

# FLOODPLAIN

Guide | Model Regulations





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**TABLE OF CONTENTS**

Executive Summary ..... 1

Introduction ..... 1

How Development Affects Floodplains..... 3

Parts of a Floodplain ..... 3

Why Do We Need Floodplain Regulation  
in the Lehigh Valley ..... 5

Brief History of National Floodplain  
Management and How it Affects  
Current Floodplain Management  
Today ..... 7

The Creation of the National Flood  
Insurance Program (NFIP) ..... 8

An Attempt to Reform the NFIP ..... 9

History of Pennsylvania Floodplain  
Management..... 12

The LVPC Model Regulations..... 13

Model Floodplain Guide | Regulations ..... 15



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## EXECUTIVE SUMMARY

Over 94% of municipalities in the state of Pennsylvania have areas designated as being prone to flooding. Locally, flooding is the most significant natural hazard in the Lehigh Valley, with all 62 communities prone to flooding. The region has two major rivers and numerous streams within its borders with nearly 40 square miles of land and numerous structures in the 100 year floodplain. Since 1950 the region has suffered 23 flood events resulting in federal and state disaster declarations, with recent destructive events in 2004, 2005 and 2006.

The Lehigh Valley Planning Commission (LVPC) first published model floodplain regulations in August 1975 in part as a response to the flooding events of Hurricane Agnes in 1972. The LVPC published revised model floodplain regulations in October 2007 to respond to the impacts of the flooding between 2004 and 2006 and to implement the policies of the 2005 Regional Comprehensive Plan and the actions in the region's first Hazard Mitigation Plan in 2006. Since the time of that 2007 publication, there have been many flooding events, both nationally and regionally; significant changes to the National Flood Insurance Program (NFIP) and Pennsylvania's Department of Community and Economic Development (DCED) Suggested Floodplain Provisions; new 2014 floodplain maps in Northampton County; and an update to the Regional Hazard Mitigation Plan in 2013. The model regulations in the back of this guide reflect those events and updates.

The current model regulations were written by the LVPC using the policies of the 2005 Regional Comprehensive Plan, the 2013 Regional Hazard Mitigation Plan, the updated 2012 DCED floodplain provisions and the 2013 NFIP Community Rating System Coordinator's Manual as guides. The Comprehensive Planning and Environment Committees of the LVPC provided important insight and evaluation of the model regulations. The PA DCED evaluated the model regulations for consistency with the state suggested provisions.

Municipalities, residents and decision makers alike should examine their current flood risks and consider how those risks might change in the future. Insurance costs will increase with rising flood risk and hazards. Keeping people safe and insurance costs in check will mean being more proactive in reducing flood risk and going beyond meeting the minimum floodplain management requirements. Adopting higher standards is a key strategy in reducing flood risk and the cost of flooding.

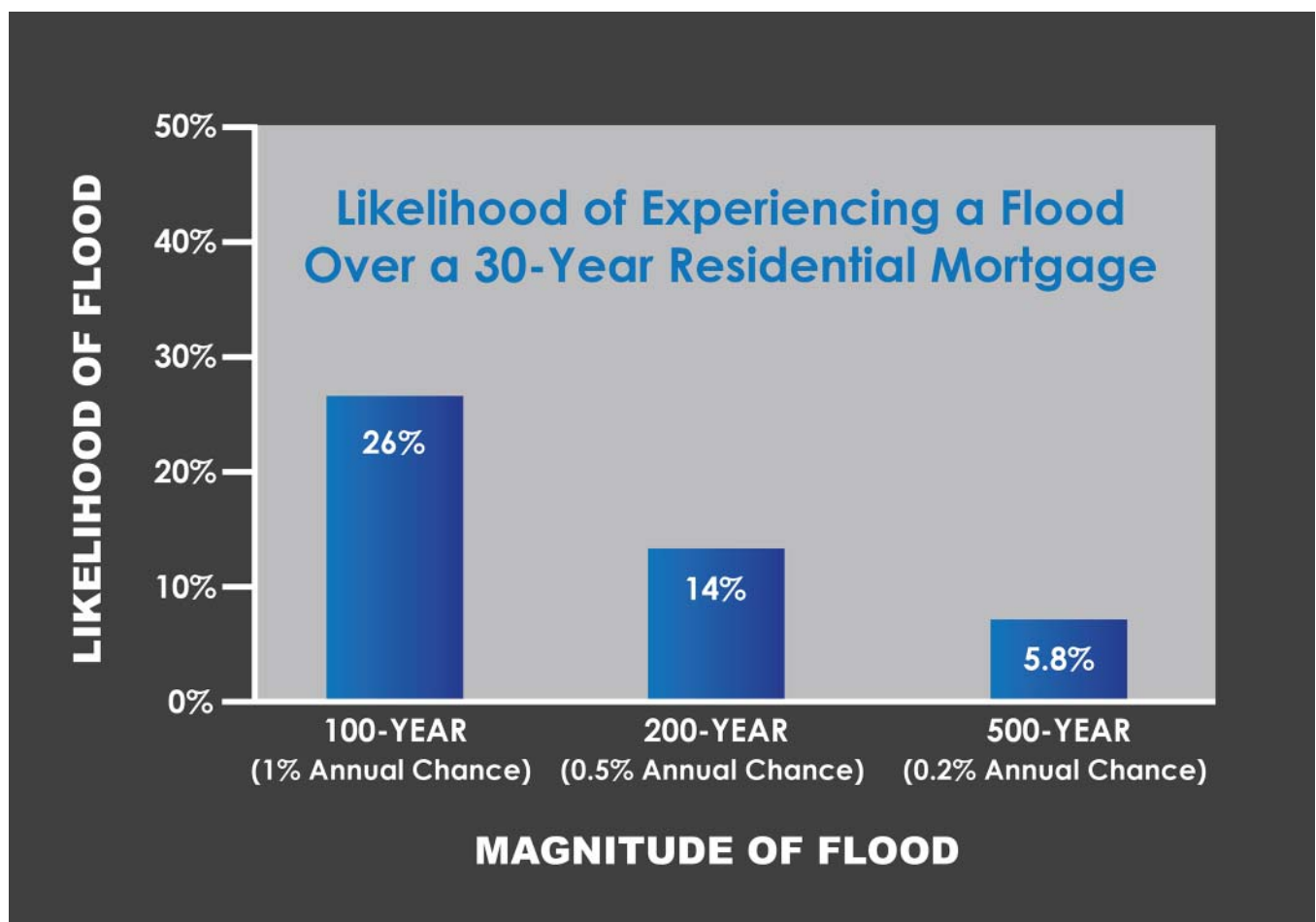
## INTRODUCTION

A floodplain is an area adjacent to a stream or river that is subject to flooding or inundation during severe storm events. Floodplains are meant to flood, as flooding is part of the planet's hydrologic cycle. The boundaries of floodplains are irregularly shaped and often meander through a community unnoticed. Although often unseen, floodplains are integral assets of communities because of the many benefits they provide, which include floodwater storage, protecting water quality, habitat for wildlife, and enhancing community character. The frequency of flooding depends on the climate and the size, shape and composition of the watercourse, whether it's a stream or a river.



By storing floodwaters, floodplains provide a natural form of flood protection by allowing floodwaters to spread out beyond the channel and temporarily store floodwater. A floodplain can also improve water quality by filtering out pollutants and sediment and recharging groundwater. Vegetated floodplains can stabilize soils during floods, thus reducing the amount of sediment carried downstream. Under natural conditions, flooding causes little or no damage. However, when homes, businesses, and neighborhoods are built in flood hazard areas, flooding can result in loss of life, increased threats to public health and safety, damage to public and private property, damage to public infrastructure and utilities, and economic impacts to the residents of the community.

Floods are regularly described in terms of their statistical frequency. A “100-year flood” or “100-year floodplain” describes an event or an area subject to a 1% probability of a certain size flood occurring in any given year. It does not mean that flooding will only happen once in a 100-year period. To provide some context, according to the Federal Emergency Management Agency (FEMA), a structure that is located in a 100-year floodplain has a roughly 30% chance of being damaged by a flood over the course of a 30-year mortgage.



## HOW DEVELOPMENT AFFECTS FLOODPLAINS

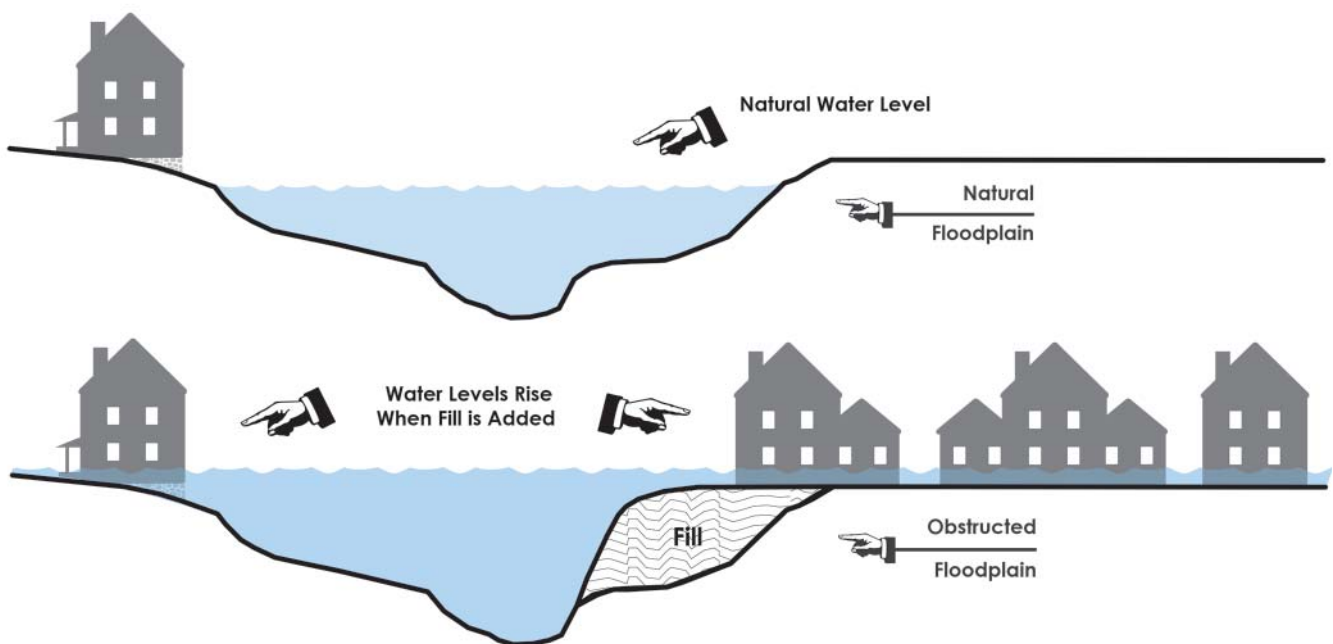
Development can have several impacts on floodplains. Building in a floodplain increases runoff and the rate of runoff because it reduces the amount of surface land area available to absorb rainfall and channels its flow into sewers and drainage ways much more quickly. Filling “in” a floodplain reduces the flood channel capacity and can increase the velocity of floodwaters and flood height. It also starts to redistribute the floodwater to other areas.

### PARTS OF A FLOODPLAIN

A floodplain generally consists of the floodway and the flood fringe. A good analogy to use when thinking of a floodplain is a bathtub filling to the brim with water. The tub represents the floodway, handling the deepest water until it reaches a point where it overflows the top of the tub. The water on the floor represents the flood fringe.

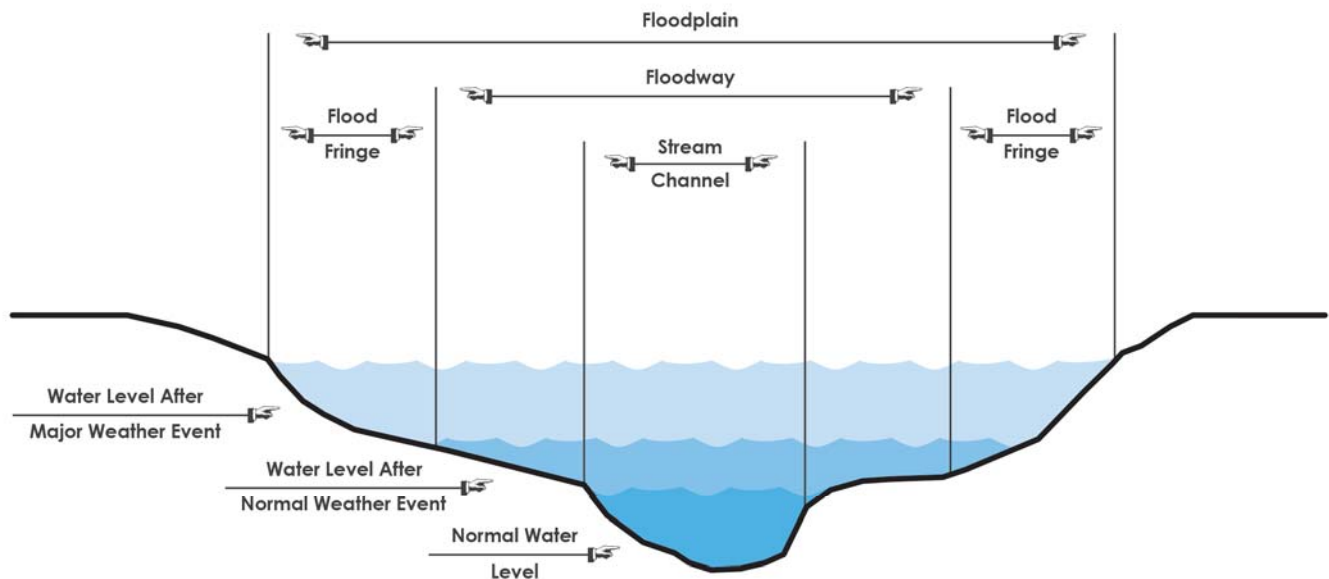
The floodway is generally the channel of a river or other watercourse that carries the deepest, fastest water downstream. It is the area that experiences the deepest water and the highest flow velocities. Since preservation of the floodway is critical to the passage of floodwaters, development is strictly regulated within the floodway. Most new structures are not allowed. Fill may be allowed if it is shown after engineering analysis that it causes no obstruction to flow and no increase in flood elevations.

### EFFECTS OF FILL IN THE FLOODPLAIN



Floodplains naturally store floodwater. Flooding may increase and damage worsen when dirt and other fill is added to the floodplain.

## ELEMENTS OF SPECIAL FLOOD HAZARD AREAS



The flood fringe is the part of the floodplain outside of the floodway. The flood fringe is primarily a flood-water storage area. Depths and velocities of floodwater in flood fringe areas are generally lower than in the floodway. Most development activities are allowed in the flood fringe as long as structures are elevated above the base flood elevation. Local ordinances can have greater restrictions or higher standards.

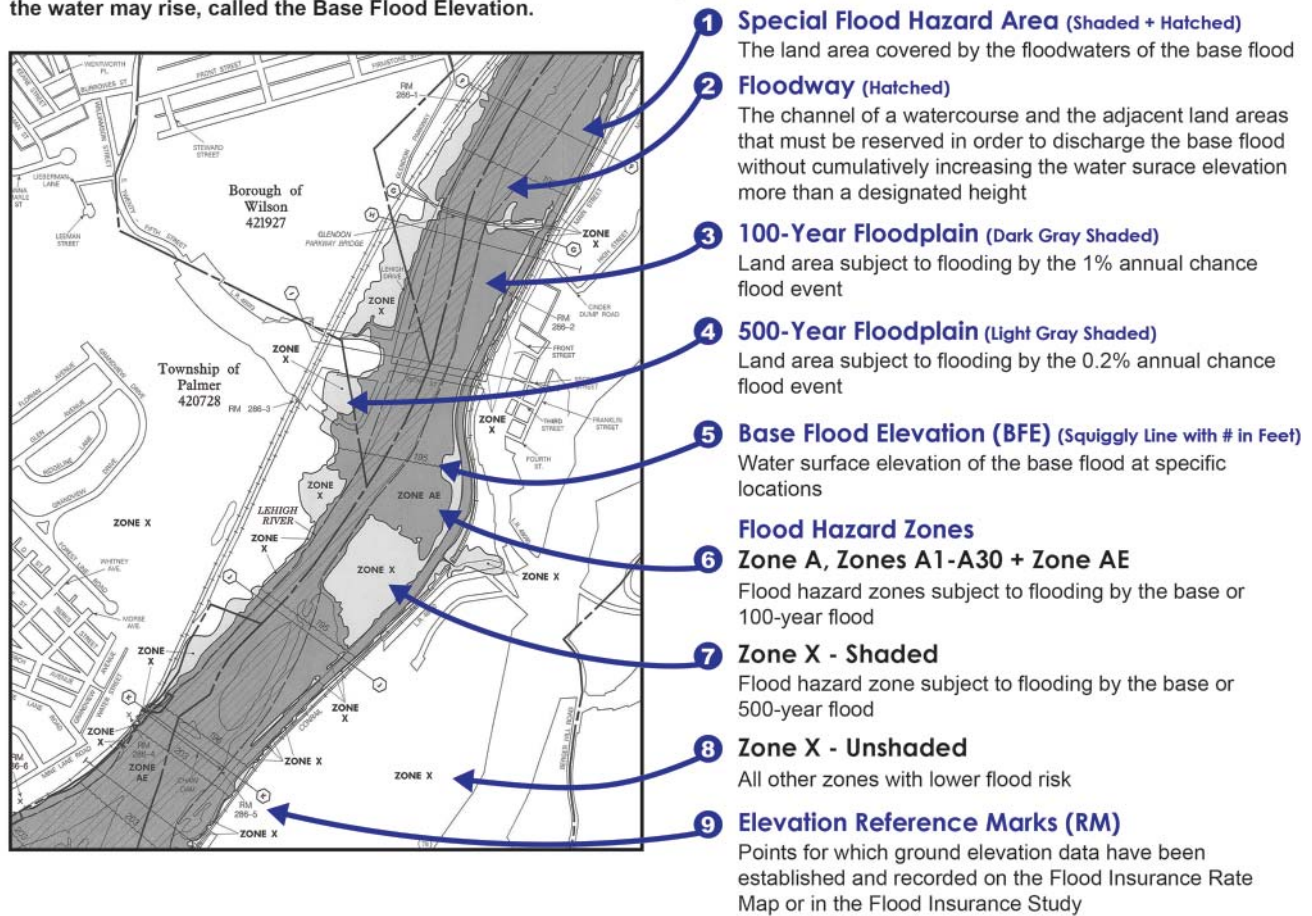
Floodway and flood fringe areas are designated only after an engineering analysis has been performed and a 100-year flood elevation has been determined. The Special Flood Hazard Area (SFHA) is FEMA's designation for the 100-year flood boundary. FEMA uses hydrological and engineering analyses to determine this area.

Due to the cost of these engineering analyses, some floodplain areas are mapped as general floodplains. The general floodplain is also called an approximate study area, or Zone A. Due to the lack of 100-year flood elevations and floodway/flood fringe determinations in a general floodplain area, it is the property owner's responsibility to pay for an engineering analysis to determine the flood elevation before the community can authorize any development.

The 100-year and 500-year floodplains (1% and 0.2% annual chance, respectively) and related floodway, flood fringe and general floodplain areas are shown on the NFIP Flood Insurance Rate Maps (FIRMS). Copies of these maps are available through municipal and county offices. Federal, state and local government agencies, as well as lending institutions and insurance companies, use these maps to identify homes that are located in floodplain areas. The best way to find out if a property is located in the floodplain is by visiting the municipal zoning officer. The local official should have a copy of the municipal FIRMS and the county-wide Flood Insurance Study (FIS). The FIRMS and the County FIS are the official source of information about whether a structure is located in the 100-year floodplain.

# THE FLOOD INSURANCE RATE MAP

The Federal Emergency Management Agency (FEMA) prepares Flood Insurance Rate Maps (FIRMs) to show areas that are predicted to flood after intense or major storms. The FIRMs estimate how high the water may rise, called the Base Flood Elevation.



Flooding is common in the United States. Over 80% of federal disaster declarations since 1950 have been for flooding events. It's also a costly type of natural event. By 2012, the NFIP had a debt of \$24 billion, had nearly 5.7 million policies and liabilities of \$1.3 trillion. That liability is only second in terms of dollars to the liabilities of the Social Security program. With the combination of the debt, liabilities and the cost of natural disasters rising, the federal government needed to significantly reform the NFIP to begin reducing the program's exposure to significant flood losses.

## WHY DO WE NEED FLOODPLAIN REGULATION IN THE LEHIGH VALLEY?

We don't know how frequent or how severe flooding will be, but we do know that flooding events will continue to occur in Pennsylvania and the Lehigh Valley. Over 94% of municipalities in the state have areas designated as being prone to flooding. Locally, flooding is the most significant natural hazard in the Lehigh Valley, with all 62 communities prone to flooding. The region has two major rivers and numerous streams within its borders with nearly 40 square miles of land and numerous structures in the 100 year floodplain. Since 1950, the region has suffered 23 flood events resulting in federal and state disaster declarations, with especially recent destructive events in 2004, 2005 and 2006. Since 1950, flooding has



# LEHIGH VALLEY 1968-2013 FLOOD IMPACTS

**1,830  
POLICIES**

**\$51.1  
MILLION**

**2,192  
CLAIMS**

**FLOOD  
INSURANCE**

**235  
REPETITIVE  
LOSS PROPERTIES**

**FLOOD  
DAMAGES**

**46  
SEVERE  
REPETITIVE  
LOSS PROPERTIES**

**FLOOD  
INSURANCE**

**FLOOD  
DAMAGES**

**FLOOD  
DAMAGES**



Lehigh Valley Hazard Mitigation Plan 2013

## WHY REGULATE THE FLOODPLAIN?



**PROTECT PEOPLE**



**SAVE TAX DOLLARS**



**AVOID LIABILITY  
+ LAWSUITS**

Floodplain management is about making informed decisions about where to build or develop land. If a municipality knows where their high risk flood areas are located, they should be able to make reasonable decisions to help protect families, homes and businesses. Development that complies with minimum floodplain management requirements is better protected against damages, as well.

Every flood disaster affects your community's budget. If we build smarter we'll have fewer problems the next time waters rise. Remember federal flood insurance is guaranteed by taxpayers. Federal disaster assistance isn't available for all floods. And, even when the President declares a disaster, your community will have to pay a portion of the costs of evacuation, temporary housing, repair and clean-up.

If we know an area is a high-risk flood area, that may place people and property in danger, reasonable protective steps need to be taken when we build or alter flood hazard areas. Also, if a home or business is in the floodplain, and federal flood insurance isn't available, then you can't access certain types of government assistance.



**PROTECT PROPERTY +  
REDUCE FUTURE  
FLOOD LOSSES**

**ASSURE FUTURE FLOOD  
INSURANCE + DISASTER  
ASSISTANCE IS AVAILABLE**

**HELP!**



resulted in \$51,195,146 of damage to property in the Lehigh Valley. As of 2013, 11,803 properties and 3,072 structures with an estimated value of \$2.9 billion are located in 100-year floodplains.

In recent years, the region has also received above average rainfall that can trigger a flooding event. In 2011, the region had four major rain events in a span of just two months, including the remnants of Hur-



ricane Irene and Hurricane Lee. The rainfall during 2011 set new records for wettest month and wettest meteorological summer on record. The region received nearly 72 inches of rain that year, with the average rainfall being 45 inches per year.

Local floodplain management is always challenging. Many communities in the Lehigh Valley were founded along major waterways as centers of commerce and industry that relied on rivers for water supply, power and the transportation of goods. As a result, buildings were sited as close as possible to the river, well within the 100-year floodplain. Today, those communities look at those buildings and land as attractive sites for industrial and commercial redevelopment projects. They face the challenge of balancing hazard mitigation and the rising expense of flood insurance with the need for redevelopment. Redevelopment is an engine that drives economic growth, a municipality's ratables, and job creation. Redevelopment always presents a host of challenges, but the challenges are greater when faced with buildings or previously developed land that is located in the floodplain.

Insuring property in a 100-year floodplain has become more expensive. Standard homeowner insurance policies do not cover damage from flooding and federal disaster assistance is only available if the area is declared a disaster area by the federal government. More often than not, current municipal floodplain regulations and homeowners carrying floodplain insurance are the primary tools used to cope with flooding on the local level. Flood insurance premiums will rise in coming years due to the new insurance requirements in the Biggert-Waters Flood Insurance Reform Act of July 2012 and the Homeowner Flood Insurance Affordability Act of 2013. The primary goal of the legislation is to make the flood insurance program solvent by minimizing flood loss risk and moving the cost of repairing flood damage on to those who choose to develop in floodplains instead of taxpayers.

FEMA is in the process of updating and modernizing FIRMs as they have recently done in Northampton County. As municipalities receive updated FIRMs, they will have to be adopted through the local legislative process. For most municipalities, this includes updating their floodplain ordinance. Municipalities should consider increasing development standards in floodplains to increase their community's resilience to future flood impacts. Finally, the NFIP insurance reforms may provide an incentive for municipalities to participate in FEMA's Community Rating System (CRS) which rewards communities for developing better floodplain maps and for increasing regulatory standards in floodplains.

## **BRIEF HISTORY OF NATIONAL FLOODPLAIN MANAGEMENT AND HOW IT AFFECTS CURRENT FLOODPLAIN MANAGEMENT TODAY**

Today, floodplain "management" is generally defined as a comprehensive program of preventive and corrective measures to reduce losses associated with flooding. Floodplain management measures may include, but are not limited to, land use regulations (including new development and construction policy), construction of flood control projects, flood insurance, floodproofing, floodplain preservation, acquisition of flood prone properties, education, and implementation of early warning systems.

Floodplains are regulated at the local, state, and federal level. The federal government began regulating floodplain development in 1879 with the creation of the Mississippi River Commission. However, significant federal flood control activity did not begin until the Flood Control Act of 1936 was passed. It was passed in response to the flooding of the Labor Day Hurricane and a series of major river floods in 1935. This Act expanded federal responsibility to all navigable rivers of the nation and authorized over 200 flood control projects in 31 states. It further extended the scope of federal involvement, assigning the federal government the full cost of building and maintaining dams, channel modifications, levees and floodwalls. Over the next 50 years, from 1936 to 1986, Congress authorized and built approximately 900 flood control projects including approximately 400 flood control dams, thousands of miles of levees, floodwalls, floodways and improved channels.

Despite the billions of dollars spent on flood control projects, flood losses continued to rise rapidly due to continuing, extensive floodplain development. In 1952, President Truman asked Congress to consider a bill to establish the first federal flood insurance program after flooding in 1951, but Congress did not pass the bill. In 1955, after Hurricanes Carol and Hazel and other regional floods hit several parts of the country again resulting in billions of dollars in uninsured losses, interest in developing a national flood insurance program was revived. Congress passed the National Flood Insurance Act of 1956 but did not fund it. The property insurance industry continued to oppose such a program due to its impracticability for business.

After the extensive destruction from Hurricane Betsy in 1965, which resulted again in over a billion dollars of uninsured losses in numerous states, Congress began to recognize that protective works alone would not stem the increase in flood losses. This led to the creation of a presidential task force on federal flood control policy and the 1966 publication of House Document 465, "A Unified National Program for Managing Flood Losses." The document included five major goals:

- Improve basic knowledge about flood hazards.
- Coordinate and plan new developments in the floodplain.
- Provide technical services to managers of floodplain property.
- Move toward a practical national program for flood insurance.
- Adjust federal flood control policy to support sound criteria and changing needs.

## **THE CREATION OF THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP)**

In 1968 Congress passed another National Flood Insurance Act to correct the shortcomings of traditional flood protection and flood relief programs. The Act provided for the creation of the NFIP. The NFIP made flood insurance available to property owners in communities that voluntarily agreed to adopt an

ordinance regulating development in floodplain areas. Despite an extended effort by the government to encourage property owners in floodplain areas to obtain flood insurance, few did.

Hurricane Camille in 1969 and Hurricane Agnes and the Rapid City Flood in 1972 demonstrated the ineffectiveness of the voluntary flood insurance program as the hurricanes and flash flood caused over a combined \$30 billion dollars in damage, with the majority of it uninsured. As a result, Congress passed the Flood Disaster Protection Act in 1973, which required mandatory purchase of flood insurance as a condition for receiving any form of federal or federally related financial assistance, such as mortgage loans from federally insured lending institutions. Initially the Federal Insurance Administration (FIA) administered the NFIP. In 1979, both the FIA and NFIP were transferred to the newly formed Federal Emergency Management Agency (FEMA).

The NFIP (with significant updates in 1988, 1994, 2000, 2004, 2006 and 2012) remains the cornerstone of floodplain management in the United States. FEMA has mapped floodplains in over 20,000 communities, and over 18,400 communities now participate in the insurance program. The maps, known as Flood Insurance Rate Maps (FIRMs) designate areas that are susceptible to flood impacts. FIRMs divide the floodplain based on flood risk into the “100-year floodplain” and the “500-year floodplain”. Lehigh County maps were last updated in 2004; Northampton County in 2014.

The NFIP does not prevent communities from imposing more restrictive local regulations. In 1990, the NFIP began the Community Rating System (CRS) to encourage communities to adopt stronger floodplain management practices by offering insurance premium discounts to land and property owners in CRS-rated communities. To date, only 1,229 communities nationwide participate in the program.

Until 1986, the NFIP was funded, in part, by congressional appropriations. The NFIP was self-supporting from 1986 until 2005 as policy premiums and fees covered all expenses and claim payments. In 2005, the NFIP incurred approximately \$17 billion in flood claims caused by Hurricanes Katrina, Rita, and Wilma. To put that into context, the losses incurred in 2005 alone were greater than all losses the program incurred between 1968 and 2004. Under current law, the funds borrowed from the U.S. Treasury must be repaid with interest. The program, however, remains unable to repay the debt. Congress attempted to reform the program with the passage of the Biggert-Waters Flood Insurance Reform Act that was signed into law July 6, 2012.

## AN ATTEMPT TO REFORM THE NFIP

The insolvency of the NFIP was tied to several deficient areas of the program as described below:

**Subsidies.** The NFIP did not charge risk based premiums for all properties prior to 2012. Properties that existed prior to the program’s enactment were grandfathered (“pre-FIRM properties”) and received subsidized rates on their flood insurance. Prior to enactment of the Biggert-Waters Act, these property owners were allowed to continue to pay subsidized rates even after their property was sold or was repetitively damaged and rebuilt.



**Repetitive Loss Properties.** The program did not address properties that made repetitive claims for flood damage; in many cases claims exceeded the value of the property (“repetitive loss structures” and “severe repetitive loss structures”). These properties could be continually rebuilt in the same footprint.

**Outdated Mapping.** Although FEMA is in the process of updating FIRMs, there was no required timetable or plan for map updating that showed how flood hazards had changed.

**Residual risk properties.** The NFIP exempts from its mandatory requirements properties behind flood control structures (such as levees and dams) designed to protect against a 100-year flood event (defined as “residual risk areas”). These property owners can purchase flood insurance, at highly discounted rates, though they are not required to do so. These properties, however, continue to suffer from “residual risk” because flood control structures can be overtopped by floodwaters or fail.

The Biggert-Waters Flood Insurance Reform Act was the most substantial reform of the NFIP in years. The legislation was passed as Title II of the Transportation Bill (H.R. 4348) and signed into law on July 6, 2012. It extended the NFIP for five years and made a number of changes related to improving the solvency of the NFIP, flood risk mapping (including mapping of levee protected areas), and flood mitigation programs. It raised the limit on annual premium increases to 20% (from 10%) and requires FEMA to submit a ten-year repayment plan for the program’s debt. The solvency and debt-reduction requirement, together with raising the limit on annual premium increases to 20%, ensures that the cost of a flood insurance policy will rise.

In 2013, premium rates rose for subsidized (a policy that does not pay the full actuarial rate and is not reflective of the true risk of flood to that property) non-primary residences, business properties, substantially damaged or improved properties, severe repetitive loss properties, and any property that has incurred flood-related damages where claim payments exceed the fair market value of the property. Full-risk rates on policies written for newly purchased property also went into effect.

Beginning in 2014, premium rates for other properties, including non-subsidized properties, would have increased as new or revised flood insurance rate maps become effective and full risk rates were phased in for these properties. These premium rate increases would have included properties in areas that have received new or revised flood insurance rate maps since July 6, 2012. Northampton County was one such area.

The legislation directed FEMA to update flood maps using the most accurate topography and elevation data available, but did not specify a timetable to update the maps. Of particular importance to Lehigh Valley municipalities, the legislation includes key changes to the Mitigation Grant Assistance Program to address repetitive claims properties. For severe repetitive loss structures, FEMA could pay 100 percent of repair costs *or* the expected savings to the NFIP for mitigation activities. Funding for mitigation of such structures no longer must meet a cost-effectiveness requirement. Funds can be directed to acquire or relocate such structures where these activities “will eliminate future payments from the National Flood Insurance Fund.”

FEMA can now pay up to 90 percent of eligible costs for mitigation activities for repetitive loss structures and 75 percent of eligible costs for all other mitigation activities. Those activities remain subject to a cost-effectiveness requirement. The list of eligible mitigation activities was updated to include activities that elevated, relocated or floodproofed equipment that services a structure, and to develop or update a mitigation plan (up to \$50,000).

The increased cost of flood insurance as a result of the Act caused significant protest from owners of property in flood prone areas. Numerous lawsuits and attempts to delay or delete the Act in 2012 and 2013 led to Congress taking action in 2014 to reverse the flood insurance reforms and curb flood insurance premium increases created by the Act.

In March 2014, Congress passed the Homeowner Flood Insurance Affordability Act of 2013. As of the writing of this guide, the President has not signed the bill. The Affordability Act made many substantial changes to the Biggert Waters Act and the NFIP.

- Prevents FEMA from raising the average rates for a class of properties above 15% and from raising rates on individual policies above 18% per year for virtually all properties. Pre Biggert-Waters, increases were capped at 10%. Biggert-Waters had a new cap of 20%.
- Repeals the provision in the Biggert-Waters Act that required homebuyers to pay the full-risk rate for pre-FIRM properties at the time of purchase.
- Repeals the provision in Biggert-Waters that required pre-FIRM property owners to pay the full-risk rate if they voluntarily purchase a new policy.
- Repeals the provision in Biggert-Waters that ends the grandfathering of flood insurance rates. This means that compliant structures under old flood maps would not be hit with large increases if new maps show greater risk of flooding. The retention of subsidized rates is funded by a \$25 surcharge for most residential policyholders, and a \$250 fee for non-residential property or non-primary residence homeowners. The bill retains a provision in Biggert-Waters to eventually make the program self-sufficient by moving toward actuarial rates.
- Requires FEMA to refund policyholders for overpaid premiums between 2012 and 2014.
- Requires FEMA to minimize the number of policies with annual premiums that exceed one percent of the total coverage provided by the policy.
- Allows FEMA to utilize the National Flood Insurance Fund to reimburse policyholders and communities that successfully appeal a map determination. FEMA currently has the authority to reimburse successful appeals of map findings, but Congress hadn't to date, appropriated funding for this purpose.

- Establishes a Flood Insurance Advocate within FEMA to answer current and prospective policyholder questions about the flood mapping process and flood insurance rates.
- Requires FEMA to establish guidelines on alternative mitigation methods for urban structures where traditional mitigation efforts such as elevation are impractical.
- Requires FEMA to clearly communicate full flood risk determinations to policyholders even if their premium rates are less than full risk.
- Requires FEMA to report to Congress on the impacts of rate increases on small businesses, non-profit entities, houses of worship, and residences with a value equal to less than 25% of the area median home value.
- Requires FEMA to certify its mapping process is technologically advanced and to notify and justify to communities that the mapping model it plans to use to create the community's new flood map are appropriate. It requires FEMA to send communities being remapped the data being used in the mapping process.
- Requires FEMA, at least 6 months prior to implementation of rate increases as a result of this Act to make publicly available the rate tables and underwriting guidelines that provide the basis for the change.

## HISTORY OF PENNSYLVANIA FLOODPLAIN MANAGEMENT

In Pennsylvania, Hurricane Agnes in 1972 (\$2.1 billion in property destruction, 50 lives lost) and the 1977 Johnstown Flood (\$300 million in property destruction, 85 lives lost) prompted the state to pass its own floodplain law. The Pennsylvania Floodplain Management Act (Act 166 of 1978) requires municipalities identified as being flood-prone to enact floodplain regulations which, at a minimum, meet the requirements of the NFIP and to establish:

- A special permit process for developing hospitals, nursing homes, jails, and mobile home parks in a floodplain.
- More stringent development standards for floodplain storage of construction materials and substances that have been determined to be dangerous to human life.
- A building permit process requiring applicants to certify that the lowest floor of a new or substantially improved structure is 1.5 feet above the 100-year base flood elevation.

DCED is responsible for coordinating the NFIP in the state and for administering the Pennsylvania Floodplain Management Act. They publish “suggested provisions” to help municipalities write and adopt



floodplain ordinances that meet the requirements of the NFIP and Act 166. As a result of Act 166 and the work of DCED, all 62 Lehigh Valley municipalities have NFIP approved floodplain regulations.

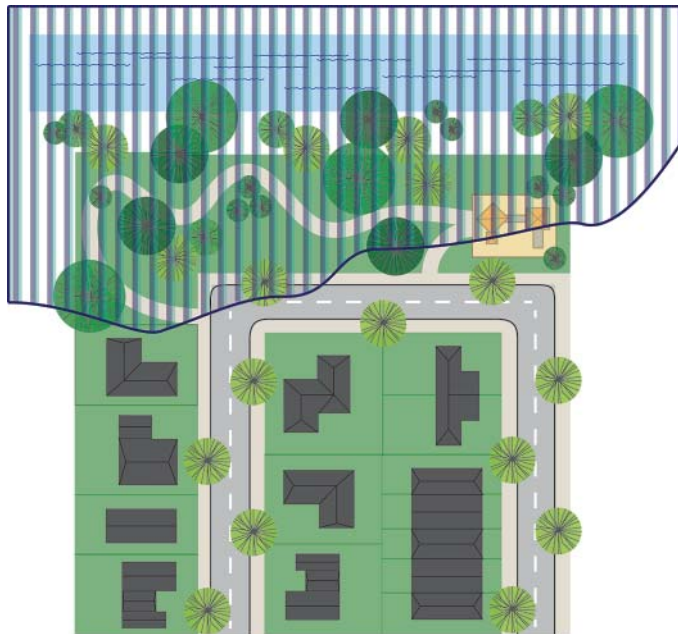
## THE LVPC MODEL REGULATIONS

The model floodplain regulations are designed to, at minimum, meet the requirements of the National Flood Insurance Program and PA DCED’s 2012 Suggested Floodplain Provisions. The model regulations meet the requirements of the 2012 FEMA Region III Ordinance Review Checklist. This checklist is a tool used by FEMA to check that any municipal floodplain ordinance meets their requirements.

Similar to the October 2007 LVPC model regulations, the 2014 model is more stringent than the DCED suggested provisions and the NFIP standards in some instances. The model regulations incorporate more restrictive provisions recommended by the NFIP Community Rating System. The model regulations prohibit new development in the floodway and significantly restrict new development in other areas of the 100-year floodplain. The NFIP permits a limited amount of chemical storage in the floodplain, where the LVPC model regulations do not. Also, the amount of allowable improvements to existing structures in the floodplain is lower in the LVPC model than what is permissible under the NFIP.



Land subdivided into lots with several homes partially or entirely in the floodplain is not recommended.



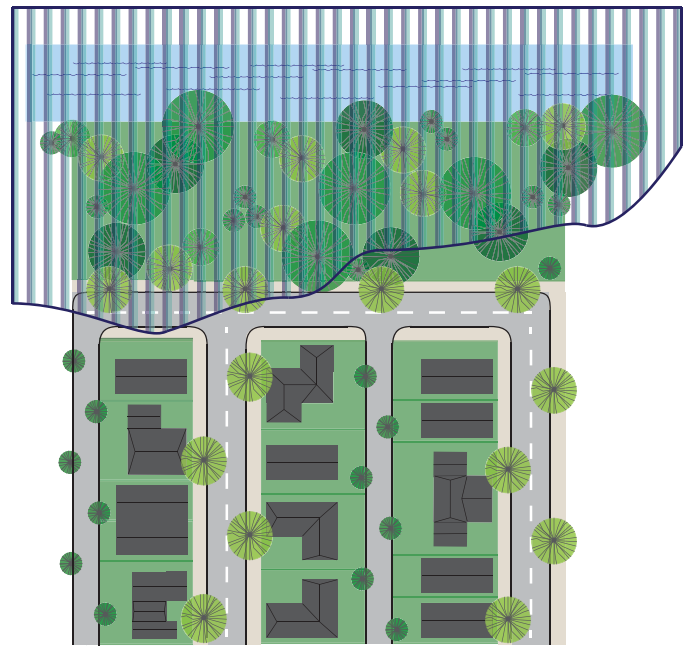
Land subdivided into lots, some partially in the Floodplain. Active recreation space provides a buffer between the waterway and the homes.

The NFIP permits a limited amount of allowable improvements to existing structures in the floodplain is lower in the LVPC model than what is permissible under the NFIP.

The model regulations attempt to address the sometimes divergent needs of rural and urban communities when it comes to regulating land use in a floodplain. Rural communities have more greenfield sites than redevelopment sites in the 100-year floodplain. The emphasis for these communities is preventing new development in the floodplain and protecting the natural functions of the floodplain. For urban communities in the Lehigh Valley that were built adjacent to rivers and streams, the regulations attempt to deal with the dilemma between economic redevelopment and hazard mitigation by permitting

redevelopment projects that meet a set of very specific, stringent standards and do not include residences or critical facilities.

The model regulations should be reviewed by municipal solicitors prior to municipal adoption. Some municipalities may have to make some modifications to them, depending on the types of flood hazard areas located within their borders, information contained in the county-wide Flood Insurance Study, and the municipality's own particular circumstances, objectives or policy. If a municipality chooses to update their floodplain ordinance, it will need to be reviewed by the LVPC in accordance with Section 502 of the Municipalities Planning Code (MPC), and approved for NFIP compliance by DCED and FEMA.



Land developed utilizing compact, walkable form with no lots or houses in the floodplain. Large, naturalized riparian buffer between the waterway and homes serves as wildlife refuge and passive recreation area.

## ARTICLE 1. STATUTORY AUTHORIZATION

The Legislature of the Commonwealth of Pennsylvania has, by the passage of the Pennsylvania Floodplain Management Act of 1978, delegated the responsibility to local governmental units to adopt floodplain management regulations to promote public health, safety, and the general welfare of its citizenry. Therefore, the [Municipal Elected Body] of [Name of Municipality], does hereby order as follows:

### Article 2. General Provisions

#### Section 2.1 Intent

A. The intent of this Ordinance is to:

1. Protect areas of the floodplain necessary to contain floodwaters.
2. To permit only those uses in the floodplain that are compatible with preserving natural conditions and stream flow.
3. Promote the general health, welfare, and safety of the community by preventing development in areas prone to flooding.
4. Encourage the utilization of appropriate construction practices in order to prevent or minimize flood damage in the future.
5. Minimize public and private losses due to flood conditions in areas prone to flooding.
6. Minimize danger to public health by protecting water supply and natural drainage.
7. Reduce financial burdens imposed on the community, its governmental units, and its residents, by preventing excessive development in areas subject to flooding.
8. Comply with federal and state floodplain management requirements.

#### Section 2.2 Applicability

- A. The Flood Hazard District is established as a district as defined in Section 4.1 of this Ordinance.
- B. It shall be unlawful for any person, partnership, business or corporation to undertake, or cause to be undertaken, any construction or development anywhere within the Flood Hazard District unless a permit has been obtained from the Floodplain Administrator.
- C.. A permit shall not be required for minor repairs to existing buildings or structures.



### Section 2.3 Abrogation and Greater Restrictions

- A. This Ordinance supersedes any other conflicting provisions which may be in effect in the Flood Hazard District. However, any other Ordinance provisions shall remain in full force and effect to the extent that those provisions are more restrictive. If there is any conflict between any of the provisions of this Ordinance, the more restrictive shall apply.

### Section 2.4 Severability

- A. If any section, subsection, paragraph, sentence, clause, or phrase of this Ordinance shall be declared invalid for any reason whatsoever, such a decision shall not affect the remaining portions of the Ordinance, which shall remain in full force and effect, and for this purpose the provisions of this Ordinance are hereby declared to be severable.

### Section 2.5 Warning and Disclaimer of Liability

- A. The degree of flood protection sought by the provisions of this Ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur or flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This Ordinance does not imply that areas outside the Flood Hazard District or that land uses permitted within such areas will be free from flooding or flood damages.
- B. This Ordinance shall not create liability on the part of [Name of Municipality] or any officer or employee thereof for any flood damages that result from reliance on this Ordinance or any administrative decision lawfully made thereunder.

### Section 2.6 Discrepancy between Mapped Floodplain and Actual Ground Elevations

- A. In cases where there is a discrepancy between the mapped floodplain on the FIRM and the actual ground elevations, the elevation provided on the profiles shall govern.
- B. If the elevation of the site in question is below the base flood elevation, that site shall be included in the 100-year floodplain and regulated accordingly.
- C. If the elevation of the site in question is above the base flood elevation and not located within the floodway, that site shall be considered outside the 100-year floodplain and the floodplain regulations will not apply. The property owner shall be advised to apply for a Letter of Map Amendment through FEMA.

## Article 3. Definitions

### Section 3.1 Terms Defined

A. When used in this Ordinance, the words, terms and phrases in Section 3.2 shall have the following meanings, unless expressly stated otherwise or unless the context clearly indicates otherwise.

### Section 3.2 Definitions

**Accessory use or structure.** A use or structure on the same lot with, and of a nature customarily incidental and subordinate to, the principal use or structure.

**Base flood.** A flood which has a one percent chance of being equaled or exceeded in any given year (also called the “100-year flood” or one-percent (1%) annual chance flood).

**Base flood elevation (BFE).** The elevation shown on the Flood Insurance Rate Map (FIRM) for Zones AE, AH, A1-30 that indicates the water surface elevation resulting from a flood that has a one-percent (1%) or greater chance of being equaled or exceeded in any given year.

**Basement.** Any area of the building having its floor below ground level on all sides.

**Building.** A combination of materials to form a permanent structure having walls and a roof. Included shall be all manufactured homes and trailers to be used for human habitation.

**Conditional Letter of Map Revision (CLOMR).** A letter outlining FEMA comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the floodplain. The letter does not revise an NFIP map.

**Cost of improvement.** Cost that includes both the structural and finish or labor and materials, minus those required to meet floodproofing and flood elevation regulations and the cost of permits. This includes lighting fixtures, built-in appliances, interior moldings, paneling, tiling, wall-to-wall carpet over sub-flooring, built-in cabinets, etc. The cost to demolish undamaged building components must be established and included.

**Cost of reconstruction.** Cost that includes both the structural and finish or labor and materials, minus those required to meet floodproofing and flood elevation regulations and the cost of permits, to reproduce by new construction the exact form and detail of a structure or a part thereof, as it appeared at a specific period of time.

**Critical facilities.** Any structure or facility that is 1) identified in the current Lehigh Valley Hazard Mitigation Plan as a “critical facility”; 2) that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials; 3) hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a flood; or 4) police stations, fire stations, vehicle equipment storage facilities and emergency operations centers that are needed for flood response activities before, during, and after a flood; or 5) public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during, and after a flood.

**Current cost.** A basis of valuation which values an asset at the amount which it would currently cost to obtain.

**Development.** Any man-made change to improved or unimproved real estate, including but not limited to the construction, reconstruction, renovation, repair, expansion, or alteration of buildings or other structures; the placement of manufactured homes, streets, and other paving; utilities; filling, grading and excavation; mining; dredging; drilling operations; storage of equipment or materials; and the subdivision of land.

**Encroachment.** Construction, placement of fill, or similar alteration of topography in the floodplain that reduces the area available to convey floodwaters.

**Existing manufactured home park or subdivision.** A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of this Ordinance.

**Expansion to an existing manufactured home park or subdivision.** The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

**FEMA.** Federal Emergency Management Agency.

**Fill.** Man-made deposits of natural soil or rock product.

**Flood.** A temporary inundation of normally dry land areas.

**Flood Insurance Rate Map (FIRM).** The official map on which the Federal Emergency Management Agency has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

**Flood Insurance Study (FIS).** The official report provided by the Federal Emergency Management Agency that includes flood profiles, the FIRM, the Flood Boundary and Floodway Map, and the water surface elevation of the base flood.

**Floodplain administrator.** The municipal official responsible for implementing and enforcing this Ordinance and monitoring floodplain development in [Name of Municipality].

**Floodplain area.** The relatively flat or low land area which is subject to partial or complete inundation from an adjoining or nearby stream, river or watercourse; and/or any area subject to the unusual and rapid accumulation of surface waters from any source.

**Floodproofing.** Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

**Floodway.** The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

**Freeboard.** A factor of safety usually expressed in feet above a flood level for purposes of floodplain management.

**Highest adjacent grade.** The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

**Historic structure.** Any structure that is a) listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Pennsylvania Historical and Museum Commission (PHMC) as meeting the criteria for individual listing on the National Register; b) certified or preliminarily determined by the PHMC as contributing to the historical significance of a National Register historic district or a district preliminarily determined by the PHMC to be eligible to qualify for listing in the National Register; or c) designated as historic by a municipal Ordinance where it is identified individually or as part of a local historic district by a zoning Ordinance under the authority of the Pennsylvania Municipalities Planning Code or located in a local historic district that has been certified by the PHMC as meeting the requirements of the Pennsylvania Historic District Act.

**Intact structure.** A structure that is undamaged in any way; whole.

**Letter of Map Amendment.** The official amendment, by letter, to an effective National Flood Insurance Program (NFIP) map by FEMA.



**Letter of Map Revision.** The official revision, by letter, to an effective National Flood Insurance Program (NFIP) map by FEMA.

**Lowest floor.** The lowest floor of the lowest fully enclosed area (including basement). An unfinished, flood resistant partially enclosed area, used solely for parking of vehicles, building access, and incidental storage, in an area other than a basement area is not considered the lowest floor of a building, provided that such space is not designed and built so that the structure is in violation of the applicable non-elevation design requirements of this Ordinance.

**Manufactured home.** A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term includes park trailers, travel trailers, recreational and other similar vehicles which are placed on a site for more than 180 consecutive days.

**Manufactured home park or subdivision.** A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

**Manure.** The animal excrement, including poultry litter, which is produced at an agricultural operation. It includes materials such as bedding and raw materials which are commingled with that excrement.

**Manure stockpile.** A storage pile of manure accumulated for future use that is not confined within a manure storage facility.

**Manure storage facility.** A permanent structure or pond, a portion of a structure or pond, or a group of structures or ponds at one agricultural operation, utilized for the purpose of containing manure or agricultural process wastewater. This includes concrete, metal or other fabricated tanks and underground structures, as well as earthen and synthetically-lined manure storage ponds.

**Market value.** The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale; the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus.

**Minimize.** To reduce to the smallest amount or extent possible. "Minimize" shall not mean complete elimination but shall require that the most substantial efforts possible under the circumstances have been taken to reduce the adverse effect(s) of the action required to be minimized. "Minimize" shall include but not be limited to the requirement that the placement of dwellings and other structures and the locations of roads, stormwater management facilities, and other land disturbance shall be planned and designed to reduce the adverse effect(s) of the activity in question to the smallest amount possible under the circumstances consistent with otherwise permitted development.

**Minor repair.** The replacement of existing work with equivalent materials for the purpose of its routine maintenance and upkeep, but not including the cutting away of any wall, partition or portion thereof, the

removal or cutting of any structural beam or bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the exitway requirements; nor shall minor repairs include addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, oil, waste, vent, or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

**[Name of Municipality] Building Code.** The administration and enforcement of the provisions of the Pennsylvania Construction Code Act, Act 45 of 1999 and The Uniform Construction Code, contained in 34 Pa. Code, Chapters 401 through 405, as amended from time to time, was adopted and incorporated herein by reference as the municipal building code of [Name of Municipality].

**National Flood Insurance Program (NFIP).** A Federal program created by Congress in 1968 to mitigate future flood losses through sound, community-enforced building and zoning Ordinances and to provide access to affordable, federally backed flood insurance protection for property owners.

**New construction.** Structures for which the start of construction commenced on or after the effective start date of this Ordinance and includes any subsequent improvements to such structures. Any construction started after [effective date of community's first floodplain management Ordinance adopted by the community] and before the effective start date of this floodplain management Ordinance is subject to the Ordinance in effect at the time the permit was issued, provided the start of construction was within 180 days of permit issuance.

**New manufactured home park or subdivision.** A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of this Ordinance.

**One hundred-year flood.** A flood that has a 1% chance of being equaled or exceeded in any given year.

**PA DCED.** Pennsylvania Department of Economic Development.

**PA DEP.** Pennsylvania Department of Environmental Protection.

**Partially damaged structure.** A structure that has sustained damage from any cause whereby the cost of restoring the structure to its before-damaged condition is less than fifty (50) percent of the market value of the structure before the damage occurred.

**Person.** An individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever, which is recognized by law as the subject of rights and duties.

**Post-FIRM structure.** A structure for which construction or substantial improvement occurred after 12/31/1974, or on or after the community's initial FIRM dated (MM/DD/YYYY), whichever is later, and as such, would be required to be compliant with the regulations of the NFIP.

**Pre-FIRM structure.** A structure for which construction or substantial improvement occurred on or before 12/31/1974, or before the community's initial FIRM dated (MM/DD/YYYY), whichever is later, and as such, would not be required to be compliant with the regulations of the NFIP.

**Recreational vehicle.** A vehicle which is built on a single chassis not more than 400 square feet, measured at the largest horizontal projections, designed to be self-propelled or permanently towable by a light-duty truck and not designed for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

**Reconstruction.** The act or process of reproducing by new construction the exact form and detail of a structure or a part thereof, as it appeared at a specific period of time.

**Redevelopment.** The removal and replacement, rehabilitation, or adaptive reuse of an existing structure or structures, or of vacant but formerly developed land.

**Regulatory flood elevation (RFE).** The regulatory flood elevation is the elevation to which development is regulated for purposes of elevation and/or dry floodproofing. It is equal to the base flood elevation (BFE) plus a freeboard of 1.5 feet.

**Repetitive loss.** Flood related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on average, equals or exceeds 25 percent of the market value of the structure before the damages occurred.

**Residential storage facility.** An enclosed storage facility containing independent, fully enclosed bays that are leased to individuals exclusively for storage of their household goods or personal property.

**Severe repetitive loss structure.** As determined by FEMA, a residential structure that is covered under flood insurance by the NFIP and has incurred flood-related damage for which four or more separate claim payments have been paid under flood insurance coverage with the amount of each claim payment exceeding \$5,000 and with cumulative amount of such claim payments exceeding \$20,000.

**Special Flood Hazard Area.** An area in the floodplain subject to a one percent or greater chance of flooding in any given year. It is shown on FIRM maps as Zone A, AO, A1-A30, AE, A99 or AH.

**Start of construction.** Includes substantial improvement and other proposed new development and means the date the permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the date of the permit

and shall be completed within 12 months after the date of issuance of the permit unless a time extension is granted, in writing, by the Floodplain Administrator. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

**Storage.** Depository, stockpiling or safekeeping of materials, products or items.

**Structure.** A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

**Subdivision.** The division of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs, or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

**Substantial damage.** Damage from any cause sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent or more of the market value of the structure before the damage occurred.

**Substantially damaged structure.** A structure that has sustained damage from any cause whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent or more of the market value of the structure before the damage occurred.

**Substantial improvement.** Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage” or “repetitive loss” regardless of the actual repair work performed. The term does not, however, include any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions.



**Uniform Construction Code (UCC).** The statewide building code adopted by The Pennsylvania General Assembly in 1999 applicable to new construction in all municipalities whether administered by the municipality, a third party or the Department of Labor and Industry.

**Vacant but formerly developed land.** Land from which previous improvements have been removed.

**Violation.** The failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in 44 CFR §60.3(b) (5), (c) (4), (c)(10), (d) (3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.

**Warehouse.** A structure used primarily for the storage and distribution of goods, merchandise, supplies, and equipment.

**Watercourse.** A watercourse is a channel or conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow. Man-made swales, constructed specifically for stormwater management purposes, are excluded from this definition.

## Article 4. Identification of Floodplain Areas

### Section 4.1 Identification

- A. The identified floodplain area shall be any areas of [Name of Municipality] classified as special flood hazard areas (SFHAs) in the Flood Insurance Study (FIS) and the accompanying Flood Insurance Rate Maps (FIRMs) dated [effective map date] and issued by the Federal Emergency Management Agency (FEMA), or the most recent revision thereof, including all digital data developed as part of the FIS, and any community identified flood hazard areas. The above referenced FIS and FIRMs, and any subsequent revisions and amendments are hereby adopted by [Name of Municipality] and declared to be a part of this Ordinance.
- B. The Flood Hazard District may consist, more specifically, of the following areas:
  1. **The Floodway Area (FW)** shall be those areas identified in the FIS and the FIRM as floodway and which represent the channel of a watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without increasing the water surface elevation by more than one (1) foot at any point. This term shall also include floodway areas which have been identified in other available studies or sources of information for those special flood hazard areas where no floodway has been identified in the FIS and FIRM. Such studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough technical review by [Name of Municipality].

2. **The AE Area/District** shall be those areas identified as an AE Zone on the FIRM included in the FIS prepared by FEMA for which base flood elevations have been provided.

The AE Area adjacent to the floodway shall be those areas identified as an AE Zone on the FIRM included in the FIS prepared by FEMA for which base flood elevations have been provided and a floodway has been delineated.

The AE Area without a floodway shall be those areas identified as an AE Zone on the FIRM included in the FIS prepared by FEMA for which base flood elevations have been provided but no floodway has been determined.

3. **The A Area/District** shall be those areas identified as an A Zone on the FIRM included in the FIS prepared by FEMA and for which no base flood elevations have been provided. For these areas, elevation and floodway information from other federal, state, or other acceptable sources shall be used when available. Where other acceptable information is not available, the base flood elevation shall be determined by using the elevation of a point on the boundary of the identified floodplain area which is nearest the construction site.
4. **The AO and AH Area/District** shall be those areas identified as Zones AO and AH on the FIRM and in the FIS. These areas are subject to inundation by one percent (1%) annual chance shallow flooding where average depths are between one and three feet. In Zones AO and AH, drainage paths shall be established to guide floodwaters around and away from structures on slopes.
5. **Community Identified Flood Hazard Areas** shall be those areas where [Name of Municipality] has identified local flood hazard or ponding areas, as delineated and adopted on a "Local Flood Hazard Map" using best available topographic data and locally derived information such as flood of record, historic high water marks, soils or approximate study methodologies.

- C. An initial determination shall be made by the Zoning Officer should a dispute concerning any district boundary arise. Any party aggrieved by this decision may appeal to the Zoning Hearing Board under the provisions of Article 7 of this Ordinance. The burden of proof is on the appellant.

#### Section 4.2 Changes in Identification of Area

- A. The Flood Hazard District may be revised or modified by the [Name of Municipality] where studies or information provided by a qualified agency or person documents the need for such revision. However, prior to any such change, approval must be obtained from FEMA.

### **Article 5. General Provisions**

- A. No encroachment, land development, improvement or reconstruction of any kind shall be made to any watercourse until all adjacent municipalities which may be affected by such action have been notified by [Name of Municipality], and until all required permits or approvals have been first obtained from the Pennsylvania DEP Regional Office. In addition, FEMA and PA DCED shall be notified prior to any alteration or relocation of any watercourse.

- B. Any new construction, uses, activities or land development occurring within the Flood Hazard District shall be undertaken only in strict compliance with the provisions of this Ordinance and with all other applicable codes, Ordinances and regulations including the [Name of Municipality] Building Code, as amended and [Name of Municipality] Subdivision and Land Development Ordinance.
- C. A permit shall be required before any construction or development is undertaken within the Flood Hazard District.
- D. Under no circumstances shall any new construction, use, activity and/or land development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch or any other drainage facility or system.
- E. Any new construction and/or land development, with the exception of redevelopment projects, that would cause any increase in the base flood elevation shall be prohibited.
- F. New construction, development, encroachment or redevelopment in the FW area is prohibited.
- G. All subdivision and land development proposals containing at least fifty (50) lots or a minimum of five (5) acres in the Flood Hazard District where base flood elevation data is not available shall be supported by hydrologic and hydraulic engineering analyses that determine base flood elevations and floodway information. The analyses shall be prepared by a licensed professional engineer in a format required by FEMA for a Conditional Letter of Map Revision (CLOMR) or Letter of Map Revision (LOMR).

## **Article 6. Uses Permitted in the Flood Hazard District**

### Section 6.1 Uses Permitted by Right

- A. In the Flood Hazard District, the following uses and activities are permitted in the AE Area/District or A Area/District areas provided they are in compliance with the provisions of the underlying district and are not prohibited by any other Ordinance:
  - 1. Agriculture, horticulture, and forestry that:
    - a. Do not include any structures.
    - b. Do not require grading which would cause any increase in flood heights or frequency.
    - c. Are conducted in accord with recognized soil conservation and water quality practices.
  - 2. Public and private recreational uses and activities, limited to parks, day camps, picnic grounds, boat launching and swimming areas, hiking and horseback riding trails, wildlife and nature preserves, game farms, fish hatcheries, and hunting and fishing areas.

3. Uses accessory to those permitted in the underlying zoning district, including yard areas, gardens, play areas and parking areas, provided that no structures are erected, and no impervious surfaces are created.
4. Redevelopment projects that:
  - a. Do not include residential structures or critical facilities;
  - b. Do not include prohibited uses listed in Section 6.2;
  - c. Are consistent with the goals and objectives of the [Name of Municipality] Comprehensive Plan;
  - d. Are permitted in the applicable underlying zoning district;
  - e. Are elevated to regulatory flood elevation (RFE) and in full compliance with the floodproofing requirements in the [Name of Municipality] Building Code as amended;
  - f. Include a document, certified by a registered professional engineer who states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the 100-year flood. Such statement shall include the lowest floor elevation of all proposed structures, the elevation of the 100-year flood, and the type and extent of floodproofing measures which have been incorporated into the design of all proposed structures and/or the development.
5. The repair or expansion of riparian buffers.
6. Floodproofing to protect only lawfully existing non-conforming structures and lawfully existing non-conforming uses within structures.
7. Fences and temporary protective fencing that do not impede floodwaters.
8. Dams, culverts, bridges, and altered or relocated watercourses with permits and/or approvals from the PA DEP, PA Public Utility Commission, and/or US Army Corps of Engineers. Furthermore, notification of such actions shall be provided to all affected adjoining municipalities, FEMA and the Pennsylvania PA DCED. The approval of a permit by any of the preceding state or federal agencies for one of the uses allowed in the Flood Hazard District shall in no way affect or conflict with the requirements imposed upon the use under the regulations of the Flood Hazard District.
9. Public utility facilities under the exclusive jurisdiction of the Pennsylvania Public Utility Commission.

#### Section 6.2 Uses Prohibited in the Flood Hazard District

- A. The following uses are prohibited from locating within the Flood Hazard District:
  1. All uses prohibited in the underlying zoning district.
  2. New construction, development or redevelopment in the FW area.
  3. All structures, with the exception of those specifically allowed in Section 6.1.
  4. Warehousing and residential storage warehouses.



5. The production, storage, or use of any amount of radioactive substances.
6. The production, storage or use of a substance or material, underground or aboveground, that is buoyant, flammable, explosive, or injurious to property, water quality or human, animal, plant, fish or aquatic life including but not limited to the following:
  - a. Acetone
  - b. Ammonia
  - c. Benzene
  - d. Calcium carbide
  - e. Carbon disulfide
  - f. Celluloid
  - g. Chlorine
  - h. Hydrochloric acid
  - i. Hydrocyanic acid
  - j. Magnesium
  - k. Nitric acid and oxides of nitrogen
  - l. Petroleum products (gasoline, fuel oil, etc.)
  - m. Phosphorus
  - n. Potassium
  - o. Sodium
  - p. Sulphur and sulphur products
  - q. Pesticides (including insecticides, fungicides, and rodenticides)
  - r. Radioactive substances, insofar as such substances are not otherwise regulated.
7. Storage of material or equipment that, in time of flooding, could become buoyant and pose an obstruction to flow in identified floodway areas.
8. The production, storage or use of explosives.
9. The storage or disposal of materials used for snow and ice control including sand, salt and other deicing chemicals.
10. Sanitary landfills, dumps, junk and salvage yards, and outdoor storage of vehicles and/or materials.
11. The storage or disposal of any soil, loam, peat, sand, gravel, rock, or other mineral substance, refuse, trash, rubbish, debris, or dredged/excavated spoil.

12. Draining, excavation, or dredging, or removal or relocation of loam, peat, sand, gravel, soil, rock, or other mineral substance, except as accessory to work permitted as of right or by special permit.
13. Manure storage facilities and manure stockpiles.
14. Improvements to existing manufactured home parks and subdivisions.
15. Sewage disposal facilities.
16. Other than required to meet the requirements of Section 6.1(A)(8) and 6.1(A)(9), fill is prohibited in the Flood Hazard District.

#### Section 6.3 Nonconforming Structures and Uses in the Flood Hazard District

- A. The provisions of this Ordinance do not require any changes or improvements to be made to lawfully existing structures. However, when an improvement is made to any existing structure, the provisions of Section 6.4 of this Ordinance, and (reference Municipal Ordinance Non-conforming Use standards here) shall apply.

#### Section 6.4 Improvements to Existing Structures in the Flood Hazard District

- A. No improvement or reconstruction of an existing structure shall be allowed within any FW area as identified by the Flood Insurance Study prepared by FEMA or other available studies or sources of information found acceptable by [Name of Municipality] and approved by FEMA.
- B. No improvement of an existing structure shall be allowed within any AE Area/District or A Area/District that would, together with all other existing and anticipated development, increase the base flood elevation more than one (1) foot at any point.
- C. The improvement or reconstruction of existing structures that store materials that are buoyant, flammable, explosive, or injurious to property, water quality or human, animal, plant, fish or aquatic life shall be prohibited in the Flood Hazard District.
- D. Existing structures in the AE Area/District and A Area/District are defined and regulated as follows:

1. **INTACT STRUCTURES**

Any improvement to an existing intact structure, to an extent ten (10) percent or more of its market value, shall be undertaken only in full compliance with the floodproofing requirements in the [Name of Municipality] Building Code, as amended.

2. **PARTIALLY DAMAGED STRUCTURES**

Any improvement or reconstruction to an existing partially damaged structure shall be undertaken only in full compliance with the floodproofing requirements in the [Name of Municipality] Building Code, as amended.

### 3. **SUBSTANTIALLY DAMAGED STRUCTURES**

Any improvement or reconstruction to a substantially damaged structure shall be in full compliance with the floodproofing requirements in the [Name of Municipality] Building Code, as amended, and shall have the lowest floor, including basement, elevated to regulatory flood elevation.

### 4. **REPETITIVE LOSS STRUCTURES**

- a. An improvement to a repetitive loss structure to an extent ten (10) percent or more of its market value of the intact structure shall be prohibited. Any permitted improvement to a repetitive loss structure shall be in full compliance with the floodproofing requirements of the [Name of Municipality] Building Code, as amended, and shall have the lowest floor, including basement, elevated to regulatory flood elevation.
- b. The reconstruction of a repetitive loss structure shall be in full compliance with the [Name of Municipality] Building Code, as amended, and shall have the lowest floor, including basement, elevated to regulatory flood elevation.

### 5. **SEVERE REPETITIVE LOSS STRUCTURES**

- a. An improvement to a severe repetitive loss structure to an extent five (5) percent or more of its market value as an intact structure shall be prohibited. Any permitted improvement to a severe repetitive loss structure shall be in full compliance with the floodproofing requirements of the [Name of Municipality] Building Code, as amended, and shall have the lowest floor, including basement, elevated to regulatory flood elevation.
- b. The reconstruction of a severe repetitive loss structure shall a) be in full compliance with the [Name of Municipality] Building Code, as amended; b) have the lowest floor, including basement, elevated to regulatory flood elevation; and c) the applicant shall provide documentation from [Name of Municipality], the state of Pennsylvania and FEMA that states [Name of Municipality], the state of Pennsylvania or FEMA will not acquire the property for the purposes of flood mitigation prior to the reconstruction of the structure.
- c. The cost of improvements or reconstruction commenced since the adoption of this Ordinance must be calculated at current cost.
- d. It is the responsibility of the applicant to supply the information necessary (e.g. appraisals, construction costs, estimates, etc. to make the determination that the market value is reasonably accurate and that the cost estimate reasonably reflects the actual costs of the improvements to the structure.
- e. Acceptable estimates of market value shall be determined from one of the following methods:
  1. Independent appraisals by a state licensed real estate appraiser.
  2. The value of the building taken from NFIP claims data.
- f. Acceptable estimates of cost of improvement shall be determined from one of the following methods:

1. Itemized estimates made by contractors licensed to work in [Name of Municipality].
  2. Building code valuation tables.
- g. No expansion or enlargement of an existing structure shall be undertaken in the direction of a watercourse.
- h. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined in this Ordinance must comply with the [Name of Municipality] Building Code and all Ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific Ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic Places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from the Ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.
- i. The Zoning Hearing Board shall have the right to waive, as a special exception, any of the requirements of this Section for any structure listed on a National, State or Local Register of Historic Places; provided, however, that the provisions of Article 7 shall be applied in such a case.

## **Article 7. Variances and Special Requirements for Certain Variances**

### Section 7.1 General

- A. If compliance with any of the requirements of this Ordinance would result in an exceptional hardship to the applicant, the [Name of Municipality] may, upon request, grant relief from the strict application of the requirements.

### Section 7.2 Variance Procedures and Conditions

- A. For a use other than those permitted in Section 6.1, an application seeking approval by variance shall be forwarded to the Zoning Hearing Board along with required studies or information and the findings of the Zoning Officer.
- B. No variance shall be granted for any construction, development, use, or activity within any floodway area.
- C. No variance shall be granted for any construction, development, use, or activity within any AE Area/District or A Area/District that would, together with all other existing and anticipated development, increase the BFE more than one (1) foot at any point.
- D. If granted, a variance shall involve only the least modification necessary to provide relief.



- E. In granting any variance, the Zoning Hearing Board shall attach the reasonable conditions and safeguards outlined herein. These conditions and safeguards are necessary in order to protect the public health, safety, and welfare of the residents of the municipality.
  
- F. Whenever a variance is granted, the Zoning Hearing Board shall notify the applicant in writing that:
  - 1. The granting of the variance may result in increased premium rates for flood insurance.
  - 2. Such variances may increase the risks to life and property.
  
- G. In reviewing any request for a variance, the Zoning Hearing Board shall consider, at a minimum, that there is good and sufficient cause, including:
  - 1. That there are unique physical circumstances or conditions, including irregularity, narrowness, or shallowness of lot size or shape, or exceptional topographical or other physical conditions peculiar to the particular property and that the unnecessary hardship is due to such conditions and not the circumstances or conditions generally created by the provisions of the zoning Ordinance in the neighborhood or district in which the property is located.
  - 2. That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformity with the provisions of the zoning Ordinance and that the authorization of a variance is therefore necessary to enable the reasonable use of the property.
  - 3. That such unnecessary hardship has not been created by the appellant.
  - 4. That the variance, if authorized, will not alter the essential character of the neighborhood or district in which the property is located, nor substantially or permanently impair the appropriate use or development of adjacent property, nor be detrimental to the public welfare.
  - 5. That failure to grant the variance would result in exceptional hardship to the applicant.
  - 6. That the granting of the variance will neither result in an unacceptable or prohibited increase in flood heights, additional threats to public safety, or extraordinary public expense, nor create nuisances, cause fraud on, or victimize the public, or conflict with any other applicable state or local Ordinances and regulations.
  - 7. A complete record of all variance requests and related actions shall be maintained by [Name of Municipality]. In addition, a report of all variances granted during the year shall be included in the required report to FEMA.

## **Article 8. Technical Provisions in the Event of a Variance Being Granted**

### Section 8.1 General

- A. In granting any variance, [Name of Municipality] shall attach the following technical provisions to the proposal for which the variance has been granted. These conditions and safeguards are necessary in order to protect the public health, safety, and welfare of the residents of the municipality.

## Section 8.2 Alteration or Relocation of Watercourses

- A. No encroachment, alteration, or improvement of any kind shall be made to any watercourse until all adjacent municipalities which may be affected by such action have been notified by the municipality, and until all required permits or approvals have been first obtained from DEP.
- B. No encroachment, alteration, or improvement of any kind shall be made to any watercourse unless it can be shown that the activity will not reduce or impede the flood carrying capacity of the watercourse in any way.
- C. In addition, FEMA and PA DCED shall be notified prior to any alteration or relocation of any watercourse.
- D. The municipality shall require technical or scientific data to be submitted to FEMA for a Letter of Map Revision (LOMR) within six (6) months of the completion of any new construction, development, or other activity resulting in changes in the BFE. A LOMR or Conditional Letter of Map Revision (CLOMR) is required for:
  - 1. Any development that causes a rise in the base flood elevations within the floodway; or
  - 2. Any development occurring in Zones A1-30 and Zone AE without a designated floodway, which will cause a rise of more than one foot in the base flood elevation; or
  - 3. Any alteration or relocation of a stream (including but not limited to installing culverts and bridges) the applicant shall (as per 44 CFR Part 65.12):
    - a. Apply to FEMA for conditional approval of such action prior to permitting the encroachments to occur.
    - b. Upon receipt of the Administrator's conditional approval of map change and prior to approving the proposed encroachments, a community shall provide evidence to FEMA of the adoption of floodplain management ordinances incorporating the increased base flood elevations and / or revised floodway reflecting the post-project condition.
    - c. Upon completion of the proposed encroachments, the applicant shall provide as-built certifications to [Municipality]. FEMA will initiate a final map revision upon receipt of such certifications in accordance with 44 CFR Part 67.

## Section 8.3 Residential and Non-Residential Structures

- A. Any new residential construction or substantial improvement shall have the lowest floor (including basement) elevated up to, or above, the regulatory flood elevation. The design and construction standards and specifications contained in the [Name of Municipality] Building Code shall be used. In AO Zones, any new construction or substantial improvement shall have the lowest floor (including basement) at, or above, the highest adjacent grade at least as high as the elevation specified on the FIRM.

- B. Any new non-residential construction or substantial improvement of a non-residential structure shall have the lowest floor (including basement) elevated up to, or above, the regulatory flood elevation, or be designed and constructed so that the space enclosed below the regulatory flood elevation is floodproofed so that the structure is watertight with walls substantially impermeable to the passage of water, and has structural components with the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. In AO Zones, any new construction or substantial improvement shall have the lowest floor (including basement) at, or above, the highest adjacent grade at least as high as the elevation specified on the FIRM.
- C. Any non-residential structure, or part thereof, made watertight below the regulatory flood elevation shall be floodproofed in accordance with the WI or W2 space classification standards contained in the publication entitled Flood-Proofing Regulations published by the U.S. Army Corps of Engineers (May 2000, as amended) or with some other equivalent standard. All plans and specifications for such floodproofing shall be accompanied by a statement certified by a registered professional engineer or architect which states that the proposed design and methods of construction are in conformance with the above referenced standards.
- D. The design and construction standards and specifications contained in the [Name of Municipality] Building Code shall be used.

#### Section 8.4 Space Below the Lowest Floor

- A. Fully enclosed space below the lowest floor (excluding basements) which will be used solely for the parking of a vehicle, building access, or incidental storage in an area other than a basement, shall be designed and constructed to allow for the automatic entry and exit of floodwaters for the purpose of equalizing hydrostatic forces on exterior walls. The term “fully enclosed space” also includes crawl spaces.
- B. Designs for meeting this requirement must either be certified by a registered professional engineer or architect, or meet or exceed the following minimum criteria:
  - 1. Minimum of two openings having a net total area of not less than one (1) square inch for every square foot of enclosed space.
  - 2. The bottom of all openings shall be no higher than one (1) foot above grade.
  - 3. Openings may be equipped with screens, louvers, etc. or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

#### Section 8.5 Accessory Structures

- A. Structures accessory to a principal building need not be elevated or floodproofed to remain dry, but shall comply, at a minimum, with the following requirements:

1. The structure shall not be designed or used for human habitation, but shall be limited to the parking of vehicles, or to the storage of tools, material, and equipment related to the principal use or activity.
  2. Floor area shall not exceed 100 square feet.
  3. The structure will have a low damage potential.
  4. The structure will be located on the site so as to cause the least obstruction to the flow of floodwaters.
  5. Power lines, wiring, and outlets will be elevated to the regulatory flood elevation.
  6. Permanently affixed utility equipment and appliances such as furnaces, heaters, washers, dryers, etc. are prohibited.
  7. Sanitary sewer facilities are prohibited.
- B. The structure shall be adequately anchored to prevent flotation or movement and shall be designed to automatically provide for the entry and exit of floodwater for the purpose of equalizing hydrostatic forces on the walls. Designs for meeting this requirement must either be certified by a registered professional engineer or architect, or meet or exceed the following minimum criteria:
1. A minimum of two openings having a net total area of not less than one (1) square inch for every square foot of enclosed space.
  2. The bottom of all openings shall be no higher than one (1) foot above grade.
  3. Openings may be equipped with screens, louvers, etc. or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

### Section 8.6 Manufactured Homes

- A. Where permitted by variance within the Flood Hazard District, all manufactured homes, and any improvements thereto, shall be:
1. Placed on a permanent foundation.
  2. Elevated so that the lowest floor of the manufactured home is at, or above, regulatory flood elevation.
  3. All ductwork and utilities including HVAC/heat pumps elevated to regulatory flood elevation.
  4. Anchored to resist flotation, collapse, or lateral movement.
  5. Shall be prohibited within the area measured fifty (50) feet landward from the top-of-bank of any watercourse.
- B. Installation of manufactured homes shall be done in accordance with the manufacturer's installation instructions. Where the applicant cannot provide the above information, the more restrictive requirements of the [Name of Municipality] Building Code or the U.S. Department of Housing and

Urban Development's Permanent Foundations for Manufactured Housing, September 1996 Edition as amended, shall apply.

- C. Consideration shall be given to the installation requirements of the [Name of Municipality] Building Code or the most recent revisions thereto where appropriate and/or applicable to units where the manufacturer's standards for anchoring cannot be provided or were not established for the proposed installation.

#### Section 8.7 Recreational Vehicles

A. Recreational vehicles must either:

1. Be on the site for fewer than 180 consecutive days only and not parked in the floodway.
2. Be fully licensed and ready for highway use.
3. If the provisions of 8.7(A)(1) and (2) cannot be met, recreational vehicles must meet the permit requirements for manufactured homes in Section 8.6.

#### Section 8.8 Development Which May Endanger Human Life

A. Any new or substantially improved structure which will be used for the production or storage of any of the following dangerous materials or substances, or will be used for any activity requiring the maintenance of a supply of more than 550 gallons, or other comparable volume, of any of the following dangerous materials or substances on the premises; or will involve the production, storage, or use of any amount of radioactive substances shall be subject to the provisions of this Section, in addition to all other applicable provisions. The following list of materials and substances are considered dangerous to human life:

1. Acetone
2. Ammonia
3. Benzene
4. Calcium carbide
5. Carbon disulfide
6. Celluloid
7. Chlorine
8. Hydrochloric acid
9. Hydrocyanic acid
10. Magnesium
11. Nitric acid and oxides of nitrogen



12. Petroleum products (gasoline, fuel oil, etc.)
  13. Phosphorus
  14. Potassium
  15. Sodium
  16. Sulphur and sulphur products
  17. Pesticides (including insecticides, fungicides, and rodenticides)
  18. Radioactive substances, insofar as such substances are not otherwise regulated.
- B. Within any Floodway Area, any structure of the kind described in Subsection A., above, shall be prohibited. No variance shall be granted.
- C. Where permitted by a variance within the floodplain area, any new or substantially improved structure of the kind described in Subsection A. above, shall be:
1. Elevated or designed and constructed to remain completely dry up to regulatory flood elevation.
  2. Designed to prevent pollution from the structure or activity during the course of a 100-year base flood elevation.
  3. Any such non-residential structure, or part thereof, that will be built below the regulatory flood elevation shall be designed and constructed in accordance with the standards for completely dry floodproofing contained in the publication Flood-Proofing Regulations(U.S. Army Corps of Engineers, May 2000, as amended), or with some other equivalent watertight standard.

#### Section 8.9 Fill

- A. If fill is used, it shall:
1. Extend laterally at least fifteen (15) feet beyond the building line from all points.
  2. Consist of soil or small rock materials only.
  3. Be compacted to provide the necessary permeability and resistance to erosion, scouring, or settling.
  4. Be no steeper than one (1) vertical to two (2) horizontal, feet unless substantiated data, justifying steeper slopes are submitted to, and approved, by the Floodplain Administrator.
  5. Be used to the extent to which it does not adversely affect adjacent properties.

#### Section 8.10 Drainage Facilities

- A. Storm drainage facilities shall be designed to convey the flow of stormwater runoff in a safe and efficient manner. The system shall ensure proper drainage along streets, and provide positive drainage

away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties.

#### Section 8.11 Water and Sanitary Sewer Facilities and Systems

- A. All new or replacement water supply and sanitary sewer facilities and systems shall be located, designed and constructed to minimize or eliminate flood damages and the infiltration of floodwaters.
- B. Sanitary sewer facilities and systems shall be designed to prevent the discharge of untreated sewage into floodwaters.
- C. No part of any on-site sewage system shall be located within any Flood Hazard District except in strict compliance with all state and local regulations for such systems. If any such system is permitted, it shall be located so as to avoid impairment to it, or contamination from it, during a flood.
- D. The design and construction provisions of the [Name of Municipality] Building Code and FEMA #P-348, Protecting Building Utilities From Flood Damages and The International Private Sewage Disposal Code shall be utilized.

#### Section 8.12 Other Utilities

- A. All other utilities such as gas lines, electrical and telephone systems shall be located, elevated (where possible) and constructed to minimize the chance of impairment during a flood.

#### Section 8.13 Streets

- A. The finished elevation of all new streets shall be no more than one (1) foot below the regulatory flood elevation.

#### Section 8.14 Storage

- A. All materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human, animal, or plant life, and not listed in Section 8.8, Development Which May Endanger Human Life, shall be stored at, or above, the regulatory flood elevation and/or floodproofed to the maximum extent possible.

#### Section 8.15 Placement and Composition of Buildings and Structures

- A. All buildings and structures shall be designed, located, and constructed so as to offer the minimum obstruction to the flow of water and shall be designed to have a minimum effect upon the flow and height of floodwater.

- B. All buildings and structures shall be firmly anchored in accordance with accepted engineering practices to prevent flotation, collapse, or lateral movement.
- C. All air ducts, large pipes, storage tanks, and other similar objects or components located below the regulatory flood elevation shall be securely anchored or affixed to prevent flotation.
- D. Wood flooring used at, or below, the regulatory flood elevation shall be installed to accommodate a lateral expansion of the flooring, perpendicular to the flooring grain without causing structural damage to the building.
- E. Plywood used at, or below, the regulatory flood elevation shall be of a “marine” or “water-resistant” variety.
- F. Walls and ceilings at, or below, the regulatory flood elevation shall be designed and constructed of materials that are “water-resistant” and will withstand inundation.
- G. Windows, doors, and other components at, or below, the regulatory flood elevation shall be made of metal or other “water-resistant” material.
- H. Paints and other finishes used at, or below, the regulatory flood elevation shall be of “marine” or “water-resistant” quality.
- I. Adhesives used at, or below, the regulatory flood elevation shall be of a “marine” or “water-resistant” variety.
- J. All wooden components (doors, trim, cabinets, etc.) at, or below, the regulatory flood elevation shall be finished with a “marine” or “water resistant” paint or other finishing material.
- K. Electrical distribution panels shall be at least three (3) feet above the regulatory flood elevation.
- L. Separate electrical circuits shall serve lower levels and shall be dropped from above.
- M. Water heaters, furnaces, air conditioning and ventilating units, and other electrical, mechanical or utility equipment or apparatus shall not be located below the regulatory flood elevation.
- N. All gas and oil supply systems shall be designed to prevent the infiltration of floodwaters into the system and discharges from the system into floodwaters. Additional provisions shall be made for the drainage of these systems in the event that floodwater infiltration occurs.

## Section 8.16 Hospitals, Nursing Homes, Jails or Prisons, Manufactured Home Parks

- A. Where a variance has been granted for the construction, enlargement, or expansion of a structure used or intended to be used for a hospital, nursing home, jail or prison, or manufactured home park in the Flood Hazard District, it shall be located, constructed and maintained in a manner that will fully protect the health and safety of the general public and any occupants of the structure. At a minimum, all new structures shall be designed, located, and constructed so that the structure will survive inundation by waters of the base flood elevation without any lateral movement or damage to either the structure itself, or to any of its equipment or contents below the regulatory flood elevation.
- B. The lowest floor (including basement) will be elevated to regulatory flood elevation.
- C. The occupants of the structure can remain inside for an indefinite period of time and be safely evacuated at any time during the 100-year base flood elevation.
- D. Prevent the risk of any significant possibility of pollution, increased flood levels or flows, or debris endangering life and property.
- E. All hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently accepted technical concepts. Studies, analyses, computations, etc. shall be submitted in sufficient detail to allow a thorough technical review by [Name of Municipality] and the PA DCED.

## Section 8.17 Application Requirements for Hospitals, Nursing Homes, Jails Or Prisons, Manufactured Home Parks

- A. Where a variance has been granted for the construction, enlargement, or expansion of a structure used or intended to be used for a hospital, nursing home, jail or prison, or manufactured home park in the Flood Hazard District, applicants shall provide five copies of the following items to [Name of Municipality]:
  - 1. A written request.
  - 2. A small scale map showing the vicinity in which the proposed site is located.
  - 3. A plan of the entire site, clearly and legibly drawn at a scale of one (1) inch being equal to one hundred (100) feet or less, showing the following:
    - a. North arrow, scale and date.
    - b. Topography based upon the North American Vertical Datum (NAVD) of 1988, showing existing and proposed contours at intervals of two (2) feet.
    - c. All property and lot lines including dimensions, and the size of the site expressed in acres or square feet.

- d. The location of all existing streets, drives, other access ways, and parking areas, with information concerning widths, pavement types and construction, and elevations.
  - e. The location of any existing bodies of water or watercourses, buildings, structures and other public or private facilities, including railroad tracks and facilities, and any other natural and man-made features affecting, or affected by, the proposed activity or development.
  - f. The location of the floodplain boundary line, information and spot elevations concerning the base flood elevation, and information concerning the flow of water including direction and velocities.
  - g. The location of all proposed buildings, structures, utilities, and any other improvements.
  - h. Any other information which [Municipality] considers necessary for review of the application.
4. Plans of all proposed buildings, structures and other improvements, clearly and legibly drawn at suitable scale showing the following:
    - a. Sufficiently detailed architectural or engineering drawings, including floor plans, sections, and exterior building elevations, as appropriate.
    - b. For any proposed building, the elevation of the lowest floor (including basement) and, as required, the elevation of any other floor.
    - c. Complete information concerning flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the base flood elevation.
    - d. Detailed information concerning any proposed floodproofing measures.
    - e. Cross section drawings for all proposed streets, drives, other access ways, and parking areas, showing all rights-of-way and pavement widths.
    - f. Profile drawings for all proposed streets, drives, and vehicular access ways including existing and proposed grades.
    - g. Plans and profiles of all proposed sanitary and storm sewer systems, water supply systems, and any other utilities and facilities.
  5. Certification from the applicant that the site upon which the activity or development is proposed is an existing separate and single parcel, owned by the applicant or the client he/she represents.
  6. Certification from a registered professional engineer, architect, or landscape architect that the proposed construction has been adequately designed to protect against damage from the base flood elevation.
  7. A statement, certified by a registered professional engineer, architect, landscape architect, or other qualified person which contains a complete and accurate description of the nature and extent of pollution that might possibly occur from the development during the course of a base flood elevation, including a statement concerning the effects such pollution may have on human life.
  8. A statement certified by a registered professional engineer, architect, or landscape architect, which contains a complete and accurate description of the effects the proposed development will have on base flood elevations and flows.



9. A statement, certified by a registered professional engineer, architect, or landscape architect, which contains a complete and accurate description of the kinds and amounts of any loose buoyant materials or debris that may possibly exist or be located on the site below the base flood elevation and the effects such materials and debris may have on base flood elevations and flows.
10. The appropriate component of the PA DEP "Sewage Facilities Planning Module for New Land Development".
11. Where any excavation or grading is proposed, a plan meeting the requirements of the PA DEP to implement and maintain erosion and sedimentation control.
12. Any other applicable permits such as, but not limited to, a permit for any activity regulated by the PA DEP under Section 302 of Act 1978-166.
13. An evacuation plan which fully explains the manner in which the site will be safely evacuated before or during the course of a 100-year flood.

Section 8.18 Application Review Procedures for Hospitals, Nursing Homes, Jails and Prisons, Manufactured Home Parks

- A. Upon receipt of an application for the construction, enlargement, or expansion of a structure used or intended to be used for a hospital, nursing home, jail or prison or manufactured home park in the Flood Hazard District by [Name of Municipality], the following procedures shall apply:
  1. Before issuing any permits, [Name of Municipality] shall allow the PA DCED thirty (30) days to review the application.
  2. If [Name of Municipality] does not receive any communication from the PA DCED during the thirty (30) day review period, it may issue permits to the applicant.
  3. If the PA DCED should decide to disapprove an application, it shall notify [Name of Municipality] and the applicant, in writing, of the reasons for the disapproval, and [Name of Municipality] shall not issue permits.
- B. No application for the construction, enlargement, or expansion of a structure used or intended to be used for a hospital, nursing home, jail or prison or manufactured home park in the Flood Hazard District shall be approved unless it can be determined that the structure or activity will be located, constructed and maintained in a manner which will:
  1. Fully protect the health and safety of the general public and any occupants of the structure. At a minimum, all new structures shall be designed, located, and constructed so that the structure will survive inundation by waters of the base flood elevation without any lateral movement or damage to either the structure itself, or to any of its equipment or contents below the regulatory flood elevation.
  2. The lowest floor (including basement) will be elevated to at least to regulatory flood elevation.
  3. The occupants of the structure can remain inside for an indefinite period of time and be safely evacuated at any time during the base flood elevation.
  4. Prevent any significant possibility of pollution, increased flood levels or flows, or debris endan-

gering life and property.

- C. All hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently accepted technical concepts. Studies, analyses, computations, etc. shall be submitted in sufficient detail to allow a thorough technical review by [Name of Municipality] and the PA DCED.

## **Article 9. Administration**

### Section 9.1 Designation of the Floodplain Administrator

- A. The [Building Permit Officer, Zoning Officer, Municipal Manager, etc.] within the [Office, Department, etc.] is hereby appointed to administer and enforce this Ordinance and is referred to herein as the Floodplain Administrator. The Floodplain Administrator may: fulfill the duties and responsibilities set forth in these regulations; delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees; or enter into a written agreement or written contract with another agency or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.
- B. In the absence of a designated Floodplain Administrator, the Floodplain Administrator duties are to be fulfilled by [Designated Municipal Official].

### Section 9.2 Duties and Responsibilities of the Floodplain Administrator

- A. The Floodplain Administrator shall issue a permit only after it has been determined that the proposed work to be undertaken will be in conformance with the requirements of this and all other applicable codes and Ordinances.
- B. Prior to the issuance of any permit, the Floodplain Administrator shall review the application for the permit to determine if all other necessary government permits required by state and federal laws have been obtained, such as those required by the Pennsylvania Sewage Facilities Act (Act 1966-537, as amended); the Pennsylvania Dam Safety and Encroachments Act (Act 1978-325, as amended); the Pennsylvania Clean Streams Act (Act 1937-394, as amended); and the U.S. Clean Water Act, Section 404, 33, U.S.C. 1344. No permit shall be issued until this determination has been made.
- C. In the case of existing structures, prior to the issuance of any permit, the Floodplain Administrator shall review the history of repairs to the subject building, so that any repetitive loss issues can be addressed before the permit is issued.

- D. During the construction period, the Floodplain Administrator or other authorized official shall inspect the premises to determine that the work is progressing in compliance with the information provided on the permit application and with all applicable municipal laws and Ordinances. The Floodplain Administrator shall make as many inspections during and upon completion of the work as are necessary.
- E. In the discharge of his/her duties, the Floodplain Administrator shall have the authority to enter any building, structure, premises or development in the Flood Hazard District, upon presentation of proper credentials, at any reasonable hour to enforce the provisions of this Ordinance.
- F. In the event the Floodplain Administrator discovers that the work does not comply with the permit application or any applicable laws and Ordinances, or that there has been a false statement or misrepresentation by any applicant, the Floodplain Administrator shall revoke the permit and report such fact to the [Municipal Elected Body] for whatever action it considers necessary.
- G. The Floodplain Administrator shall maintain in perpetuity all records associated with the requirements of this Ordinance including, but not limited to, permitting, inspection and enforcement.
- H. The Floodplain Administrator shall consider the requirements of the [Name of Municipality] Building Code.

### Section 9.3 Application Procedures and Requirements

- A. Application for such a permit shall be made, in writing, to the Floodplain Administrator on forms supplied by [Name of Municipality]. Such application shall contain the following:
  - 1. Name and address of applicant.
  - 2. Name and address of owner of land on which proposed construction is to occur.
  - 3. Name and address of contractor.
  - 4. Site location including address.
  - 5. Listing of other permits or variances required.
  - 6. Brief description of proposed work and estimated cost, including a breakout of flood-related cost and the market value of the building before the flood damage occurred where appropriate.
- B. If any proposed construction or development is located entirely or partially within any Flood Hazard District, applicants for permits shall provide all the necessary information in sufficient detail and clarity to enable the Floodplain Administrator to determine that:
  - 1. All such proposals are consistent with the need to minimize flood damage and conform to the requirements of this and all other applicable codes and Ordinances.

2. All utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage.
  3. Adequate drainage is provided so as to reduce exposure to flood hazards.
  4. Structures will be anchored to prevent floatation, collapse, or lateral movement.
  5. Building materials are flood-resistant.
  6. Appropriate practices that minimize flood damage have been used.
  7. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities have been designed and/or located to prevent water entry or accumulation.
- C. Applicants shall file the following minimum information plus any other pertinent information as may be required by the Floodplain Administrator to make the above determination:
1. A completed permit application form.
  2. A plan of the entire site, clearly and legibly drawn at a scale of one (1) inch being equal to one hundred (100) feet or less, showing:
    - a. North arrow, scale, and date.
    - b. Topographic contour lines, if available.
    - c. The location of all existing and proposed buildings, structures, and other improvements, including the location of any existing or proposed subdivision and development.
    - d. The location of all existing streets, drives, and other access ways.
    - e. The location of any existing bodies of water or watercourses, the Flood Hazard District, and, if available, any information that pertains to the floodway, and the flow of water, including direction and velocities.
    - f. The proposed lowest floor elevation of any proposed building based upon North American Vertical Datum of 1988.
    - g. The elevation of the base flood.
    - h. Supplemental information as may be necessary by the [Name of Municipality] Building Code.
    - i. If available, information concerning flood depths, pressures, velocities, impact and uplift forces and other factors associated with a base flood elevation; and detailed information concerning any proposed floodproofing measures and corresponding elevations.
    - j. Documentation, certified by a registered professional engineer or architect, to show that the cumulative effect of any proposed development within an AE Area/District without floodway when combined with all other existing and anticipated development, will not increase the base flood elevation more than one (1) foot at any point.
    - k. A document, certified by a registered professional engineer or architect, which states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the base flood elevation.

Such statement shall include a description of the type and extent of floodproofing measures which have been incorporated into the design of the structure and/or the development.

3. Applications for permits shall be accompanied by a fee, payable to the municipality based upon the estimated cost of the proposed construction as determined by the Floodplain Administrator.

#### Section 9.4 Changes

- A. After the issuance of a permit by the Floodplain Administrator, no changes of any kind shall be made to the application, permit, or any of the plans, specifications or other documents submitted with the application without the written consent or approval of the Floodplain Administrator. Requests for any such change shall be in writing, and shall be submitted by the applicant to Floodplain Administrator for consideration.

#### Section 9.5 Placards

- A. In addition to the permit, the Floodplain Administrator shall issue a placard which shall be displayed on the premises during the time construction is in progress. This placard shall show the number of the permit, the date of its issuance and be signed by the Floodplain Administrator.

#### Section 9.6 Start of Construction

- A. Work on the proposed construction or development shall begin within 180 days after the date of issuance of the development permit. Work shall also be completed within twelve (12) months after the date of issuance of the permit or the permit shall expire unless a time extension is granted, in writing, by the Floodplain Administrator. The issuance of development permit does not refer to the zoning approval.
- B. The actual start of construction means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.
- C. Time extensions shall be granted only if a written request is submitted by the applicant, who sets forth sufficient and reasonable cause for the Floodplain Administrator to approve such a request and the



original permit is compliant with the Ordinance and FIRM/FIS in effect at the time the extension is granted.

### Section 9.7 Enforcement

- A. Whenever the Floodplain Administrator or other authorized municipal representative determines that there are reasonable grounds to believe that there has been a violation of any provisions of this Ordinance, or of any regulations adopted pursuant thereto, the Floodplain Administrator shall give notice of such alleged violation as hereinafter provided. Such notice shall:
1. Be in writing.
  2. Include a statement of the reasons for its issuance.
  3. Allow a reasonable time not to exceed a period of thirty (30) days for the performance of any act it requires.
  4. Be served upon the property owner or his agent as the case may require; provided, however, that such notice or order shall be deemed to have been properly served upon such owner or agent when a copy thereof has been served with such notice by any other method authorized or required by the laws of Pennsylvania.
  5. Contain an outline of remedial action which, if taken, will effect compliance with the provisions of this Ordinance.
- B. Any person who fails to comply with any or all of the requirements or provisions of this Ordinance or who fails or refuses to comply with any notice, order of direction of the Floodplain Administrator or any other authorized employee of the municipality shall pay a fine to [Name of Municipality], of not less than (Figure to be Set by the Municipality) nor more than (Figure to be Set by the Municipality), plus costs of prosecution. In addition to the above penalties all other actions are hereby reserved including an action in equity for the proper enforcement of this Ordinance. The imposition of a fine or penalty for any violation of, or noncompliance with, this Ordinance shall not excuse the violation or noncompliance or permit it to continue and all such persons shall be required to correct or remedy such violations and noncompliance within a reasonable time. Any development initiated or any structure or building constructed, reconstructed, enlarged, altered, or relocated, in noncompliance with this Ordinance may be declared by the [Municipal Elected Body] to be a public nuisance and abatable as such.

### Section 9.8 Appeals

- A. Any person aggrieved by any action or decision of the Floodplain Administrator concerning the administration of the provisions of this Ordinance, may appeal to the [Zoning Hearing Board OR Court of Common Pleas]. Such appeal must be filed, in writing, within thirty (30) days after the decision, determination or action of the Floodplain Administrator.

- B. Upon receipt of such appeal, the [Zoning Hearing Board OR Court of Common Pleas] shall set a time and place, within not less than ten (10), or not more than thirty (30) days, for the purpose of considering the appeal. Notice of the time and place at which the appeal will be considered shall be given to all parties.
- C. Any person aggrieved by any decision of the [Zoning Hearing Board OR Court of Common Pleas] may seek relief there from by appeal to court, as provided by the laws of Pennsylvania including the Pennsylvania Floodplain Management Act.

Section 9.9 Enactment

This Ordinance [Ordinance Number] shall be effective on [Effective date] and shall remain in force until modified, amended or rescinded by [Name of Municipality], [County], Pennsylvania.

ENACTED AND ADOPTED by the [Elected Body] this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

ATTEST:

[BOARD, COUNCIL, ETC.] OF [NAME OF MUNICIPALITY]

\_\_\_\_\_

By: \_\_\_\_\_

[Name of Municipality] Secretary

[Elected Body] President/Chairperson



