CREATING MORE FLOOD RESILIENT COMMUNITIES
MASTER PLAN FOR HEMLOCK TOWNSHIP AND FERNVILLE

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CREATING MORE FLOOD RESILIENT COMMUNITIES:
Master Plan for Hemlock Township and Fernville

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Introduction
The Susquehanna River and its towns are the foundation of our regional economy and places of enduring beauty and human activity. Towns along the Susquehanna played a significant role in building our nation as centers of manufacturing, industry and commerce. Today, however, many of our river towns are not as vibrant as they once were due to loss of industry and jobs from a migration to suburban, regional and offshore locations.

To revitalize our river towns and save our farms and forests from sprawl development, we need to attract people and business back into our core communities. The Susquehanna Greenway Partnership has developed the River Towns technical assistance program to help communities embrace the Susquehanna River and their historic downtowns as assets for sustainable economic development and healthy living. The Susquehanna Greenway Partnership has established the following goals and principles for the River Towns Technical Assistance Program:

Goals
- Revitalize river towns by making them healthier, more attractive places to live, work and play
- Attract investment to river towns and promote sustainable economic development
- Protect and enhance our natural and cultural resources
- Protect water quality

River Towns Program Principles
- Respect and work with the nature of the Susquehanna River
- Connect with the River (physically, visually, spiritually)
- Involve people with the River and with their River Towns
- Recognize that economic development favors River Towns

On September 7, 2011 the flooding from Tropical Storm Lee devastated the village of Fernville and other parts of Hemlock Township. The River Towns Technical Assistance program used a participatory planning process to engage residents of Fernville and municipal leaders of Hemlock Township to create a master plan for Fernville’s Fishing Creek corridor. The planning process also created a ‘smart growth’ strategy to identify the best locations for...
Executive Summary

targeted residential and mixed-use neighborhood development – to help offset the loss of homes in the floodplain.

The planning process included community organization, community self-assessment, project visioning, and compilation of resident’s ‘wish-list’ for their revitalized community. The master plan synthesized these ideas into viable and functional community parks and open spaces. The master plan also suggested project priorities, and a logical sequence for project and program design, funding procurement, and implementation.

The River Towns Technical Assistance Program has achieved positive tangible results in Fernville and Hemlock Township. The community is organized and guided by a clear vision and the specific steps necessary to move enhancement projects toward implementation. Additional funding has been secured from the National Fish and Wildlife Foundation to perform an assessment of the Fishing Creek stream channel to ensure that recreation and open space enhancements are designed to work with the dynamic nature of the stream and help to mitigate impacts of future flooding.

Preliminary outcomes of the NFWF grant include the following priority projects:
- 2D Modeling of Fishing Creek
- Green Infrastructure Drainage Improvements
- Riverfront Foodplain Improvements
- Fernville Community Park Site Development Drawings
- Smart Growth Implementation Strategy

Additional updates to priority projects and funding sources will come as the NFWF grant comes to a close in late 2014.
Introduction

In September 2011, Hurricane Irene and Tropical Storm Lee brought heavy rainfall and flooding throughout eastern Pennsylvania. Fernville, a village in Hemlock Township, suffered significant property and infrastructure damage. Flooding, roadway and bridge damage cut all access to the village for an extended period. Fernville is located less than ½ mile from the Town of Bloomsburg’s town square, separated from the town by Fishing Creek. Flood damage along Fishing Creek was particularly destructive due to the volume and speed of the floodwaters. Twenty three homes have been removed from the floodplain in Fernville, while 8 homes have been elevated. The future of several other homes is uncertain. The level of flood damage in Fernville and Hemlock Township was one of the reasons it was selected by the Susquehanna Greenway Partnership for technical assistance through its River Town program.

The flood of 2011 changed the face of Fernville. With a significant loss in population and tax-base, the Township needed a plan for the future that could be implemented incrementally. Fernville needed a plan that was practical given the dynamics of the Fishing Creek stream corridor, but also a plan that would challenge residents to envision a better future that would attract new residents outside of the floodplain and create recreation and open space amenities that would attract community reinvestment.

The Need

River Towns were centers for economic activity from earliest times. The essentials needed for community life were within walking distance – home, work and play were conveniently woven together. Today, these community relationships are still valued. People choose to visit and live in communities with stable economies, walkable and bike-friendly neighborhoods, nearby recreation, and with memorable town centers for business and social activity. The Susquehanna Greenway Partnership (SGP) holds a vision for a system-wide network of vibrant River Towns, actively connected to the Susquehanna and engaged with each other. SGP has initiated a River Towns Technical Assistance Program to make river towns more vibrant and appealing through the organization of River Town Teams, community visioning, conceptual planning, project implementation, promotion and marketing.

One of the hardest jobs in the world is running a town or township – whether as mayor, a city councilperson, borough manager or township supervisor. Every day they must meet constituent needs, provide basic services, maintain aging infrastructure and, on top of that, find the resources to attract new investment and growth to reinvigorate their community. Amazingly, many do this as a part-time job. The SGP River Towns Program will provide professional technical assistance to communities to address these diverse opportunities and challenges. The River Town (RT) Technical Assistance Program will assist communities to appreciate
Introduction

and take full advantage of their community’s strategic location on
the Susquehanna River. The RT program will address the priorities
and recommendations established in the Pennsylvania’s “State
Land Use and Growth Management” report. SGP understands
the challenges facing these communities – and is implementing
a multi-year RT program to help communities grappling with
pressing needs, including:

• How to mitigate for future flood impacts
• Economic redevelopment / revitalization strategies for
downtown and historic neighborhoods
• Integration of greenways and green infrastructure
• Innovative stormwater management solutions to improve
water quality and meet new requirements for Phase II
Watershed Implementation Plans (WIPs)
• Improving human health and quality of life by creating safe
and walkable communities

The Susquehanna’s 70 River Towns and 180 rural municipalities
need various levels of assistance to realize their full potential as a
Susquehanna Greenway River Town. SGP has begun the process
of building municipal support and the financial partnerships to
sustain the program in the long-term, but needs DCED funding and
technical assistance to get River Towns program fully established
and operational. SGP’s goal is to have the River Towns program self-
sustaining in 3 years.

Flooding – A Global Issue
After the flooding in the fall of 2011, the Susquehanna Greenway
Partnership (SGP) organization thought long and hard about
the best way to respond to the devastation. The SGP outlined
an approach to provide technical assistance to two River Towns
significantly impacted by the flooding and was successful in
securing PA DCED, PA DCNR and Chesapeake Bay Commission
funding for the effort. Creative minds around the world are currently
working on the issue of flooding from sea level rise and the
increased re-occurrence and severity of flooding events. The SGP is
pleased to be part of this global effort – as it seeks to find pragmatic
and functional local solutions to flood-prone communities along the
Susquehanna River.

Flood Control Solutions
Engineers, architects, landscape architects and planners worldwide
are grappling to find workable solutions to prevent and mitigate
the impacts of flooding. The solutions being conceived range from
the redesign and elevation of structures, to massive flood control levees and gates, to green infrastructure solutions that provide a buffer between water and the built environment.

Finding Local Solutions
In service to the River Towns of the region, the Susquehanna Greenway Partnership (SGP) seeks to contribute to this global dialog on flood mitigation. The SGP advocates and promotes green infrastructure solutions for communities to mitigate future flooding. The Susquehanna Greenway Partnership feels that by reinvesting in greenways, parks and natural areas, a town makes a powerful and positive statement about its belief in a prosperous and sustainable future.

Balancing Goals and Objectives
In producing the Master Plan – we sought to balance various goals and objectives. One challenge was to balance the rights of private land owners – with the needs of municipal leaders to ensure the health and safety of residents. Many rural emergency responders (Fire and EMS) are volunteers, who risk their lives protecting residents and their property. The master plan seeks to proactively identifying structures that, for public health and safety reasons, should be removed from the floodplain. The master plan also seeks to balance appropriate park and recreation design with the dynamic nature of a health river or stream. Flooding is a natural process and we want to propose facilities that are durable, compliment natural stream functions, and contribute a vibrancy and economic value to the community.

History of Fernville
Fernville is a village located on Fishing Creek – but has flooding impacts also linked to the Susquehanna River. Fishing Creek is a large (approximately 450 square mile watershed) tributary to the North Branch Susquehanna River. Fernville has always been a primarily residential village on the outskirts of the Town of Bloomsburg, but in the past has also had a mill and some small businesses.
Introduction

Water Power
The Deitterick Grist Mill was located in Fernville near the present day intersection of Hemlock and Walnut Streets. Remnants of the mill building itself are hard to detect today. But the Fishing Creek stream corridor exhibits many characteristics of a mill location.

From the bluff overlooking Fernville and Fishing Creek – one can see the general elements of a mill site. Where Fishing Creek takes a sudden bend – is the location of an historic dam structure that would have impounded water to operate the mill. A head race would have linked the dam to the mill and a tail race would have reconnected the outflow back to the main creek channel. Understanding how we have modified streams in the past – will help identify cause and effect and help to identify practical solution to mitigate flooding and flood damage in the future.

Fishing Creek Stream Dynamics
Streams and Rivers are dynamic systems, constantly changing alignments and modifying the landscape over time. Every action has a reaction. A dynamic stream channel does not respect our delineated property boundaries or fit with many plans to design and maintain stream and riverfront properties. Many residents have noted the changes occurring with Fishing Creek, including formation of islands, extension of point bars, erosion of property, and lateral movement of the stream channel. Fishing Creek was significantly modified during the construction of Interstate 80 in the late 1960’s. It is very likely that the stream is still responding, 45 years later, to these changes.

Multi-Municipal Collaboration
Hemlock Township is seeking a collaborative working relationship with the Town of Bloomsburg – to formulate a plan to minimize risk in future flooding. The township recognizes the dynamic nature of Fishing Creek and is exploring how a combination of recreation, greenways, open spaces and planned ‘smart growth’ development outside the floodplain can be the best way towards a sustainable future.
Demographics of Hemlock Township and Fernville
Fernville is a village of 556 residents within Hemlock Township with a population of 2,249. Fernville had 243 homes as per the 2010 Census, so the demolition of 23 homes as a result of 2011 flooding represents a loss of nearly 10% of the village's homes. The population loss associated with 2011 flooding is not yet known, but both Hemlock Township and the Hemlock Township Municipal Authority are advocating new residential development to help offset the tax-base and rate payer losses.
Community Participation
Community Participation

Introduction
The Susquehanna Greenway Partnership – Technical Assistance program engaged Hemlock Township officials, Fernville residents, and other local stakeholders, in a participatory planning process for the development of the Fishing Creek Corridor Master Plan. The diverse study committee was formed to provide input and guidance in the master planning process. The committee was asked to describe its vision for the village of Fernville and the Fishing Creek corridor. The committee was actively engaged in the following planning process:

Community Organization
• Project Committee (Green Team) Organization Meeting at Hemlock Township – describe the planning process, discuss expectations, list individuals to participate in the RT Assessment Workshop, and prepare for RT Workshop at Bloomsburg University
• Background Research and Data Gathering – compile existing plans and policy documents
• Compile existing and available GIS mapping data

Community Self-Assessment
• GIS and Planning Assessment of Smart Growth Areas in Hemlock Township
• GIS mapping and field assessment of the Fishing Creek stream corridor
• Planning Policy Review and Evaluation

• Project Committee meeting at Hemlock Township – discuss outcome of the River Town Assessment; listing community needs / priorities; compile committee input into a community vision statement
Introduction
The village of Fernville is located on Fishing Creek, approximately 2 miles upstream from the creeks confluence with the North Branch Susquehanna River. Much of the village of Fernville, as well as a large amount of Bloomsburg’s west end neighborhoods, is located in the 100 and 500 year floodplains. Flooding in Fernville is influenced by both Fishing Creek and flood water back-up from the River. The master plan looks at a 1.2 mile corridor of Fishing Creek from the southwest end of the village at the confluence of Fishing Creek and Hemlock Creek, to where Creek Road exits the village to the north.

GIS Mapping
The following section contains ArcGIS based site analysis maps created by Bloomsburg University student interns under the supervision and instruction of Brian Auman, Kathy Hannaford and Erin Peirce. The following maps cover the following analysis areas: Hemlock Township/Fernville Conext, Parcels, Geology, and Smart Growth.
Site Analysis

Land Uses In Fishing Creek Watershed

- Agriculture: 35%
- Developed: 3%
- Forest: 62%
- Water: 0.73%

Data Source: Pennsylvania Spatial Data Access, ESRI
Site Analysis

Hemlock Township Land Uses

- Hemlock Township
- Agricultural: 42%
- Forest: 16%
- Developed: 40%
- Water: 0.02%

Data Source: 2006 Pennsylvania Spatial Data Access, ESRI
Hemlock Township: Parcels
Hemlock Township: Geology by Rock Type

- Wills Creek Formation
- Trimmers Rock Formation
- Sherman Creek Formation
- Onondaga and Old Port Formations
- Keyser and Tonoloway Formations
- Irish Valley Formation
- Hamilton Formation
- Clinton Formation
- Bloomsburg and Mifflintown Formations

Date Source: 2006 Pennsylvania Spatial Data Access, ESRI
+ smart growth

This map is derived from:

- Flood Plains
- 20ft Buffers on Stream Networks
- Unstable Slopes from Soil Layers
- Areas that are Developed or Contain Water

[hemlock township]
Site Analysis

+ smart growth

Unsuitable Areas for Growth in Hemlock Township

[hemlock township]
+ smart growth

[hemlock township]
Site Analysis

+ smart growth

Suitable Areas for Growth

Suitable Areas
Unsuitable Areas
Sewer and Growth Area

[hemlock township]
Master Planning – A New Era For Flood Mitigation
Master Planning – A New Era For Flood Mitigation

Introduction
There has been a major shift in focus in flood control in planning and design publications. In decades past the focus was on engineering flood control structures such as flood walls and levees. While structures are still the preferred choice for many densely developed urban areas – we have begun to recognize the limitations of engineering solutions. The effect of a new flood wall or levee simply transfers the flooding problem downstream. There is a growing interest in more natural flood control/ flood mitigation methods. Park, recreation and natural areas are being designed to create aesthetic and functional park space that provides a buffer between the river and the community. The new generation of riverfront parks do a good job at both protecting life and property during floods, while physically connecting people to the river for recreation and enjoyment.

Village of Fernville – Vision
Hemlock Township is interested in creating a more natural Fishing Creek corridor to buffer the community from future flooding, while providing residents with expanded recreational amenities and improved connectivity between the village and the town of Bloomsburg. The Township wants to relocate displaced homeowners in a way that minimizes sprawl development, and locate new development in areas already served by road, sewer and water infrastructure.

The study committee was asked to describe their vision for the new Fernville and to provide a list of features and amenities that they would like to see – either in the existing park or in the recently acquired properties. The study committee also listed potential community partners that could help them realize their vision.

Vision
- Create a Memorable Place
- Stop Erosion
- Reduce Risk / Create Safety from Flooding (2 Ways Out)
- Proactive Buyout of Additional Properties
- Allow for Flooding (Give Fishing Creek the Space it Needs)
- Foot / Pedestrian Bridge – to replace historic bridge
- Preserve / Interpret Fernville History / Historic Landmarks
- Implement an Accurate Flood Warning System
- Create Bloomsburg University / Community Connection
- Nurture Funding Partnerships
Master Planning – A New Era For Flood Mitigation

**Features**
- Create a Community Gateway to Fernville
- Recreation Areas / Parks
- Beautify Fishing Creek – Remove Litter, Weeds
- Walking and Biking Path / Kayaking in Creek
- Dog Park - (if Fenced, Maintained, Controlled)
- Multi-use Pavilion
- Community Events
- Tree Plantings
- Natural Landscapes - Wildflowers / Wildlife Habitats
- Gardens / Cropland
- Access to Fishing Creek – for fishing, boating, wading…
- Places People can Take Photos

**Partners**
- Hemlock Township
- Columbia County / County Commissioners
- Columbia County Conservation District
- State Senator / Representatives
- SEDA-Council of Governments
- Town of Bloomsburg
- School District / Columbia – Montour Vo-Tech
- Fishing Creek Watershed Association
- National Fish and Wildlife Foundation
- US Fish and Wildlife Service
- Pheasants Forever
- AYSO (Youth Soccer)

- United Water Company
- Lowes / Home Depot / Wal-Mart
- Central Susquehanna Community Foundation
- UGI Utilities / PPL Utilities
- Geisinger Health System
- Bloomsburg University
- Susquehanna Greenway Partnership

**Fernville Park Features – a Refined List**

By the Fall of 2013 – many of the flood damaged homes were either removed or elevated, and residents had a better feel for the size and character of the new open space. At this time a second study committee meeting was held to help refine the list of features to be included in the master plan.

**Fernville Park Features – a Refined List**

- Mitigate Future Flood Damage / Improve Public Safety
- Maintain Old Fashion Feel of Park – small, intimate, inviting, with quiet areas, suitable for small children
- Create a Community Gateway to Fernville – both sides of Bloom Street – and at east and west ends of town.
- Active Recreation - Small Sports Fields, Basketball Court
- Beautify Fishing Creek – Remove Litter, Weeds
- Walking and Biking Path / Improve Safety on Bloom and Drinker Streets for walking and biking
- Improved Creek Access / Canoe & Kayak Soft Launch
- Kayaking in Creek / Trailhead for Rail-Trail and Kayakers
- School Student Bus Shelter
Master Planning – A New Era For Flood Mitigation

- Dog Park - (if Fenced, Maintained, Controlled)
- Make Pavilion a Multi-use Area
- Community Events
- Tree Plantings / Fruit Trees
- Natural Landscapes - Wildflowers / Wildlife Habitats
- Gardens / Cropland
- Access to Fishing Creek – for fishing, boating, wading…
- Places People can Take Photos

Fernville & Fishing Creek Master Plan
The master plan seeks to display all the community ‘wish list’ items on a single plan, finding an appropriate location for each, and surrounded by complimentary features and uses. The master plan also seeks to convey the importance of watershed and stream channel assessment to determine stream restoration options to control water flow and help mitigate damage to property in future floods.

See page 49 for complete Fernville and Fishing Creek Master Plan

Fernville Fishing Creek Corridor
This map, displays in green, the properties acquired by Hemlock Township as part of the FEMA buyouts. The orange dots indicate home of an unknown status – these structures may or may not be removed. The white rectangles indicate homes that have been elevated above flood elevation. And yellow indicates properties in which homes have been removed, but remain in private ownership.
Master Planning – A New Era For Flood Mitigation

Fishing Creek – Constriction Point
This map depicts a natural constriction point in the Fishing Creek floodplain. Fishing Creek cuts through the ridge, but the passage is much narrower than typically found in the lower reaches of the watershed. In most areas the creek has access to wide, broad forest and agricultural floodplains. The break in the ridge created a natural north-south travel route and roads, homes and other development followed. The village of Fernville has long endured flooding – but with the potential of increased recurrence and magnitude of flooding in the future, the community is seeking solutions to mitigate flooding and move development out of harm’s way.

Fishing Creek – Expanded Floodplain
In the absence of a hydrological study of the watershed and stream channel – this illustration suggests opening a widened floodplain corridor. While several of the homes in this area have already been acquired – the future of other structures are still unknown. These would be the first properties in which the municipality could implement a proactive land acquisition program.

Fishing Creek – Floodplain Restoration
Removing structures and giving Fishing Creek an expanded floodplain is an important first step, but there are additional measures that can be taken to improve the flooding situation. One is to remove additional obstructions in the floodplain, and these include the United Water’s basin and possibly the ‘cinder pile’ on the opposite side of Fishing Creek from Fernville. Both the water company’s basin and cinder pile displaced large quantities of water and force high water flows toward the Village of Fernville. Additionally – the flood plain can be restored by the planting of a diverse forested buffer of native trees, shrubs and herbaceous materials creating a natural barrier between Fishing Creek and resident’s homes. The benefits will include improved aesthetics, water-quality, wildlife habitat, and an enhanced natural area that can be incorporated into the Fernville Community Park.
Reconnecting the Floodplain
In the Fernville Community Park itself – the ground elevation of the park can be lowered to reconnect the floodplain and dissipate the energy of future flood waters.

The master plan also depicts the concept of an enhanced way for floodwaters to flow UNDER Bloom Street. The series of culverts could pass high water under the street, and in combination with reinforced utility lines, could minimized the potential of damage to the roadway and utility lines in the future.

Removal of Infrastructure
While some streets, sidewalks and utility lines will continue to be needed, many others could be removed to convert the former neighborhood back to a more natural state. These areas will become an expanded Community Park. Concrete, asphalt, sub-base gravel, and additional soil can be removed to expand the capacity of the floodplain. The site should be planted in native trees, shrubs, grasses and wildflowers to lower long-term maintenance requirements, reduce runoff, improve water-quality, improve wildlife habitat and create a quality Nature Park environment for residents and visitors. Fernville residents should be sure to document before and after photos of this transformation to preserve this part of Fernville’s rich history.
Active Recreation
The active recreation elements on the community wish list included basketball court, soccer and a skate park. Soccer and basketball can easily be accommodated in the park, while not detracting from the small scale and quaint feel of the park that is cherished by many residents. At the time of writing this report – the future of replacing Bloomsburg’s skate park is still an unknown, so Hemlock Township may want to work with the town to accommodate that use somewhere in the greater Bloomsburg area. If a skate park is placed in Fernville – the scale of the facility should be small and intimate to compliment the character of the park. The small skate park depicted on the opposite page is a good example of an appropriately sized neighborhood skate park, and constructed out of durable material (concrete) that would be appropriate in the floodplain.

Fishing Creek Access
The Fishing Creek corridor is very scenic. With the flowing stream and forested ridge backdrop – the creek is an underused and under appreciated resource. There are numerous opportunities to create better physical connections to the creek. The expanded floodplain, forested stream buffer and trail system in the “Fishing Creek Nature Park” provides access for walking, fishing and appreciating nature. The “Fernville Fishing Creek Access,” located immediately below the Bloom Street bridge, seeks to replace the former river access, which is now located far from easy roadway access. The new access will provide convenient parking and access for canoe and kayak users, or for those seeking a scenic sitting spot on the creek and close to town.
Master Planning – A New Era For Flood Mitigation

Natural Landscaping
Hemlock Township and the residents of Fernville should encourage the productive use for all the acquired properties. Not all the land is needed for current or future recreation for floodplain management needs, so a list of potential land management options are outlined here. As an alternative to planting turf grass – Hemlock Township should consider planting trees along the stream corridor, native grass and wildflower meadows in upland areas, and establish wet meadows / wetlands in low lying or poorly drained sites. The benefit of this natural landscaping would be to enhance wildlife habitat, reduce maintenance costs associated with weekly or bi-weekly lawn mowing, and create a habitat area that would attract residents and visitors to Fernville. Underground stormwater pipes could be day-lighted (brought to the surface) to capture runoff in natural ponds and wet areas within the park – to restore ecologically important wetland habitats.

Neighborhood Garden Park
The FEMA acquired lots between Hemlock and Walnut Streets are surrounded by existing homes. These sites may not be appropriate for active recreation or offer much value as restored habitat areas because of its disconnect from the stream corridor. The master plan suggests the best possible use for this site may be a small-scale neighborhood garden. This garden plots would initially be offered for use to immediate neighbors. If space is still available – it could be opened to other community members. The goal of this neighborhood garden park is to provide some structure to the site with street tree plantings and fencing; putting the land to productive use, and; integrating nicely into the existing neighborhood.

Fernville Community Garden
A larger lot located on Drinker Street – is a more appropriate site for a more formal community garden. Plots in the garden can be rented to residents and interested gardeners from the greater Bloomsburg area. Basic infrastructure such as a water source, fencing and tool shed will be needed. Hemlock Township and the park and recreation committee would need to take an active role in the proper operations and management of the community garden.

Private Gardens
Individual or smaller buy-out parcels represent an interesting challenge for the municipality. Mowing or maintaining numerous smaller parcels will be inefficient and time consuming for the municipal maintenance staff. Hemlock Township should consider developing legal agreements with adjacent land owners to use and maintain these properties. A memorandum of understanding (MOU) could be developed to define appropriate uses (excluding structures, development or storage of vehicles, supplies and materials, and defines expectations for street trees and proper maintenance. Given proper performance by the landowner – these can be renewable agreements that will allow the landowner to make longer-range investments such as landscaping, fruit trees,
vine and berries, and vegetable gardens. The municipality is relieved of the continuous maintenance requirements and the land is put to productive use.

Creating a Memorable Place
A common vision expressed by many members of the study committee, was the desire for the new Fernville Community Park to contain a “memorable” place. It would be a place where graduation or wedding pictures could be taken, a space that would leave a lasting impression on a visitor. A place that would change attitudes about the Fernville community – representing a positive outlook on the future. One space that would be most appropriate for this would be at the Fernville Community Gateway / Fishing Creek Park. The master plan suggests the planting of large street trees welcoming residents coming home, or visitors to the Village of Fernville. The lawn area around the pavilion would be framed with rich and diverse landscape plantings providing all-season green and colorful flower and foliage displays. The space would be small, intimate and inviting with benches, and other informal seating places. It would offer a cool, green oasis where residents would take out-of-town visitors. The space would represent the best of Fernville – neighborly, warm and comfortable.

Fishing Creek Greenway
The master plan defines a conceptual Fishing Creek Greenway that creates a 1.6 mile loop trail in both Bloomsburg and Hemlock Township. This greenway concept would require several things to become reality. First, for there to be a creek side trail, the greenway will require the permission of several private landowners to grant a trail easement. The second requirement would be for the construction of a pedestrian foot bridge over Fishing Creek at the western end of Fernville.

The alternative is for the trail to be road-based. This alternative works best on the Bloomsburg side – where back streets and an existing sidewalk system already exists. Drinker Street has no sidewalks and residents describe the speed of vehicular traffic, even with the ‘Share the Road’ signage, to be intimidating for many walkers and bikers. Perhaps the Fishing Creek Greenway can be implemented slowly over time, starting with the first segment of trail on Municipal land in Fernville’s Fishing Creek Park and Nature Park. From there, the trail system can develop incrementally over time.
Hemlock Township Smart Growth Strategy
With the loss of homes and property in Fernville – the municipality and the municipal authority are interested in accommodating new growth and development within the sewer and water service region and out of flood prone areas. The following series of maps depict a suitability analysis mapping of Hemlock Township to identify areas best suited for new development AND in proximity (walking and biking distance) to the town of Bloomsburg.

Smart Growth Concept Plan
This map illustrates several smart growth concepts including new residential developments, and a concept for creative redevelopment of a commercial mall complex into a mixed-use ‘town center.’ The Smart Growth Concept Plan shows how all of these new developments could be linked to Bloomsburg through a network of pedestrian and bicycle trails, while adding vibrancy and value to the community of Fernville.

Concept Development – Fernville Area
The hillside west of Fernville, has farmland and open space well suited for residential growth and development. The most likely development model for this area would be large residential lots (1-5 acres in size) that would accommodate a couple dozen homes. The smart growth concept illustrated here shows a much higher density of homes on these sites, developing two distinct neighborhood clusters of Fernville Heights and Fernville Estates, depicted with 92 and 78 single family homes, respectfully. There is also one area within Fernville that offers development potential - the hillside on Hemlock Street. And while this housing would need to be built into the existing hillside – it could potentially add 16 new homes to the community.

See Page 48 for the Hemlock Township Smart Growth Plan
Concept Development – Buckhorn Interchange Area
The other large tract of land offering the best smart-growth development options are the open lands north of the Interstate-80/Buckhorn Interchange. The Smart Growth Concept Plan envisions diverse mix of residential, commercial office and mixed-use traditional neighborhoods in this area. The concept depicts several residential developments including Schoolhouse Commons with 88 townhomes and 85 single family homes, and a higher-end Morningside Estates with 24 homes.

Mall Conversions – Traditional Neighborhood Design
The Smart Growth Concept Plan also proposes an alternative future for the Columbia Mall – in which the site is redeveloped to mimic a traditional town center with parking, sidewalks, professional offices and stores, all accessed by a network of streets. The economic prospects of the ‘Columbia Town Center’ is enhanced with a 24-hour a day vibrancy by its direct connection to the adjacent residential developments. The mixed-used development concept has proven to be an important tool in the redevelopment of other mall complexes throughout the country and may be appropriate for this location within a targeted development area.
Greenway Connections
Retro-fitting greenways and trails into a community is a challenging undertaking. Trails are often opposed by residents out of the fear of the unknown, of what inviting ‘strangers’ into the neighborhood will mean for their safety, privacy, and quality of life. Recognizing that it will not be easy to create greenway connections linking Bloomsburg, Fernville and the existing and future developments of Hemlock Township – we have assessed various alignments to make the key connections.

Greenway Connections – Crossing I-80
Interstate 80 poses a significant barrier to trail options linking the north with Fernville and Bloomsburg. Within the study area there are 5 possible ways to cross over or under the Interstate Highway – Schoolhouse Road, along Hemlock Creek, at the Buckhorn Interchange, Creek Road, and Millville Road.

Greenway Connections – Not Practical
For the purpose of creating greenway connections – the study ruled out two crossings. The Buckhorn Interchange was deemed to be unsafe for pedestrian and bicycle trails and Millville Road did not connect through the village of Fernville to bring economic benefit to the village.

See Page 50 for Greenway Connections Map

Greenway Connections - Fishing Creek Greenway
The village of Fernville lost nearly two dozen homes. Investments in parks and recreation will bring back some level of vibrancy to the community. But Fernville should also seek to take advantage of its strategic location as a transportation node. The Bloom Street Bridge and the Fishing Creek and Hemlock Creek corridors connect Bloomsburg with the region’s targeted development area.

Greenways could greatly benefit the village of Fernville. If new developments surrounding Fernville and beyond can be linked with pedestrian and bicycle trails – the movement of people will add a vibrancy and an economic benefit to the community. Bloomsburg, being a college town and county seat, offers a stable economic base for the region. To the extent that future growth and development can be connected to Bloomsburg, through Fernville, will pay large dividends to the community in the future, while providing a quality of life amenity many look for when choosing a place to live. A conceptual greenway trail network is depicted on both the Fernville & Fishing Creek Master Plan and the Hemlock Township Smart Growth Concept Plan. The alignments are conceptual and are only meant to spur discussion about the potential of trails and greenways in the future.
Master Planning – A New Era For Flood Mitigation
Master Planning – A New Era For Flood Mitigation
Phasing and Implementation
**Fernville Master Plan – Priority Projects**

**Priority 1: Watershed Assessment**

Schedule: The Fishing Creek stream channel, floodplain and watershed is very complex. A better understanding of the stream, stream dynamics and the physical features that are driving the flooding, flow and water velocity, is the first step in the planning and re-design of the Fishing Creek corridor. As such, additional assessment and modeling is needed and should occur before village, streetscape, park, and recreational enhancements are designed and constructed.

- Watershed Assessment (Spring 2014)
- 2D Stream Channel and Floodplain Modeling, (Summer / Fall 2014)

Costs: $20,000 - $50,000
- Preliminary Fishing Creek Assessment - $20,000
- 2D Modeling of Fishing Creek and Floodplain - $30,000

Partners:
- National Fish and Wildlife Foundation
- Hemlock Township
- Susquehanna Greenway Partnership
- Commonwealth Financing Authority / Act 13
- Bloomsburg University
- Fishing Creek Watershed Association
- Columbia County Conservation District
Phasing and Implementation

Priority 2: Floodplain Restoration

Schedule: Must Follow Watershed Assessment / Channel and Floodplain Modeling
- Funding Procurements (1 year)
- Preliminary Engineering (6 Months)
- Permitting and Final Design (9 Months)
- Construction (6 – 9 Months)

Costs:
- Engineering and Permitting – $75,000 - $225,000
- Construction – $500,000 - $1,500,000

Partners:
- Hemlock Township
- Susquehanna Greenway Partnership
- Commonwealth Financing Authority / Act 13
- National Fish and Wildlife Foundation
- US Fish and Wildlife Service
- PA Fish and Boat Commission
- PA Department of Environmental Protection
- Bloomsburg University
- Fishing Creek Watershed Association
- Pheasants Forever
- Chesapeake Bay Commission
- Chesapeake Bay Foundation
- PA Department of Conservation and Natural Resources
- TreeVitalize Program
- Columbia County Conservation District
- Cora Brooks Foundation
- Foundation for PA Watersheds
Phasing and Implementation

**Priority 3: Fernville Community Gateway(s) – at west, north and south ends of the village**

Schedule: South Gateway should follow watershed assessment-West Gateway can proceed at any time.
- Plan Development (3-6 Months)
- Funding / Partnership Development (6 Months – 1 Year)
- Installation (6 Months)

Costs: $2,500 - $25,000

Partners:
- Hemlock Township
- Park and Recreation Committee
- Susquehanna Greenway Partnership
- Commonwealth Financing Authority / Act 13
- PA Department of Conservation and Natural Resources
- TreeVitalize Program
- Penn State Cooperative Extension
- Bloomsburg University
- Lowes, Home Depot, Wal-Mart
- Local Tree and Plant Nurseries
- Central Susquehanna Community Foundation
- Bloomsburg University
- Columbia-Montour Vo-Tech
- Private Donors

**Priority 4: Fernville Community Park Enhancements**

Schedule:
- Watershed Assessment (1 Year)
- Park Master Plan (1 Year)
- Funding Procurement, Construction Documents, Permitting and Plan Approvals (1 Year)
- Installation (6 Months - 1 Year)

Costs:
- Park Master Plan $30,000 - $50,000
- Design and Permitting– $20,000 - $40,000
- Construction – Playground $60,000
- Athletic Fields $30,000 - $40,000 / each
- Primitive Trail $5,000 / mi.
- Pathways Gravel $100,000 - $200,000 / mi.
- Pathways Paved $300,000 - $450,000 / mi.

Partners:
- Hemlock Township
- Park and Recreation Committee
- Susquehanna Greenway Partnership
- PA Department of Conservation and Natural Resources
- American Youth Soccer Organization (AYSO)
- Private Donors
Phasing and Implementation

**Hemlock Township / Village of Fernville - Action Strategies**

**Collaboration**
Establish a Collaborative and Mutually Beneficial Relationship between Hemlock Township and Bloomsburg

**Vision**
Adopt the Master Plan as a shared Vision for a Better Future

**Priorities**
Define Priority Actions and Priority Projects

**Leadership**
Identify a lead person for each priority initiative, produce a schedule for implementation, and clearly define the support needed from various partners to guarantee success

**Partnership**
Establish new relationships with agencies, organizations, and individuals that support and share your vision for Hemlock Township

**Strategy**
Match all local money with other funding sources to achieve maximum benefits from the community’s limited resources

**Celebrate**
With the completion of each milestone – celebrate the accomplishment

**Sustain**
Make slow but steady progress towards the betterment of Hemlock Township, led by a strong and dedicated municipal government