 7.0				5-year update)	possibly FEMA Mitigation Grant Funding for 5-year update	planning point of contacts) with support from Planning Partners (through their Points of Contact), PEMA		
19	Complete the ongoing updates of the Comprehensive Emergency Management Plans	Emergency Services	All Hazards	High	Low	Municipal Budget	Municipality with support from PEMA	On-going	New & Existing
20	Create/enhance/ maintain mutual aid agreements with neighboring communities for continuity of operations.	Emergency Services	All Hazards	High	Low	Municipal Budget	Municipality with support from Surrounding municipalities and County	On-going	New & Existing
21	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	Medium	Medium	Municipal budget	Municipality with support from County, PEMA, FEMA	Short Term	NA
22	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,	Public Education and Awareness, Emergency Services	All Hazards	Medium	Medium	Municipal budget, FEMA HMA and HLS grant programs	Municipality with support from County, PEMA	Short Term DOF	NA



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*
	engineers).								

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			SUMMARY (EQUAL WEIGHTING)	SUMMARY (BENEFITS & COSTS PRIORITIZED)		
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	Norfolk Southern Culvert Upgrades over Coplay Creek	+	+	+	+	-	-	+	+	+	+	N	+	+	N	+	+	N	N	N	+	N	+	N	14+ 2- 7N	20+ 2- 7N
2	Overlook Basin Upgrades at Overlook Road	+	+	+	-	-	-	+	+	+	+	N	+	-	N	+	+	N	N	N	+	N	+	N	12+ 4- 7N	15+ 4- 7N
3	Whitehall PD Emergency Generator Upgrades	+	+	-	N	+	+	N	N	+	+	N	+	+	N	+	N	N	N	N	+	N	+	N	11+ 1- 11N	17+ 1- 11N



SECTION 9.25: WHITEHALL TOWNSHIP

4	Florida Avenue sinkhole remediation	+	+	-	+	-	+	+	+	+	+	+	N	+	+	N	+	N	N	N	N	+	N	+	+	14+ 2- 7N	20+ 2- 7N
5	Traffic Evacuation Emergency Route	+	+	-	+	+	+	-	+	+	-	-	+	+	N	-	+	N	N	+	+	+	+	-	12(+) 6(-) 3(N)	16(+) 6(-) 3(N)	
6	Development of EMA and EOC	+	+	-	N	+	-	N	-	+	N	N	+	+	N	+	N	N	N	N	+	N	N	N	6+ 5- 12N	12+ 5- 12N	
7	Impact analysis of 5 th Street Bridge closure	+	+	+	N	+	+	+	+	+	+	-	+	+	+	+	N	N	N	N	N	N	+	-	14 / 2 / 7	18 / 2 / 7	
8	Lehigh County Generator Project	+	+	-	N	+	+	N	N	+	+	N	+	+	N	+	N	N	N	N	+	N	+	N	11+ 1- 11N	17+ 1- 11N	
9	Retrofit Vulnerable Structures	+	+	+	-	-	+	+	+	+	+	+	+	+	-	+	+	+	N	+	N	+	+	18 (+) 3 (-) 2 (N)	22 (+) 3 (-) 2 (N)		
10	Acquire Vulnerable Structures	+	+	+	-	-	-	+	-	+	+	+	+	+	-	+	+	+	+	+	N	+	+	17 (+) 5 (-) 1 (N)	21 (+) 5 (-) 1 (N)		
11	Maintain NFIP compliance	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	-	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)		
12	Public Education and Outreach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	N	N	+	+	17 (+) 0 (-) 6 (N)	21 (+) 0 (-) 6 (N)		
13	Higher Regulatory Standards	+	+	-	+	+	-	-	-	+	+	+	+	+	+	+	N	N	+	+	+	+	-	16 (+) 5 (-) 2 (N)	20 (+) 5 (-) 2 (N)		
14	Community Assistance Visit	+	+	+	+	+	-	+	+	+	N	N	+	+	+	+	N	N	N	N	+	N	+	-	14 (+) 2 (-) 7 (N)	18 (+) 2 (-) 7 (N)	



SECTION 9.25: WHITEHALL TOWNSHIP

15	NFIP FPA become a Certified Floodplain Manager	+	+	+	+	-	+	+	+	+	N	+	+	+	+	+	N	N	N	N	N	N	+	+	15 (+) 1 (-) 7 (N)	19 (+) 1 (-) 7 (N)
16	Join Community Rating System	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	+	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)
17	Archive Elevation Certificates	+	+	+	+	+	+	+	+	+	N	+	+	+	N	+	N	N	N	N	+	N	+	+	16 (+) 0 (-) 6 (N)	20 (+) 0 (-) 6 (N)
18	Support Plan Maintenance and Update	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	+	+	+	+	19 (+) 0 (-) 4 (N)	23 (+) 0 (-) 4 (N)	
19	Update CEMP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	+	+	+	20 (+) 0 (-) 3 (N)	24 (+) 0 (-) 3 (N)	
20	Enhance Mutual Aid Agreements	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	N	+	+	19 (+) 0 (-) 3 (N)	23 (+) 0 (-) 3 (N)	
21	Identify Post-Disaster Capabilities	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	N	N	N	+	N	+	+	18 (+) 1 (-) 4 (N)	22 (+) 4 (-) 4 (N)	
22	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 Whitehall Township to illustrate the probable areas impacted within Whitehall Township. 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 Whitehall Township 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.

