THE TOWN OF CHESTERFIELD, MA

HAZARD MITIGATION PLAN

Chesterfield Town Hall, Source: PVPC

Adopted by the Chesterfield Board of Selectmen on July 21, 2008

Prepared by:
The Chesterfield Hazard Mitigation Planning Committee

and

The Pioneer Valley Planning Commission

26 Central Street, Suite 34
West Springfield, MA 01089
(413) 781-6045
www.pvpc.org

This project was funded by a grant received from the Massachusetts Emergency Management Agency (MEMA) and the Massachusetts Department of Conservation Services (formerly the Department of Environmental Management)

Acknowledgements

The Chesterfield Board of Selectmen extends special thanks to the Chesterfield Hazard Mitigation Planning Committee as follows:

Larry Holmberg, Emergency Management Director, Chair

Matt Smith, Highway Department

Gilman Smith, Fire Chief

Roger A. Fuller, Board of Selectmen

Dan Henshaw, Planning Board

Bill Jolly, Conservation Commission

The Chesterfield Board of Selectmen offers thanks to the Massachusetts Emergency Management Agency (MEMA) for developing the Commonwealth of Massachusetts Natural Hazards Mitigation Plan (http://www.state.ma.us/dem/programs/mitigate/index.htm) which served as a model for this Plan. In addition, special thanks are extended to the staff of the Pioneer Valley Planning Commission for professional services, process facilitation and preparation of this document.

The Pioneer Valley Planning Commission:

Catherine Miller, Principal Planner/Co-Project Manager

Eric Twarog, Senior Planner/Co-Project Manager

Kristin Heery, Planner

Andrew Smith, Land Use Specialist

Shaun Hayes, Principal Planner/GIS-Graphics Section Head

Todd Zukowski, Senior Planner/GIS Specialist

Jim Scace, GIS Specialist

TABLE OF CONTENTS

1 - INTRODUCTION

Hazard Mitigation

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, *etc.* Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources.

Planning efforts, like the one undertaken by the Town of Chesterfield and the Pioneer Valley Planning Commission, make mitigation a proactive process. Pre-disaster planning emphasizes actions that can be taken before a natural disaster occurs. Future property damage and loss of life can be reduced or prevented by a mitigation program that addresses the unique geography, demography, economy, and land use of a community within the context of each of the specific potential natural hazards that may threaten a community.

Preparing a Hazard Mitigation Plan before a disaster occurs can save the community money and will facilitate post-disaster funding. Costly repairs or replacement of buildings and infrastructure, as well as the high cost of providing emergency services and rescue/recovery operations, can be avoided or significantly lessened if a community implements the mitigation measures detailed in the Plan. FEMA requires that a community adopt a pre-disaster mitigation plan as a condition for mitigation funding. For example, the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation (PDM) Program are programs with this requirement.

Planning Process

The natural hazard mitigation planning process for the Town of Chesterfield included the following tasks:

- Identifying the natural hazards that may impact the community.
- Conducting a Vulnerability/Risk Assessment to identify the infrastructure (*i.e.*, critical facilities, public buildings, roads, homes, businesses, *etc.*) at the highest risk for being damaged by the identified natural hazards, particularly flooding.
- Identifying and assessing the policies, programs, and regulations the community is currently implementing to protect against future disaster damages. Examples of such strategies include:
    - Preventing or limiting development in natural hazard areas like floodplains;

- Implementing recommendations in existing planning documents including Stormwater Management Plans, Master Plans, Open Space and Recreation Plans, and Emergency/Evacuation Plans that address the impacts of natural hazards; and
- Requiring or encouraging the use of specific structural requirements for new buildings such as buried utilities, flood-proofed structures, and lightening grounding systems.

- Identifying deficiencies in the current strategies and establish goals for updating, revising or adopting new strategies.

- Adopting and implementing the final Hazard Mitigation Plan.

During the planning process, the Town's Local Hazard Mitigation Planning Committee identified Action Plan Items and specific time frames identified by the Town during their review of existing programs, policies, and regulations. From this list, specific Action Items were prioritized by the Town's Local Natural Hazards Planning Committee based on the following criteria:

- Select Action Items which have the ability to significantly mitigate the negative impact of natural hazards on people and property;
- Select Action Items which the Town has the ability to implement given the financial and staff resources available;
- Select Action Items which will have the greatest influence on achieving Local Goals & Objectives;
- Select a diverse set of Action Items which will address different Natural Hazards that present a high or moderate risk to the region; and
- Select Action Items which will address those mitigation measures identified as deficient or in need of attention to ensure that the Town is in the best possible position to address natural hazards which impact property and residents.

For example, updating or adopting a local floodplain bylaw would be a relatively low cost action item, which could have a significant impact on mitigating hazards caused by flooding. If adopted by the Town, this amended bylaw would completely discourage development in floodplain areas and prevent harm to people and damage to property. Another action item was to review and maintain shelters for victims of natural hazards within the Town and to conduct outreach to residents so that they are aware of the availability of those shelters.

First, however, the Town must identify what services are available at the different shelters (*e.g.*, food preparation, potable water, back-up electrical power, heat, showers, *etc.*) and whether the location of different shelters will be impacted by different hazards (*i.e.*, whether flooding will make the shelter inaccessible to some residents). This action item, review and maintain shelters, also addressed a number of different natural hazards and would help ensure that suitable shelters are available for different types of natural hazards. The action items selected were all considered to have a low to moderate cost to implement. In some cases grant funding would be sought for implementation given the limited resources available in the Town.

The local action items represent a multi-faceted approach to addressing natural hazards in the Town and will be undertaken as resources become available and will be integrated into ongoing planning activities. As part of the review and adoption process, the Committee approved the action items that were in keeping with the goals and criteria established by the Town and assigned appropriate bodies within the Town to implement them within a five-year framework.

Public Committee Meetings

October 5, 2006, 7:00 - 8:30 p.m.: Public informational and organizational meeting, held at the Chesterfield Town Offices (Davenport School).

November 16, 2006, 7:00 - 8:30 p.m.: Working Committee meeting held at the Chesterfield Town Offices (Davenport School).

December 21, 2007, 7:00 - 8:30 p.m.: Working Committee meeting held at the Chesterfield Town Offices (Davenport School).

January 18, 2007, 7:00 - 8:30 p.m.: Working Committee meeting held at the Chesterfield Town Offices (Davenport School).

February 28, 2007, 7:00 - 8:30 p.m.: Working Committee meeting held at the Chesterfield Town Offices (Davenport School).

October 17, 2007, 7:00 - 8:30 p.m.: Working Committee meeting held at the Chesterfield Town Offices (Davenport School).

A mailing was made to each Committee member, prior to each meeting, that contained information from the previous meeting, an agenda sheet, and information to be covered.

Public Involvement in the Planning Process

On September 13, 2007 the Pioneer Valley Planning Commission sent a press release to all area media outlets to inform the general public that drafts of the region's Hazard Mitigation plans were complete and available for public comment and review on the Commission's website (www.pvpc.org). This press release (appendix D) resulted in a series of news articles (Appendix D) that further enhanced awareness of the Hazard Mitigation Planning Process. This action was undertaken to fulfill the requirement that a Hazard Mitigation Plan be developed in a format that is open to the public for comments.

Involving neighboring Jurisdictions

In the initial stages of the planning process for this mitigation plan, the Pioneer Valley Planning Commission conducted a series of outreach efforts to make the public aware of the regional mitigation process. In October of 2005, the Planning Commission notified all Select Boards and Chief Elected Officials that their community could participate in the region's mitigation planning process. Again, on April 4, 2006, the Planning Commission mailed a notice of planning activities to all Chief Elected Officials and Select Boards in the Pioneer Valley. Both mailings explained the purpose of mitigation planning and invited communities to participate in either Round I or Round II of the region's mitigation planning process.

On November 20th, 2007 the Pioneer Valley Planning Commission Presented the planning process that led to the creation of the *Chesterfield Local Natural Hazards Mitigation Plan.* The Western Regional Homeland Security Council is the planning entity responsible for orchestrating the homeland security planning activities of Berkshire, Franklin, Hampden and Hampshire Counties. Collectively, this body is responsible for 101 communities.

Additionally, the Hampshire Regional Emergency Planning Committee was presented with the findings of this plan during its November 15, 2007 meeting. Prior to this briefing, the HREPC was provided with updates of the Hazard Mitigation Planning Process on April 20, 2007 and again on December 21, 2006.

Strategies for Public Involvement in Pre-Disaster Mitigation Planning in Chesterfield

The Chesterfield Local Emergency Planning Committee, under the direction of the Emergency Management Director, will hold an annual review of Chesterfield's Pre-Disaster Mitigation Plan. This meeting will be held at the Chesterfield Town Offices (Davenport School), and will focus on the LEPC's planning activities.

In addition to these annual meetings, the Town of Chesterfield is in the process of developing a town website. Once the town's website is fully functional, there will be a tab on the website for Chesterfield's Pre-Disaster Mitigation Plan, and a copy will be posted on that section of the Town's website. During LEPC annual review meetings, the Emergency Management Directory will be make attendees aware of the presence of the PDM plan on the town's website.

2 – LOCAL PROFILE

Community Setting

Chesterfield is a rural town in western Massachusetts located 8 miles from Northampton and 40 miles northwest of Springfield. The Town was settled around 1755 and incorporated in 1762. The Town center, established after the American Revolution, has well-preserved Federal Period houses along Main Road. Chesterfield's main villages - the Town center, Bisbeeville, West Chesterfield, Sugar Hill and Bofat - were settled in 1762. The economy was mainly supported by agricultural practices and water-powered industries until the mid 1900's. Continued agricultural practice, a new commuting population, and a regenerated forest over much of the historic pastureland have sustained the rural character of Chesterfield.

Chesterfield was originally laid out in 1739, when veterans from King William's armies were granted land soon after the Narragansett War. A proclamation issued by the governor promised them "…if they played the man, took the fort and drove the enemy out of the Narragansett Country, which is their great seat, they should have a gratuity of land besides their wages." It took a quarter century of granting land and establishing proprietors to found this Town, step by step. On June 11, 1762 Chesterfield was incorporated at the first town meeting.

In the early days Chesterfield was mainly supported by a large agricultural economy, with Merino sheep wool as the major product. Though rocky terrain was better suited for grazing than tillage, a wood industry was also prominent. Numerous mills, including sawmills, tanneries, gristmills, and cloth dressing mills were introduced and in operation throughout the early 19th century. Residents took advantage of the natural water resources available to power their equipment in the mills and build their economy. Old Healy Mill, although not used for production anymore, is still standing today along the Westfield River. Decaying stone kilns found near streams and river areas are other remnants of past industrial life.

During the American Industrial Revolution Irish immigrants arrived throughout the late 1800's. By the turn of the century the Town's economy was diversified and residents were known for making broom-handles, baskets, wagons, carding-machines, factory supplies, and cider. A change in demand wiped out many of these industries by the early 1900's and a re-emerging agricultural economy developed along side the growing trade from summer residents who bought land and goods in the Town.

Throughout this period of growth in Chesterfield, several villages were established. Chesterfield Village remains exactly where it first began, as do West Chesterfield near the East Branch of the Westfield River, Sugar Hill (where the first town meeting was held), Bisbeeville, and Bofat on the eastern side of Town. These village sites were along the rivers and brooks near the water-powered mills. Federal Period houses along the main street and landmarks of civic buildings in a later Greek revival style were built during the 19th century and can still be seen today. Although the decline in industrialization forced certain mills to deteriorate, generations of residents have preserved and renovated historic houses, buildings, and villages through the years, adding to

Chesterfield's character. In more recent years, generations of families are still residing in these villages and new families moving to Chesterfield have built houses on old family farms, occasionally building on forested lots. With the majority of residents commuting to work outside of Town, there has been very little industrial development. A small industrial infrastructure, the preservation of historic sites, and the continuation of agriculture as a way of life sustain this distinctive, rural nature that citizens of Chesterfield shaped over time.

Infrastructure

Chesterfield's geography has been a major factor in the development of its infrastructure. Magnificent rolling hills with two main valleys surrounded by large wetland systems have helped to shape and guide local land use patterns as well as limit the value that existing and potential infrastructure might offer towards the expansion of development beyond those lots with frontage on the main roadways in Town.

Roads and Highways

The principal highway in Chesterfield is State Route 143, traveling east-west across the Town, which connects up with the cross-state Worcester Turnpike (State Route 9) in the neighboring Town of Williamsburg. Chesterfield's Town center is at the intersection of Route 143 (or Main Road) and South Street.

Rail

There is no passenger or freight rail service in Chesterfield.

Public Transportation

Chesterfield is a member of the Franklin Regional Transit Authority (FRTA), which provides paratransit services for the elderly and disabled through the Goshen Council on Aging.

Water and Sewer

Chesterfield does not have a public water supply and relies on numerous private, on-site wells located throughout the community, including six wells for non-community water systems. Chesterfield does not have a public sewer system or any publicly-owned wastewater treatment plants in the Town. All residences and businesses are served by on-site septic systems.

Schools

Public schools serving Chesterfield include the New Hingham Regional Elementary School serving both Chesterfield and Goshen, and the Hampshire Regional High School serving the communities of Chesterfield, Goshen, Southampton, Westhampton, and Williamsburg.

Natural Resources

The following in the Natural Resources section include excerpts from the Chesterfield Open Space and Recreation Plan (2003).

Chesterfield is identified as a town of scenic significance in the Massachusetts Landscape Inventory, A Survey of the Commonwealth's Scenic Areas primarily due to its distinct landscape features and unique environments. Chesterfield is characterized by smooth ridge tops and gently rolling hills, with stronger relief occurring along the East Branch of the Westfield River running north/south through the western part of Town. The Dead Branch of the Westfield River meanders over gentler land on the eastern side of Town and is associated with large tracts of wetlands.

Dramatic wooded slopes distinguish the Chesterfield landscape from the nearby foothills of the Connecticut River Valley. Occasional hilltop pasturelands open up distant western views towards the rolling forested expanse of the Berkshire Highlands. Historic sites and buildings are concentrated in three main villages, and old mills, cemeteries, and historic houses pepper the landscape with reminders of the long history of European settlement on the land. Chesterfield has continued its tradition of working forests and farmlands. A combination of low-density dwellings, reforested landscapes and protected lands has sustained the rural character of the **Town**.

However, the majority of residents today lead a modern life of commuting to nearby towns. Furthermore, given today's economic climate, forestry and agriculture are becoming less profitable. Forests and fields throughout the **Town** are likely places for continued residential growth.

Water Resources

Chesterfield's plentiful water resources include numerous rivers and streams, extensive wetlands, and several ponds. The abundance of water resources is also reflected in the reliable availability of groundwater for private and public wells. Chesterfield sits within two separate watersheds: the Westfield River watershed and the Connecticut River watershed. The majority of the Town is situated in the Westfield River watershed. Ten miles of the Westfield River run north/south through Chesterfield. Due to a large ridge along the eastern border of Town, 734 acres of Chesterfield is within the Connecticut River watershed.

The Westfield River is the main water course that flows through Chesterfield and was the first river to be designated a National Wild and Scenic River in Massachusetts. The watersheds in Chesterfield eventually flow into either the Westfield River or the Connecticut River. Land surrounding the Westfield River is an important natural riparian corridor, providing habitat for more than ninety state-protected rare species.

Surface Waters

The ultimate confluence of Chesterfield's numerous streams, brooks, and rivers is the Connecticut River by way of the triple-branched Westfield River (once called the Agawam River). The Westfield River begins approximately 13 miles northwest of Chesterfield in the Town of Savoy and flows southeast through Windsor, Cummington, Chesterfield, and beyond. The river enters at the northern Town line bordering Cummington and flows south along the western side of Chesterfield, crossing Route 143 west of the Town center. The Westfield River continues south into Huntington, where it eventually merges with the Middle and West Branches before its confluence with the Connecticut River.

Several ponds and wetland areas within the Town include:

- Damon Pond, located off Damon Pond Road at the Goshen and Chesterfield border;
- Scout Pond, located off Main Road to the east of the main entrance to the Boy Scouts property;
- Long Pond, located off South Street and linked with the Dead Branch Brook; and
- Little Galilee Pond, located on the border of South Worthington and Chesterfield.

Other water resources include Dead Branch Brook, Tower Brook, Whitside Brook, Baker Brook, Thayer Brook, Page Brook, Roberts Meadow Brook, West Branch Bronson Brook, Rocky Brook, Branch Shop Brook, Holly Brook, Chauncey Branch, West Falls Branch, Wilder Swamp, Dead Swamp, and various other wet areas including vernal pools.

Wetlands

Wetlands occur along many of the brooks, streams, and rivers throughout Chesterfield. Along with recreation they provide viable habitat, nesting, food, and water for a variety of species. In addition, wetlands provide filtration of all pollutants that enter them, hence cleaning the water on which all species depend. Wetlands can also be found at higher elevations where bedrock is close to the surface, but in Chesterfield the majority are located along the brooks and Westfield River.

Bordering vegetated wetlands are wetlands found bordering these brooks and rivers. Within a 100' buffer zone beyond the wetland edge, development is controlled and requires an Order of Conditions from the Conservation Commission according to the provisions of the Massachusetts Wetlands Protection Act. The objective of the Massachusetts Wetlands Protection Act, as amended by the 1996 Rivers Protection Act, is to preserve the quality of water, maintain quality and quantity of drinking water, provide recharge through infiltration of water into the ground, retain the natural flood storage capacity, sustain fisheries, and protect viable wildlife habitat. In Chesterfield, 680 acres are wetland.

Several of Chesterfield's wetlands are large enough to appear on Geographic Information System (GIS) or United States Geological Survey (USGS) maps; however, there are many smaller wetlands that also exist in Town. These types of wetlands are typically identified in the field by soil scientists or wetland experts through recognition of wetland vegetation and soil types. Wetlands not shown on maps may be under protection of the Massachusetts Wetland Protection Act, and are identified on a site-by-site basis.

Wetlands not associated with brooks or rivers are called "isolated wetlands." Vernal pools are examples of these and fill with water only during the wet seasons, providing habitat for salamanders, frogs, and other threatened species. There are numerous vernal pools found scattered throughout Chesterfield, but they are not protected by state laws unless they are certified, are over a quarter acre in size, or within another water resource area.

Beaver Dams

Beaver activity has been increasing over the past decade. Several wetland areas have been flooded by beaver dam construction. As a result, their vegetation has changed from forested wetland to marshy habitat. Sometimes beaver activity is detrimental to property, causing problems for local land owners (*e.g.*, flooding of wells, septic systems, lawns, out-buildings, and roadways). Affected individuals must contact the Board of Health and Conservation Commission for advice and permission to alleviate the beaver problem.

Aquifers

Each resident receives drinking water through private wells, which are ultimately dependent on ground water within the two watersheds. A small fresh water spring located on North Road provides residents with a place to fill up buckets and jugs. A public water supply is located only in Chesterfield's Town center for the Town Hall and Senior Center, at the New Hingham Elementary School, and at Bisbee Mill Museum. There are no designated aquifer recharge areas or surface water reservoirs that the Town relies on for water supply. However, there is a water supply protection area in the southeastern part of Town, within the Connecticut River watershed, for the City of Northampton.

Forests

Chesterfield is unique for the vast acreage of forest that paints the landscape. Approximately 88% or 17,324 acres, of Chesterfield is forested, primarily of second- and third-growth floodplain and northern hardwood forests. The main forest type is northern hardwood forest, also known as “transition forest”, with eastern hemlock as the dominant canopy tree, followed by yellow birch, sugar maple, American beech, white pine, red oak, ash, gray birch, paper birch, pin cherry, balsam poplar, American mountain ash, and mountain maple, which provide a breathtaking mosaic of colors in the autumn. The understory consists primarily of striped maple, hobblebush, nannyberry, and mountain laurel. Spring wildflowers such as trillium, ladyslipper, cowslip, meadowsweet, and various ferns carpet the forest floor. Smith Pyramid and Chesterfield Gorge are popular places to explore this type of forest. Page Brook, located where Dead Swamp runs into Dead Branch, has a transition forest of hemlock, yellow birch, and maple along its stream banks, with marsh marigolds, white hellebore, Canada yew, mountain laurel, and ferns along its edge.

Floodplain forests, which occur where forty or more square miles of watershed drain into the lower reaches of a river, are one of the rarest natural communities, and can be found along the Westfield River. The state-protected Gilbert Bliss State Forest includes the largest floodplain forest in Chesterfield. Here cottonwood and silver maple can be found in abundance, along with river birch, sycamore, box elder, black willow, and American elm. An herbaceous layer of herbs, ferns, and nettles, such as wood nettle, ostrich fern, sensitive fern, and false nettle are found here as well. This large and continuous block of forest provides recreational opportunities for hikers, cross-country skiers, hunters, and snowmobilers, as the southern two-thirds of the forest is equipped with a trail system through public lands that connects to trails in Huntington’s branch of the forest matrix, providing many miles of forest territory to explore.

Development in Chesterfield

Development Patterns

Several factors have played, and will continue to play, an important role in the development of Chesterfield. These include: the existing development pattern and availability of land for future development; the present road network; physical factors such as steep slopes, poor soil conditions, land set aside for conservation, the Westfield River, its tributaries and floodplains; and the availability of utilities such as public water and sanitary sewers. These factors have an impact, both individually and cumulatively, on where and how development occurs.

Zoning and other land use regulations constitute a town's "blueprint" for its future. Land use patterns over time will continue to look more and more like the town's zoning map until the Town is finally "built out"—that is, there is no more developable land left. Therefore, in looking forward over time, it is critical that the Town focus not on the current use and physical build-out today, but on the potential future uses and build-out that are allowed under the Town's zoning map and zoning bylaws. Zoning is the primary land use tool that the Town may use to manage development and direct growth to suitable and desired areas while also protecting critical resources and ensuring that development is in keeping with the Town's character.

Chesterfield has three base zoning districts and four overlay districts. The base districts define the allowed uses and dimensional requirements in all parts of the Town, while the overlay districts provide for additional restrictions in certain areas. These districts are described below.

TC-Town Center: An area which reflects the historic character of the Town and serves as the focus for many municipal services.

AR-I-Agricultural-Residential I: Areas of Town which are best suited for low-density residential development; land uses and activities in keeping with the Town's rural character, primarily but not limited to farm and forest uses.

AR-II-Agricultural-Residential II: Areas of Town dominated by steep slopes, poorly-drained soils and wetlands. In order to meet the area's environmental constraints, the zone is best suited for low-density development that accommodates these fragile resources.

Chesterfield's Overlay Districts further regulate land use within the community. These include:

WS-Water Supply Protection Overlay: Areas of Town where the watershed area for the Northampton water supply is situated. Also includes potential primary aquifer locations for the development of a municipal water system for the Town.

FP-Floodplain Overlay: Areas subject to inundation from a 100-year flood. This district establishes standards to protect against flood related damages within the areas designated Zone A and A1-30 on the Chesterfield Flood Insurance Rate Maps.

WRP-Westfield River Protection Overlay District: Areas abutting the Westfield River encompassing floodplain areas or within 100 feet of the river bank.

Wireless Communications Overlay District: This overlay district establishes the location which may contain personal wireless facilities (cell towers). It contains a thorough application procedure and review criteria.

The Zoning Bylaw establishes a Commercial Site Plan Approval procedure for all business, industrial, and commercial buildings within the Town. Site Plan Review allows the Planning Board the ability to review the development proposal to ensure that the basic safety and welfare of the people of Chesterfield are protected.

Current Development Trends

Chesterfield's landscape is characterized by rolling hills with two main valleys. The land is nearly 90% woodland or wetland. The Chesterfield Gorge, a 60-acre preserve owned by the Trustees of Reservations, contains a magnificent 30 foot abyss near the head waters of the Westfield River, a designated National Wild and Scenic River. The Commonwealth of Massachusetts is the largest landowner in Chesterfield, owning 17% of the total land area (3,249 acres).

Today, this small community is home to approximately 1,250 residents with almost 90% of the homes being owner occupied. The majority of Chesterfield's 20,007 acres is undeveloped forest and water, totaling nearly 18,000 acres. Agricultural land totaling 1,097 acres and residential land totaling 823 acres account for the majority of the remaining Town area. Commercial and industrially used land consists of approximately 26 acres.

Currently, development in Chesterfield is not sufficiently encouraged by existing zoning to seek areas where the infrastructure and environmental conditions support such development. Rather, Chesterfield's existing zoning permits development, primarily subdivisions, across the entire Town with no incentives for guiding that development to more suitable areas.

Development in Hazard Areas

Hazards identified in this plan are regional risks and, as such, all new development falls into the hazard area. The exception to this is flooding. According to the Community Information System (CIS) of FEMA, there were 75 1-4 family structures and 26 "other" structures located within the Special Flood Hazard Area (SFHA) in Chesterfield as of August 3, 2005, the most current records in the CIS for the Town of Chesterfield.

National Flood Insurance Program (NFIP)

Chesterfield is a participating member of the National Flood Insurance Program. Flood Insurance Rate Maps, all bearing the effective date of August 15, 1989, are used for flood insurance purposes and are on file with the Chesterfield Planning Board. As of 2006, there were 2 policies in effect in Chesterfield for a total of $449,000 worth of insurance. There are currently no "Repetitive Loss Properties" insured under the NFIP within the Town of Chesterfield.

3 – HAZARD IDENTIFICATION & ANALYSIS

Natural Hazard Identification

Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to identify the natural hazards which are most likely to have an impact on the Town of Chesterfield.

Floods

The average annual precipitation for Chesterfield and surrounding areas in northwestern Massachusetts is 46 inches. There are three major types of storms that bring precipitation to Chesterfield. Continental storms that originate from the west continually move across the region. These storms are typically low-pressure systems that may be slow-moving frontal systems or more intense, fast-moving storms. Precipitation from coastal storms, also known as nor'easters, that travel into New England from the south constitute the second major storm type. In the late summer or early fall, the most severe type of these coastal storms, hurricanes, may reach Massachusetts and result in significant amounts of rainfall. The third type of storm is the result of local convective action. Thunderstorms that form on warm, humid summer days can cause locally significant rainfall.

Floods can be classified as either *flash floods*, which are the product of heavy, localized precipitation in a short time period over a given location or *general floods*, which are caused by precipitation over a longer time period in a particular river basin. There are several local factors that determine the severity of a flooding event, including: stream and river basin topography, precipitation and weather patterns, recent soil moisture conditions, amount of impervious surface area, and the degree of vegetative clearing. Furthermore, flooding can be influenced by larger, global climate events. Global warming and climate change have the potential to shift current rainfall and storm patterns. Increased precipitation is a realistic result of global warming, and could potentially increase the frequency and intensity of flooding in the region. Currently, floods occur and are one of the most frequent and costly natural hazards in the United States.

Flash flooding events typically occur within minutes or hours after a period of heavy precipitation, after a dam or levee failure, or from a sudden release of water from an ice jam. Most often, flash flooding is the result of a slow-moving thunderstorm or the heavy rains from a hurricane. In rural areas, flash flooding often occurs when small streams spill over their banks. However, in urbanized areas, flash flooding is often the result of clogged storm drains (leaves and other debris) and the higher amount of impervious surface area (roadways, parking lots, roof tops).

In contrast, *general flooding* events may last for several days. Excessive precipitation within a watershed of a stream or river can result in flooding particularly when development in the floodplain has obstructed the natural flow of the water and/or decreased the natural ability of the groundcover to absorb and retain surface water runoff (*e.g.*, the loss of wetlands and the higher amounts of impervious surface area in urban areas).

A floodplain is the relatively flat, lowland area adjacent to a river, lake or stream. Floodplains serve an important function, acting like large "sponges" to absorb and slowly release floodwaters back to surface waters and groundwater. Over time, sediments that are deposited in floodplains develop into fertile, productive farmland like that found in the Connecticut River valley. In the past, floodplain areas were also often seen as prime locations for development. Industries were located on the banks of rivers for access to hydropower. Residential and commercial development occurred in floodplains because of their scenic qualities and proximity to the water. Although periodic flooding of a floodplain area is a natural occurrence, past and current development and alteration of these areas will result in flooding that is a costly and frequent hazard.

The major floods recorded in Western Massachusetts during the 20th century have been the result of rainfall alone or rainfall combined with snowmelt. Flooding along the Westfield River was historically a problem in Chesterfield. Over the years floods have destroyed several of the mills along the river. Now that most of the land along the river is protected and undeveloped, flooding has less potential to damage structures and is, therefore, less of a concern for the Town.

Along the brooks and rivers of Chesterfield much of the land is subjected to flooding, not just wetlands. Areas within the flood plain that are disturbed, developed, or filled could alter the water-holding capacity, which essentially sends flooding further beyond the boundary lines, damaging buildings, roads and potentially redirecting the course of the rivers and streams. Chesterfield's zoning bylaw includes a flood plain district for this reason. Route 143, Bisbee Road, Bryant Road, Old Chesterfield Road, River Road, Cummington Road, and Main Road are all roadways within a 100-year flood plain border. Pavement, buildings, houses, and any impermeable surface built near or within the flood plain are usually restricted unless built before the law was established, in which case it would be considered 'grand-fathered' or an existing non-conforming condition. The best uses for areas within the flood plain are recreational, agricultural, or other activities that minimize impermeable surfaces. Chesterfield also has a Westfield River Protection District that encompasses flood plain areas as indicated on FEMA's Flood Rate Insurance Maps (FIRM).

Severe Snowstorms/Ice Storms

Severe winter storms can pose a significant risk to property and human life because the rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can disrupt utility service, phone service and make roadways extremely hazardous. Severe winter storms can be deceptive killers. The types of deaths that can occur as a result of a severe winter storm include: traffic accidents on icy or snow-covered roads, heart attacks while shoveling snow, and hypothermia from prolonged exposure to cold temperatures. Infrastructure and other property are also at risk from severe winter storms and the associated flooding that can occur following heavy snow melt. Power and telephone lines, trees, and telecommunications structures can be damaged by ice, wind, snow, and falling trees and tree limbs. Icy road conditions or roads blocked by fallen trees may make it difficult to respond promptly to medical emergencies or fires. Prolonged, extremely cold temperatures can also cause inadequately insulated potable water lines and fire sprinkler pipes to rupture and disrupt the delivery of drinking water and cause extensive property damage.

New England generally experiences at least one or two severe winter storms each year with varying degrees of severity. Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. Severe winter storms typically occur during January and February; however, they can occur from late September through late April.

Hurricanes/Severe Thunderstorms

Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour, and large amounts of precipitation. Hurricanes generally occur between June and November and can result in flooding and wind damage to structures and above-ground utilities. Global warming will increase the threat of hurricanes as oceans and atmosphere warms. Climate change research indicates that storms like hurricanes will become more intense and more frequent in the future. In Massachusetts, major hurricanes occurred in 1904, 1938, 1954, 1955, 1960 and 1976.

Tornadoes/Microbursts

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along a path that ranges from a few dozen yards to over a mile in width. The path of a tornado may be hard to predict because they can stall or change direction abruptly. Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester, including towns in eastern Franklin County.

Of additional concern are microbursts, which often do tornado-like damage and can be mistaken for tornadoes. In contrast to the upward rush of air in a tornado, air blasts rapidly downward from thunderstorms to create microbursts.[1]

Microbursts and tornadoes are not uncommon in the region, and they are expected to become more frequent and more violent as the earth's atmosphere warms, due to predictions of climate change from global warming. In the last fifty years, one known tornado has touched down in Chesterfield, and there have been several high-wind storms and hail events. In Western Massachusetts, the majority of sighted tornadoes have occurred in a swath just east of Chesterfield, known as "tornado alley."

Wildland Fires/Brushfires

According to FEMA, there are three different classes of wildland fires: *surface fires*, *ground fires* and *crown fires*.[2] The most common type of wildland fire is a surface fire that burns slowly along the floor of a forest, killing or damaging trees. A ground fire burns on or below the forest floor and is usually started by lightening. Crown fires move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions. While wildland fires have not been a significant problem in Chesterfield, there is always a possibility that changing land use patterns and weather conditions will increase a community's vulnerability. For example, drought conditions can make forests and other open, vegetated areas more

[1] *http://www.fema.gov/regions/vii/2003/03r7n06a.shtm*
[2] FEMA, "Fact Sheet: Wildland Fires," September 1993.

vulnerable to ignition. Once the fire starts, it will burn hotter and be harder to extinguish. Soils and root systems starved for moisture are also vulnerable to fire. Residential growth in rural, forested areas increases the total area that is vulnerable to fire and places homes and neighborhoods closer to areas where wildfires are more likely to occur. Global climate changes may also influence precipitation patterns, making the region more susceptible to drought and therefore, wildfires.

On average, there are about three brush fires per year in the Town of Chesterfield as reported by the Fire Chief. Specific locations cannot be predicted. The brush fires tend to originate from careless activities, unattended campfires or controlled burns which have gotten away from their attendant. In 2005, there were 6 non-structural or vehicle fires in the Town of Chesterfield as identified in the Fire Incident Reporting System.

Earthquakes

An earthquake is a sudden, rapid shaking of the ground that is caused by the breaking and shifting of rock beneath the Earth's surface. Earthquakes can occur suddenly, without warning, at any time of the year. New England experiences an average of 30 to 40 earthquakes each year although most are not noticed by people.[3] Ground shaking from earthquakes can rupture gas mains and disrupt other utility service, damage buildings, bridges and roads, and trigger other hazardous events such as avalanches, flash floods (dam failure) and fires. Un-reinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated, unstable soil, and mobile homes not tied to their foundations are at risk during an earthquake.[4]

Table 3-1
New England Earthquakes with a Magnitude of 4.2 or more 1924 - 2002

Location	Date	Magnitude
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Plattsburg, NY	April 20, 2002	5.1

Source: Northeast States Emergency Consortium Web site: *www.nesec.org/hazards/earthquakes.cfm*

[3] Northeast States Emergency Consortium Web site: *www.nesec.org/hazards/earthquakes.cfm.*
[4] Federal Emergency Management Agency Web site: *www.fema.gov/hazards/earthquakes/quake.shtm.*

Table 3-2
New England States Record of Historic Earthquakes

State	Years of Record	Number Of Earthquakes
Connecticut	1568 - 1989	137
Maine	1766 - 1989	391
Massachusetts	1627 - 1989	316
New Hampshire	1728 - 1989	270
Rhode Island	1766 - 1989	32
Vermont	1843 - 1989	69
New York	1737 - 1985	24
Total Number of Earthquakes within the New England states between 1568 and 1989 = 1,239.		

Source: Northeast States Emergency Consortium Web site:
www.nesec.org/hazards/earthquakes.cfm

Massachusetts introduced earthquake design requirements into their building code in 1975. However, these specifications apply only to new buildings or to extensively modified existing buildings. Buildings, bridges, water supply lines, electrical power lines and facilities built before 1975 may not have been designed to withstand the forces of an earthquake. The seismic standards have also been upgraded with the 1997 revision of the State Building Code.

Dam Failure

Although dams and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and flood control, they also pose a potential risk to lives and property. Dam failure is not a common occurrence but dams do represent a potentially disastrous hazard. When a dam fails, the potential energy of the stored water behind the dam is released. Most earthen dam failures occur when floodwaters above overtop and erode the material components of the dam. Often dam breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an "inundation area." The number of casualties and the amount of property damage will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Many dams in Massachusetts were built in the 19th century without the benefit of modern engineering design and construction oversight. Dams can fail because of structural problems due to age and/or lack of proper maintenance. Dam failure can also be the result of structural damage caused by an earthquake or flooding brought on by severe storm events.

The Massachusetts Department of Conservation and Recreation (MA DCR) was the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the

implementing regulations 302 CMR 10.00). Until 2002, DCR was also responsible for conducting dam inspections but then state law was changed to place the responsibility and cost for inspections on the owners of the dams. This means that individual dam owners are now responsible for conducting inspections.

The state has three hazard classifications for dams:

- *High Hazard*: Dams located where failure or improper operation will likely cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, main highways, or railroads.
- *Significant Hazard*: Dams located where failure or improper operation may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.
- *Low Hazard*: Dams located where failure or improper operation may cause minimal property damage to others. Loss of life is not expected.

The inspection schedule for dams is as follows:

- Low Hazard dams – 10 years
- Significant Hazard dams – 5 years
- High Hazard dams – 2 years

The time intervals represent the maximum time between inspections. More frequent inspections may be performed at the discretion of the state. Dams and reservoirs licensed and subject to inspection by the Federal Energy Regulatory Commission (FERC) are excluded from the provisions of the state regulations provided that all FERC-approved periodic inspection reports are provided to the DCR. All other dams are subject to the regulations unless exempted in writing by DCR.

The Massachusetts Emergency Management Agency (MEMA) identifies seven (7) dams in Chesterfield. The follow table identifies the dams within the Town as well as whether they are classified as low, significant, or high hazard

Table 3-3: Chesterfield Dams, Classified by Hazard Risk

Dam	Hazard Risk
Damon Pond Dam	Low
Scout Pond Dam	Low
Oleksak Farm Pond	Low
Bisbee Mill Dam #1 (NJ)	Low
Bisbee Mill Dam #2 (NJ)	Low
Bisbee Mill Pond Dike (NJ)	Low
Little Gallilee Pond Dam*	Low

Source: Massachusetts Emergency Management Agency (MEMA)

It is also important to consider and plan for the potential critical failure of dams upstream in Cummington, Worthington, or Goshen – although none of these upstream dams are of high hazard.

Drought

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.[6]

In Massachusetts, six major droughts have occurred statewide since 1930[5]. They range in severity and length, from three to eight years. In many of these droughts, water-supply systems were found to be inadequate. Water was piped in to urban areas, and water-supply systems were modified to permit withdrawals at lower water levels.

Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of the direct impacts of drought. Of course, these impacts can have far-reaching effects throughout the region and even the country.

When evaluating the region's risk for drought on a national level, utilizing a measure called the Palmer Drought Severity Index, Massachusetts is historically in the lowest percentile for severity and risk of drought.[6] However, global warming and climate change may have an effect on drought risk in the region. With the projected temperature increases, some scientists think that the global hydrological cycle will also intensify. This would cause, among other effects, the potential for more severe, longer-lasting droughts.

Man-Made Hazards – Hazardous Materials

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes and businesses routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

The Toxics Release Inventory (TRI), a publicly available EPA database that contains information on specific toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities.[7] According to TRI, there are no industries currently releasing hazardous materials within Chesterfield's Town limits. Furthermore, there are no brownfields (21E sites) in Chesterfield.

---

[5] U.S. Geological Survey Water-Supply Paper 2375. "National Water Summary 1989 – Floods and Droughts: Massachusetts." Prepared by S. William Wandle, Jr., U.S. Geological Survey.

[6] National Drought Mitigation Center – http://drought.unl.edu

[7] 2004 Toxic Releases Inventory (TRI) Data Files for Massachusetts. www.epa.gov/tri/

However, varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores. These hazardous materials are transported regularly over our highways and by rail and if released can spread quickly to any community. Incidents can occur at any time without warning. Human error is the probable cause of most transportation incidents and associated consequences involving the release of hazardous materials.

Natural Hazard Analysis Methodology

In order to review the likelihood of a specific hazard occurring, to identify the location of occurrence, and to assess the impacts of the hazard event, a *Hazard Identification and Analysis Matrix* was prepared to organize the information that was gathered for this project. The matrix is organized into the following sections: Type of Hazard, Frequency of Occurrence, Severity of Impacts and Hazard Index. The Hazard Index was completed to rank the hazards according to the frequency of occurrence and the amount of potential damage likely to occur. The Hazard Index forms the basis for concentrating the future mitigation efforts outlined in this plan. A description of each of the matrix categories is provided below. The completed Matrix is shown on Table 3-7, *Hazard Identification and Analysis Worksheet for Chesterfield.*

Type of Hazard

The natural hazards identified for Chesterfield include floods, severe snowstorms/ice storms, hurricanes, tornadoes, wildfires/brushfires, dam failure, earthquakes, and hazardous materials. Many of these hazards result in similar impacts to a community. For example, hurricanes, tornadoes and severe snowstorms may cause wind-related damage. A more detailed description of each type of hazard is included in the earlier section of this chapter.

Frequency of Occurrence

The frequency or likelihood of occurrence for each natural hazard was classified according to the following scale:

Table 3-4
Frequency of Occurrence and Annual Probability of Given Natural Hazard

Frequency of Occurrence	Annual Probability
Very High	70-100% probability in the next year
High	40-70% probability in the next year
Moderate	10-40% probability in the next year
Low	1-10% probability in the next year
Very Low	Less than 1% probability in the next year

Source: Information adapted from Hyde County, North Carolina Multi-Hazard Mitigation Plan, September 2002.

Location of Occurrence

The classifications are based on the area of the Town of Chesterfield that would potentially be affected by the hazard. The following scale was used:

Table 3-5
Location of Occurrence and Percentage of Town Impacted of Given Natural Hazard

Location of Occurrence	Percentage of Town Impacted
Large	More than 50% of the Town affected
Medium	10 to 50% of the Town affected
Small	Less than 10% of the Town affected

Source: Information adapted from Hyde County, North Carolina Multi-Hazard Mitigation Plan, September 2002.

Severity of Impacts

The severity of direct impacts an affected area could potentially suffer were classified according to the following scale:

Table 3-6
Severity of Impacts and Magnitude of Multiple Impacts of Given Natural Hazard

Severity of Impacts	Magnitude of Multiple Impacts
Catastrophic	Multiple deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of facilities for 30 days or more.
Critical	Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.
Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.
Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.

Source: Information adapted from Hyde County, North Carolina Multi-Hazard Mitigation Plan, September 2002.

Hazard Index

The hazard index ratings were determined after assessing the frequency, location and impact classifications for each hazard. The hazard index ratings are based on a scale of 1 (highest risk) through 5 (lowest risk). The ranking is qualitative and is based, in part, on local knowledge of past experiences with each type of hazard. The size and impacts of a natural hazard can be unpredictable however; many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability. The Hazard Ratings are labeled as follows:

1 – High Risk
2 – Medium-High Risk
3 – Medium Risk
4 – Low-Medium Risk
5 – Low Risk

Table 3-7
Hazard Identification and Analysis Worksheet for Chesterfield

TYPE OF HAZARD	FREQUENCY OF OCCURRENCE	LOCATION OF OCCURRENCE	IMPACT	HAZARD RISK INDEX RATING
Flooding (100-yr base flood)	**Moderate**	**Medium**	**Limited/Critical**	**3**
Flooding	**Moderate**	**Medium**	**Limited/Critical**	**3**
Severe Snowstorms/ Ice Storms	**High**	**Large**	**Limited/Critical**	**2**
Severe Thunderstorms/ Hurricanes	**Moderate**	**Medium**	**Limited/Critical**	**3**
Tornadoes/Microbursts	**Moderate**	**Small**	**Critical**	**3**
Wildfire/Brushfire	**Low**	**Small**	**Minor**	**4**
Earthquakes	**Low**	**Large**	**Critical**	**4**
Dam Failures	**Very Low**	**Medium**	**Minor**	**5**
Drought	**Low**	**Large**	**Minor**	**5**
Man-Made Hazards: Hazardous Materials	**Low**	**Small**	**Minor**	**5**

Source: Information adapted from Town of Holden Beach North Carolina Community-Based Hazard Mitigation Plan, July 15, 2003 and the Massachusetts Emergency Management Agency (MEMA).

Vulnerability Assessment

The following is a list of natural and manmade disasters, and the areas affected by them, that have or could affect the Town of Chesterfield. The Past and Potential Hazards Map at the end of this Plan reflects the contents of this list.

In order to determine estimated losses due to natural and man made hazards in Chesterfield, each hazard area was analyzed with results shown below. Human losses are not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The value of all structures in the Town of Chesterfield, including exempt structures such as schools and churches, is $140,174,510[8] as of 2006. The median value of a home in Chesterfield is $203,600[9] as of 2005. The data below were calculated using 1) aerial photography, 2) FEMA's Community Information System (CIS), and 3) FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses, August 2001*.

In general, there are many structures in Chesterfield that have a risk of experiencing damage due to natural hazards. The following table produces a broad estimate of the number of structures that could be impacted by the various natural hazards that are known to occur in Chesterfield.

Hazard	Hazard Area	Number of Structures
Flooding	Westfield River Dead Branch Page Brook, Dead Swamp, Wilder Swamp, West Falls Branch and Whitside Brook Floodplains; undersized culverts on Main Road, Fuller Road and Ireland Street	101
Severe Snow and Ice Storms	Entire Land Area of Town	n/a
Thunderstorms and Hurricanes	Entire Land Area of Town	n/a
Earthquakes	Entire Land Area of Town	n/a
Dam Failures	Refer to Potential Hazards/Critical Facilities Map	0
Drought	Entire Land Area of Town	n/a
Man-made Hazards	Refer to Potential Hazards/Critical Facilities Map	9
Tornadoes/Microbursts	Damon Pond--Sugar Hill and Branch Road	37

Table 3-8: At-Risk Structures

[8] Data obtained from the Town Assessor

[9] Figure courtesy of U.S. Census and represents Median Value for Specified Owner-Occupied Housing Units in 2005 for the Town of Chesterfield.

Past and Potential Hazards

Flooding (100-year base flood): Medium Risk

In this section, a preliminary vulnerability assessment was prepared to evaluate the potential impact that flooding could have on the portions of Chesterfield located within the 100-year floodplain. Flooding was chosen for this evaluation because it is a natural hazard likely to impact the community and the location of the impact can be determined by mapping of areas inundated during severe flooding events. Flooding can be caused by severe storms, such as hurricanes, nor'easters, and microbursts, as well as ice dams and snow melt.

There are approximately 1,058 acres of land within the FEMA mapped 100-year floodplain and 63 acres of land within the 500-year floodplain within the Town of Chesterfield. According to the Community Information System (CIS) of FEMA, there were 75 1-4 family structures and 26 "other" structures located within the Special Flood Hazard Area (SFHA) in Chesterfield as of August 3, 2005, the most current records in the CIS for the Town of Chesterfield. Utilizing the Town's median home value of $203,600, a preliminary damage assessment was generated. For the estimated number of people living in the floodplain, an average household size of 2.69[10] people was used.

A total of 101 structures are located within the SFHA in Chesterfield, totaling approximately $20,563,600 of damage, and 272 people impacted. The damage estimate is a rough estimate and likely reflects a worst-case scenario. Computing more detailed damage assessments based on assessor's records is a labor-intensive task and beyond the scope of this project.

Flooding: Medium Risk

There is potential for annual flood incidents in Chesterfield due to the community's many steep slopes. Most of the flood hazard areas listed here were identified due to known past occurrence in the respective area. There are many areas with no record of previous flood incidents that could be affected in the future by heavy rain and runoff from surrounding slopes.

<u>Route 143 (Main Road) 1 Mile west of the Williamsburg/Chesterfield Town Line</u>

Approximately two structures[11] could be affected by a flood incident. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be $407,200. Cost for repairing or replacing any dams or bridges, power lines, telephone lines, and contents of structures are not included.

- This area is within a FEMA mapped 100-year flood zone.
- Past record of flooding in this area.
- Annual potential for flooding in floodplain from both spring runoff and heavy summer/fall rains.

[10] Figure courtesy of 2000 U.S. Census.
[11] Determined through the use of aerial photography from MassGIS

- Potential for damage/repair to Main Road (Route 143) road surface.

Willicutt Road

There are 8 structures[11] located in this area that have been affected or could be affected by a flood incident. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be $1,628,800. Cost for repairing or replacing any power lines, telephone lines, and contents of structures are not included.

- This area is not within a FEMA mapped 100-year flood zone.
- Heavy rains in 2003 caused flooding in this area; 1 structure was affected with minor damage.
- Potential annual event due to heavy rains and runoff. - Flooding of road - due to accumulation of heavy rain and runoff.
- Potential for damage/repair to the road surface.

Fuller Road

There are 9 structures[11] located in this area that have been affected or could be affected by a flood incident. 100% damage to 100% of the structures, estimated cost of repairing or replacing to be $1,832,400. Cost for repairing or replacing any power lines, telephone lines, and contents of structures are not included.

- This area is not within a FEMA mapped 100-year flood zone.
- Heavy rains in 2003 caused flooding in this area; 1 structure was affected with minor damage.
- Potential annual event due to heavy rains and runoff. - Flooding of road - due to accumulation of heavy rain and runoff.
- Potential for damage/repair to the road surface.

Main Road, West Chesterfield to Worthington Town Line

In 2005, an unusual weather system stalled over northern portions of Worthington and western portions of Cummington. This storm dropped several inches of rain in this isolated area in a relatively short span of time (2-3 hours). This rain event caused the water level in Stevens Brook, which meanders Main Road from the town line to the Westfield River, to rise very quickly and high enough where evacuations were ordered for several houses along the stream. Fortunately, only minor structural damage to one structure was noted during follow up inspections

Severe Snowstorms/Ice Storms: Medium-High Risk

Three types of winter events are heavy snow, ice storms, and extreme cold which cause concern. Occasionally heavy snow years will collapse buildings. Ice storms have disrupted power and communication services. Timberland has been severely damaged. Extreme cold affects the elderly. Chesterfield's recent history has not recorded any loss of life due to the extreme winter weather. These random events are difficult to set a cost to repair or replace any of the structures or utilities affected.

- Area has been subject to extremely heavy snow falls, records of early 1900s and into the 1950s and 1960s indicate this.

- Moderate risk Town-wide due to snow, ice and extreme cold.
- 1969 heavy snow - several 3 feet events.
- 1988 temperature below 0 degrees for a month (Nov.-Dec.).
- Elderly are affected by extreme weather.

Hurricanes/Severe Thunderstorms: Medium Risk
Chesterfield's location in Western Massachusetts reduces the risk of extremely high winds that are associated with hurricanes. The Town has experienced small blocks of downed timber and uprooting of trees onto structures. Hurricanes can and do create flooding. Estimated wind damage 5% of the structures with 10% damage $700,873. Estimated flood damage 10% of the structures with 20% damage $2,803,490. Cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included.

- Connecticut River corridor at risk.
- 1938 hurricane was a major event - wind damage and flooding statewide.
- Power and phone lines - disruptions of services.
- Flooding/washing of evacuation routes.

Tornadoes/Microbursts: Medium Risk
Risk of tornadoes is considered to be high in Hampshire County. Tornadoes rarely occur in this part of the country; therefore, assessing damages is difficult. Most buildings in the Town of Chesterfield have not been built to Zone 1, Design Wind Speed Codes. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975. According to the 2000 U.S. Census, 58% of the housing in Chesterfield was built before 1970. Estimated damages to 10% of structures with 20% damages $2,803,490. Estimated cost does not include building contents, land values or damages to utilities.

- One past incident recorded in the Town of Chesterfield.
- River corridors and hill tops susceptible.
- 9 incidents of tornado activity (F3 or less) occurred in Hampshire County from 1954 to 2006.
- Two past microburst incidents have occurred, once in 2000+/- and again in 2005.

<u>Damon Pond Area</u>
A microburst incident occurred in the year 2005 resulting in structural damage to one house caused by destruction of several large white pine trees adjacent to the house. Cost for repairing or replacing any power lines, telephone lines, and contents of structures are not included.

Wildfires/Brush Fires: Low-Medium Risk
As timber harvesting is reduced, wood roads close, debris builds up on the ground, potential for wildfire increases town-wide. Entire town - minimal forest fire protection (dependent on on-call firefighters and problems with accessibility).

A particular are of concern is the W. D. Cowls property located on Route 143 straddling the Williamsburg/Chesterfield Town line. This property has recently undergone a timber and

cordwood removal operation which will have a significant fuel component for a decade to come.

Earthquakes: Low-Medium Risk
There is moderate potential for serious damage in village portion of Town. Structures are mostly of wood frame construction estimated loss 20% of town assessed structural valuation $28,034,902. Costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures are not included.

- No known record of damage.
- Moderate risk to Town.

Dam Failure: Low Risk
The Massachusetts Emergency Management Agency (MEMA) identifies seven (7) dams in Chesterfield. Table 3-3 identifies the dams within the Town as well as whether they are classified as low, significant, or high hazard. Of the seven dams in Chesterfield all are classified as *Low Hazard*: Dams located where failure or improper operation may cause minimal property damage to others. Loss of life is not expected.

Drought: Low Risk
In Massachusetts, six major droughts have occurred statewide since 1930[12]. They range in severity and length, from three to eight years. In many of these droughts, water-supply systems were found to be inadequate. Water was piped in to urban areas, and water-supply systems were modified to permit withdrawals at lower water levels. Chesterfield has no recent history (50 years+) of severe drought conditions impacting the community.

Man-Made Hazards - Hazardous Materials: Low Risk

Chesterfield relies on the support of the District 4 HazMat Team based in Holyoke for responding to incidents involving hazardous materials. Public transportation of chemicals and bio-hazardous materials by vehicle transport on Route 143 is a concern. There is one (1) site in the Town of Chesterfield identified by the U.S. EPA as a Tier II Hazardous Material site. This site is:

Verizon Chesterfield Dial OFC (MA823307) – 2 Bryant Street

(Past and Potential Hazards/Critical Facilities Map Located In Back of Plan)

Future Construction Hazards

[12] U.S. Geological Survey Water-Supply Paper 2375. "National Water Summary 1989 – Floods and Droughts: Massachusetts." Prepared by S. William Wandle, Jr., U.S. Geological Survey.

To respond to FEMA's concerns about whether or not this plan adequately addressed the impact hazards could have on future construction (including those buildings that are in a hazard zone, but have yet to be impacted), Chesterfield's LEPC met to discuss this issue on October 17, 2007.

During this meeting, the Emergency Management Director developed the following spreadsheet, which was designed to estimate the number of structures that could be impacted in the future by those natural hazards that were identified during Chesterfield's planning process.

Development has not been an issue in Chesterfield, as there are, fewer than 10 building permits each year in Chesterfield.

4 – CRITICAL FACILITIES

A Critical Facility is defined as a building, structure, or location which:

- Is vital to the hazard response effort.
- Maintains an existing level of protection from hazards for the community.
- Would create a secondary disaster if a hazard were to impact it.

Critical Facilities within Hazard Areas

Hazards identified in this plan are regional risks and, as such, all critical facilities fall into the hazard area. The exception to this is flooding. There are several critical facilities that fall within the 100-year floodplain as shown in the table at the end of this section.

The Critical Facilities List for the Town of Chesterfield has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. Chesterfield's Hazard Mitigation Committee has broken up this list of facilities into three categories. The first category contains facilities needed for Emergency Response in the event of a disaster. The second category contains Non-Emergency Response Facilities that have been identified by the Committee as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Chesterfield. The third category contains Facilities/Populations that the Committee wishes to protect in the event of a disaster. The Critical Facilities Map at the end of this Plan identifies these facilities.

Category 1 – Emergency Response Services

The Town has identified the Emergency Response Facilities and Services as the highest priority in regards to protection from natural and man-made hazards.

1. **Emergency Operations Center**
   Chesterfield Fire Department – 5 North Street
   Alternate EOC – Davenport Building (Town Offices), 422 Main Road

2. **Fire Station**
   Chesterfield Fire Department – 5 North Street

3. **Police Station**
   Chesterfield Town Offices/Police Department – 422 Main Road

4. **Highway Garage**
   Town Municipal Garage – Route 9

5. **Town Offices**
   Chesterfield Town Offices/Police Department – 422 Main Road

6. Mass Care Shelters and Reception Centers

Mass Care Shelters:
Church of Christ – Main Road (Route 143), Capacity = 200
Chesterfield Scout Reservation – 27 Sugar Hill Road, Capacity = 400
New Hingham Regional Elementary School – 30 Smith Road, Capacity = 750
Reception Centers:
Davenport Building – 422 Main Road, Capacity = 150
Grange Hall – 410 Main Road, Capacity = 160

7. Primary Evacuation Routes

Route 1 - East from center of town along Route 143 to Williamsburg.
Route 2 - Southeast Area - East Street into Westhampton.
Route 3 - South from center of town along South St to Westhampton.
Route 4 - North from the center of town along North Road then right onto Damon Pond Road to Goshen.
Route 5 - West from center of town along Route 143 to Worthington.
Route 6 - North from Route 143 and West Chesterfield village along Cummington Road in Cummington.
Route 7 - South from West Chesterfield village along Ireland Street to Worthington either via Partridge Road or Ireland Street.

8. Bridges Located on Evacuation Routes

See Table 4-1 and Critical Facilities Map at the back of Plan

Category 2 – Non Emergency Response Facilities

The Town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Chesterfield.

1. Hospitals

Cooley Dickenson Hospital – 30 Locust Street, Northampton

2. Water Supply

Public Water Supply at the Chesterfield Regional Elementary School, 30 Smith Road

3. Dry Hydrants - Fire Ponds - Water Sources

Numerous locations in Chesterfield, see *Critical Facilities Map* at back of Plan

4. Transfer Station

Chesterfield Transfer Station – Willicutt Road

5. Communications

Communication Tower (Microwave) – Shaw Ledges
Communication Tower (Currently Unused) – Bofat Hill, Bofat Hill Road
Telephone Crossboxes:
Verizon Switching Station – South Street

Verizon Switching Station – Bryant Road

6. Alternate Transportation Pickup Points

Congregational Church – Main Road

7. Transportation Resources

Airport: Worthington Airstrip – Route 112, Worthington
Ambulance (Primary): Highland Ambulance, Main Street, Goshen
Ambulance (Secondary): AMR, Northampton
Towing: Liebenow's Garage, Old Route 9, Cummington
Cichy's Garage, 3 Main Street, Williamsburg

8. Mortuary Facilities

Child's Funeral Home, 14 Kinsley Avenue, Haydenville
Pease Funeral Services, 425 Prospect Street, Northampton
Williamsburg Funeral Home, S. Main Street, Haydenville

9. Emergency Food Storage/Goods Warehousing

New Hingham Regional Elementary School – 30 Smith Road
Davenport Building (Town Offices) – 422 Main Road
Chesterfield Town Hall – 405 Main Road

Category 3 – Facilities/Populations to Protect

The third category contains people and facilities that need to be protected in event of a disaster.

1. Special Institutions

Chesterfield Senior Center - Main Street
Father Freel Camp – South Chesterfield Road
Chesterfield Scout Reservation – 27 Sugar Hill Road

2. Schools

New Hingham Regional Elementary School – 30 Smith Road

3. Daycare or Nursery

Davenport Daycare – 401 Main Road
"Bonnie's Program" – 30 Smith Road

4. Historic Buildings/Sites

Bisbee Mill (added 2005 to the National Register of Historic Places – Building #05000219): 66 East Street.

5. Large Employment Centers

Chesterfield Town Offices – 422 Main Street
Berkshire Hardwoods – East Street
Hilltown CDC – Main Street

6. EPA Tier II Hazardous Materials Facilities

Verizon Chesterfield Dial OFC (MA823307) – 2 South Bryant Street

7. Other

Chesterfield General Store, Main Street (Only establishment in Town with food supplies)

Table 4-1: Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas

Hazard Type	Hazard Area	Critical Facilities Affected	Evacuation Routes Affected
Flooding (100-year Flood)	100-year Floodplain along East Branch of the Westfield River	Bridge at the intersection of Main Road (Route 143)/Cummington Road in West Chesterfield	Main Road (Route 143)
	100-year Floodplain Areas along Tower Brook	Bridge at the intersection of Tower Brook/Cummington Road in West Chesterfield Bridge at the intersection of Tower Brook/Mount Road in West Chesterfield	None None
	100-year Floodplain along West Falls Branch	Bridge and Dry Hydrant at the intersection of West Falls Branch/Main Road (Route 143) in West Chesterfield Bridge at the intersection of West Falls Branch/Ireland Street in West Chesterfield	Main Road (Route 143) None
	100-year Floodplain along Damon Pond	Bridge and Dry Hydrant at the intersection of Dead Branch/Damon Pond Road in Northeast Chesterfield	Damon Pond Road
	100-year Floodplain around Dead Swamp	Beaver Dam Located off Route 143 (Main Road) 1 mile west of the Williamsburg/Chesterfield Town Line	Main Road (Route 143)
	100-year Floodplain west of Soaker Road	Bridge on Soaker Road	None
	100-year Floodplain associated with Scout Pond	Bridge just north of Scout Pond on Old Chesterfield Road	None
	100-year Floodplain along Dead Branch	Bridge at the intersection of Dead Branch/Main Road (Route 143) Bridge at the intersection of Dead Branch/Bisbee Road Bridge and Dry Hydrant at the intersection of Dead Branch/East Street 3 Low Hazard Dams along Dead Branch	Main Road (Route 143) None None None

(Past and Potential Hazards/Critical Facilities Map Located In Back of Plan)

5 – CURRENT MITIGATION STRATEGIES

Flooding

The Floodplain Map for the Town of Chesterfield shows the 100-year and 500-year flood zones identified by FEMA flood maps. The 100-year flood zone is the area that will be covered by water as a result of a flood that has a one percent chance of occurring in any given year. Likewise, the 500-year flood has a 0.2 percent chance of occurring in any given year. In Chesterfield, there are several floodplain areas – primarily along the Westfield River in the western side of Town, and along the Dead Branch Brook, east of the town center. In addition, there are some smaller floodplains mapped in low-lying areas throughout Chesterfield, like Wilder Swamp and Dead Swamp, as well as along Tower Brook and West Falls Branch, two tributaries flowing into the Westfield. Furthermore, there are some level stretches along Dead Branch Brook that could potentially flood very wide, especially around Long Pond and Fisk Meadow.

The major floods recorded in Western Massachusetts during the 20th century have been the result of rainfall alone or rainfall combined with snowmelt. Flooding along the Westfield River was historically a problem in Chesterfield. Over the years floods have destroyed several of the mills along the river. Now that most of the land along the river is protected and undeveloped, flooding has less potential to damage structures and is, therefore, less of a concern for the Town.

One of the goals of this Natural Hazards Mitigation Plan is to evaluate all of the Town's existing policies and practices related to natural hazards and identify potential gaps in protection.

Management Plans

The Comprehensive Emergency Management (CEM) Plan for Chesterfield lists the following generic mitigation measures for flood planning:

1. Identify areas in the community that are flood prone and define methods to minimize the risk. Review National Flood Insurance Maps.
2. Disseminate emergency public information and instructions concerning flood preparedness and safety.
3. Community leaders should ensure that Chesterfield stays enrolled in the National Flood Insurance Program.
4. Strict adherence should be paid to land use and building codes, (*e.g.* Wetlands Protection Act), and new construction should not be built in flood prone areas.
5. Ensure that flood control works are in good operating condition at all times.
6. Natural water storage areas should be preserved.
7. Maintain plans for managing all flood emergency response activities including addressing potentially hazardous dams.

The Comprehensive Emergency Management (CEM) Plan for Chesterfield also lists the following generic preparedness and response measures for floods:

1. Place EOC personnel on standby during stage of flood 'watch' and monitor NWS/New England River Forecast Center reports.
2. Ensure that public warning systems are working properly and broadcast any information that is needed at this time.
3. Review mutual aid agreements.
4. Monitor levels of local bodies of water.
5. Arrange for all evacuation and sheltering procedures to be ready for activation when needed.
6. Carry out, or assist in carrying out needed flood-proofing measures such as sand bag placement, *etc.*
7. Regulate operation of flood control works such as floodgates.
8. Notify all Emergency Management related groups that will assist with flood response activities to be ready in case flood 'warning'.
9. Broadcast warning/notification of flood emergency.
10. Coordinate traffic control and proceed with evacuation of affected populations as appropriate.
11. Open and staff shelters and reception centers.
12. Undertake, or continue to carry out, flood proofing measures.
13. Dispatch search and rescue teams.
14. Dispatch emergency medical teams.

Evacuation Options

Much of the land subject to flooding in town is agricultural or forested. However, there are some areas of low-density residential along the East Branch of the Westfield River near West Chesterfield Village. According to the Chesterfield CEM Plan, the following areas have been identified as flood and hurricane prone areas: 1) Willicutt Road and Fuller Road areas for road flooding; and 2) Route 143 - Main Road approximately 1 mile west of the Chesterfield/Williamsburg Town line, locally known as Curtis Swamp area.

The primary evacuation routes for floods and hurricanes are:

Route 1 - East from center of town along Route 143 to Williamsburg.
Route 2 - Southeast Area - East Street into Westhampton.
Route 3 - South from center of town along South St to Westhampton.
Route 4 - North from the center of town along North Road then right onto Damon Pond Road to Goshen.
Route 5 - West from center of town along Route 143 to Worthington.
Route 6 - North from Route 143 and West Chesterfield village along Cummington Road in Cummington.

Route 7 - South from West Chesterfield village along Ireland Street to Worthington either via Partridge Road or Ireland Street.

In addition, Chesterfield has 6 bridges situated either in or near the 100-year floodplain, which could make evacuation efforts as a result of flood more difficult. Some of the roads that residents would most likely take to reach safety travel through flood-affected areas.

Flood Control Structures

There are seven (7) dams within the Town of Chesterfield, none of which has a high hazard risk.

Land Use Regulations that Mitigate Impacts from Flooding

The Town of Chesterfield has adopted several land use regulations that serve to limit or regulate development in floodplains, to manage stormwater runoff, and to protect groundwater and wetland resources, the latter of which often provide important flood storage capacity. These regulations are summarized below and their effectiveness evaluated in Table 4-1.

Zoning Bylaws

The Town of Chesterfield has established a set of bylaws designed in part to "promote the general welfare, to protect the health and safety of its inhabitants, to encourage the most appropriate use of land within the Town, to retain and improve the pleasant physical aspects of the community, to reduce the hazard from fire by regulating the location and use of buildings and the open spaces around them, and to protect, conserve and increase the value of property" of the Town of Chesterfield. The Zoning Bylaw include several provisions that mitigate the potential for flooding, including:

Section IV: Overlay Districts

4.0: Floodplain and Westfield River Protection Districts

4.00: Purposes

The purposes of the Floodplain and Westfield River Protection Districts are to:

a. Protect life, public safety and property from flooding hazards;
b. Preserve the natural flood control and flood storage characteristics of the floodplain;
c. Prevent any alterations to the natural flow of the river;
d. Protect fisheries and wildlife habitat within and along the river;
e. Control erosion and siltation;
f. Enhance and preserve existing scenic or environmentally sensitive areas along the shoreline;
g. Conserve shore cover and encourage well-designed developments;
h. Prevent water pollution caused by erosion, sedimentation, nutrient or pesticide run-off, and poorly sited waste disposal facilities.

4.01: District Boundaries

a. The Floodplain District is herein established as an overlay district and includes all special flood hazard areas designated as Zone A on the Chesterfield Flood Insurance Rate Maps (FIRMs)….
b. The Westfield River Protection District is herein established as an overlay district. The area subject to the bylaw shall be the entire length of the East Branch of the Westfield River within the Town of Chesterfield. The Westfield River Protection District shall encompass those floodplain areas designated as Zone A on the Town of Chesterfield Flood Insurance Rate Maps (FIRM) for the Westfield River, East Branch. Where the floodplain has not been delineated on the FIRM maps or where the delineation is less than 100 feet from the river bank (as defined by M.G.L. Chapter 131, Section 40), the River Protection District shall be defined as that area within 100 feet, measured horizontally, of the river bank as shown on the "Chesterfield Floodplain and Westfield River Protection District" map.

4.03 Permitted Uses

a. Agricultural production, including raising of crops, livestock, poultry, nurseries, orchards, hay;
b. Passive recreational uses, including but not limited to hiking, hunting or nature study provided there is minimal disruption of wildlife habitat;
c. Maintenance and repair usual and necessary for continuance of an existing use;
d. Conservation of water, plants and wildlife, including the raising and management of wildlife;
e. Reasonable emergency procedures necessary for safety or protection of property;
f. Residential accessory uses including lawns, gardens, play areas and sealed water supplies.

4.04 Restricted Uses Within the Westfield River Protection District

a. No altering, dumping, filling or removal of riverine materials or dredging is permitted. Maintenance of the river, including stabilization or repair of eroded riverbanks or removal of flood debris, may be done under requirements M.G.L., Chapter 131, Section 40, and any other applicable laws, bylaws, and regulations.
b. All forest cutting over 25,000 board feet at one time shall require the filing of a Forest Cutting Plan in accordance with the Mass. Forest Cutting Practices Act (M.G.L., Chapter 132, Sections 40-46). In addition, no cutting of forest or vegetation shall occur within 50 feet of the river bank. In the area between 50 feet and 100 feet from the river bank, no more than 50% of existing forest shall be cut.
c. No impoundments, dams or other obstructions may be located within the area subject to this bylaw.
d. All other uses not specifically permitted or allowed by special permit approval within the overlay zone are prohibited.

4.05 Prohibited Uses Within the Wild Section of the Westfield River Protection District

In addition to the restricted uses in Section 4.04, the following uses are prohibited in the Wild section of the district:

a. No public or paved vehicular roads, no public recreation facilities, and no other development that would be inconsistent with the designation of this section of river as wild shall be constructed. No public vehicular access is permitted.

4.06 Uses By Special Permit in the Floodplain and Westfield River Protection District

The following uses may be permitted by Special Permit from the Planning Board, unless otherwise restricted by this bylaw:

a. Single-family residences, excluding mobile homes
b. Residential accessory uses including garages, home occupations, driveways, private roads, utility rights-of-way, and on-site wastewater disposal systems.
c. Commercial or non-profit recreational development, provided that no permanent structures one constructed.
d. Public utility, substation, water supply use.

4.07 Additional Special Permit Approval Requirements - Floodplain District

The following Special Permit requirements apply in the Floodplain District in addition to those specified in Section:

a. With Zone A, where base flood elevation is not provided on the FIRM maps, the applicant shall obtain any existing base flood elevation data. These data will be reviewed by the Building Inspector for their reasonable utilization toward meeting the elevation or floodproofing requirements, as appropriate, of the State Building Code.
b. No encroachments (including fill, new construction, substantial improvements to existing structures, or other development) shall be allowed unless it is demonstrated by the applicant that the proposed development, as a result of compensating actions, will not result in any increase in flood levels during the occurrence of a 100-year flood in accordance with the Federal Emergency Management Agency's regulations for the National Flood Insurance Program.

4.08 Additional Special Permit Requirements - Westfield River Protection District

The following Special Permit requirements apply in the Westfield River Protection District, in addition to those requirements specified in Sections 4.07 and 7.2:

a. A buffer strip extending at least one hundred (100) feet in depth, to be measured landward from each bank of the Westfield River shall be required for all lots within the River Protection District. If any lot, existing at the time of adoption of this bylaw, does not contain sufficient depth, measured landward from the river bank, to provide a one hundred foot buffer strip, the buffer strip may be reduced to 50% of the available lot depth, measured landward from the river bank.
b. For purposes of this bylaw, the riverbank shall be defined as the river's seasonal high water mark.
    1) The buffer strip shall include trees and shall be kept in a natural or scenic condition.
    2) No buildings or structures shall be erected, enlarged, altered or moved within the buffer strip.
    3) On-site wastewater disposal systems shall be located as far from the Westfield River as is feasible.

4.09 Special Permit Criteria

In addition to the provisions of Section 7.2, the Planning Board may issue a special permit if it finds the proposed use is compliant with the following provisions:

a. In the Floodplain District, proposed uses must:
   1) Not create increased flood hazards which are detrimental to the public health, safety and welfare.
   2) Comply in all respects with the provisions of the underlying District or Districts within which the land is located.
   3) Comply with all applicable state and federal laws, including the Massachusetts Building Code and the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, Sec. 40).
b. In the Westfield River Protection District, proposed uses must also:
   1) Be situated in a portion of the site that will most likely conserve shore land vegetation and the integrity of the buffer strip;
   2) Be integrated into the existing landscape through features such as vegetative buffers and through retention of the natural shorelines;
   3) Not result in erosion or sedimentation;
   4) Not result in water pollution.

4.1 Water Supply Protection District

4.10 Purpose of District

To promote the health, safety and welfare of the community by protecting and preserving the surface and groundwater resources of the Town and the region from any use of land or buildings which may reduce the quality of its water resources.

4.13 District Delineation

The Water Supply Protection District is herein established to include all lands within the Town of Chesterfield lying within the primary recharge areas of groundwater aquifers and watershed areas of reservoirs which now or may in the future provide public water supply. See map entitled "Water Supply Protection District", Town of Chesterfield.

4.14 Prohibited Uses

a. Business and industrial uses, not agricultural, which manufacture, use, process, store, or dispose of hazardous materials or wastes as a principal activity or which involve on-site disposal of industrial process waste water….
b. Trucking terminals, motor vehicle gasoline sales, auto service and repair shops.
c. Solid waste landfills, dumps, auto recycling, junk and salvage yards, with the exception of the disposal of brush or stumps.
d. Underground storage and/or transmission of petroleum products excluding liquified petroleum gas.
e. Outdoor storage of salt, de-icing materials, pesticides or herbicides.
f. Dumping or disposal on the ground, in water bodies, or in residential septic systems of any toxic chemical, including but not limited to septic system cleaners which contain toxic chemicals such as methylene chloride and 1-1-1 trichlorethane, or other household hazardous wastes.

g. The rendering impervious of more than 20% of the area of any single lot.

4.15 Restricted Uses

a. Excavation for removal of earth, sand, gravel and other soils shall not extend closer than five (5) feet above the annual high groundwater table. A monitoring well shall be installed by the property owner to verify groundwater elevations. This section shall not apply to excavations incidental to permitted uses, including but not limited to providing for the installation or maintenance of structural foundations, freshwater ponds, utility conduits or on-site sewage disposal. This section shall apply to all commercial earth removal operations, including expansions of existing operations.
b. Access road(s) to extractive operation sites shall include a gate or other secure mechanism to restrict public access to the site.
c. The use of sodium chloride for ice control shall be minimized, consistent with the public highway safety requirements.
d. Salt storage areas shall be covered and be located on a paved surface, with berms to prevent run-off from leaving the site.
e. Commercial fertilizers, pesticides, herbicides, or other leachable materials shall be used with all necessary precautions to minimize adverse impacts on surface and groundwater, and shall not result in groundwater concentrations exceeding Massachusetts Drinking Water Standards.
f. Above-ground storage tanks for oil, gasoline or other petroleum products shall be placed in a building on a diked, impermeable surface to prevent spills or leaks from reaching groundwater. All such tanks shall comply with all applicable state and federal regulations.
g. All animal feed lots and manure storage areas shall be designed to restrict infiltration or other movement of livestock wastes to the aquifer.

4.16 Drainage

All run-off from impervious surfaces shall be recharged on the site by being diverted toward areas covered with vegetation for surface infiltration to the extent possible. Dry wells shall be used only where other methods are infeasible, and shall be preceded by oil, grease and sediment traps to facilitate removal of contamination. All recharge areas shall be permanently maintained in full working order by owner.

Section V: Special Use Regulations

5.4: Parking and Loading Standards

Drainage – Drainage facilities for each parking area should be designed and constructed to contain stormwater run-off on the premises.

5.9: Creative Development/Common Driveways

1. The common driveway shall be constructed… with a crown sufficient for drainage.
2. Drainage shall be adequate to dispose of surface runoff. Culverts shall be installed if deemed necessary by the Planning Board.

Section VII: Administration and Enforcement

7.45 Site Plan Approval Criteria

The following criteria shall be considered in the review and evaluation of a site plan:

b. The development shall be integrated into the existing terrain and surrounding landscape, and shall be designed to protect abutting properties and community amenities. Building sites shall, to the extent feasible: a) minimize impact on wetlands, steep slopes, floodplains, hilltops; b) minimize obstruction of scenic views from publicly accessible locations; c) preserve unique natural or historical features; d) minimize tree, vegetation and soil removal and grade changes; e) maximize open space retention; and, f) screen objectionable features from neighboring properties and roadways.

d. The development shall be served with adequate water supply and waste disposal systems provided by the developer/applicant. For structures to be served by on-site waste disposal systems, the applicant shall submit a septic system design prepared by a Certified Engineer and approved by the Board of Health.

f. The site plan shall show adequate measures to prevent pollution of surface or groundwater, to minimize erosion and sedimentation, and to prevent changes in groundwater levels, increased run-off and potential for flooding. Drainage shall be designed so that run-off shall not be increased; groundwater recharge is maximized, and neighboring properties will not be adversely affected.

h. Electric, telephone, cable TV, and other such utilities are encouraged to underground where physically and environmentally feasible.

Rules and Regulations for Governing the Subdivision of Land

Chesterfield's most recent draft of its Rules and Regulations for Governing the Subdivision of Land was adopted for the purpose of "protecting the safety, convenience and welfare of the inhabitants of Chesterfield by regulating the laying out and construction of ways in subdivisions providing access to the several lots therein, but which have not become public ways, and ensuring sanitary conditions in subdivisions and in proper cases parks and open areas." The Subdivision Rules and Regulations contain several provisions that mitigate the potential for, and impact of, flooding, including:

Section IV: Procedure for Submission and Approval of Plans

B. Definitive Plan

3. Contents: The Definitive Plan shall contain the following information:

i. Significant site features such as existing stone walls, fences, buildings, swamps, flood plains, large trees, and road outcroppings.

o. Where a storm drainage line discharges into a brook, stream or drainage area, a profile will be shown of the brook, stream or discharge area to determine condition, and proposed method of stabilization.

q. A Street Layout Plan… [including] location, size, type of construction, elevations and invert of all pipes and conduits of the:

- Water Supply System, including wells, pumps, valves, stubs, gates, hydrants, and similar equipment;
- Storm Drainage System, including manholes, culverts, catch-basins and appurtenant equipment;
- Sanitary Sewerage System, including manholes, pumps, septic tanks and appurtenant equipment;
- Electrical Supply Equipment, including poles, transformers, primary and secondary cables, lighting fixtures and other electrical equipment;
- Other Underground Utility Systems in the Right-of-Way, such as gas, telephone and cable TV facilities.

4. Additional Subdivision Requirements
   a. The [Feasibility Report of Proposed Sanitary Sewage Systems] should take into consideration… the topographic and ground level conditions, natural drainage pattern and flood heights of nearby waterways….
   c. [According to the] Wetlands Protection Act, no person shall remove, fill, dredge, or alter any bank, beach, dune, flat, marsh, meadow or swamp bordering on any existing creek, river, stream, pond, lake or any land under said waters or subject to flooding without filing written notice of intention to perform said work with the local Conservation Commission and State Departments of Natural Resources and Public Works.

Section V: Design Standards

7. Easements
   2. Where a subdivision is traversed by a water course, drainage way, channel or stream, the Planning Board shall require that there be provided a storm water easement or drainage right-of-way of adequate width to conform substantially to the lines of such water course, drainage way, channel or stream, and to provide for construction or other necessary purposes.

River and Stream Protection

The Town of Chesterfield follows the standards established by the Wetlands Protection Act, which protects water bodies and wetlands through the Town Conservation Commission. The Town also has instituted its Floodplain and Westfield River Protection District, an overlay district that provides restrictions on the development and use of lands either within the floodplain or within 100 feet of the Westfield River.

Chesterfield Community Development Plan

In 2004, the Town of Chesterfield completed its Community Development Plan. The intent of the document is not to address hazard mitigation or flood control in a direct or comprehensive way; however, the Open Space section of the plan inventories the natural features and environments in the Town, many of which, such as wetlands, groundwater recharge areas, farms, rivers, streams, and brooks, contain floodplain, dam failure inundation or localized flooding areas.

The plan highlights the importance of balancing future development with the preservation of the community's natural and scenic resources. The preservation of open space and farmland will provide flood storage capacity, which reduces the amount of impervious surfaces in an area, as well as other benefits not directly related to natural hazard mitigation.

National Flood Insurance Program

The Town of Chesterfield participates in the National Flood Insurance Program. As of 2006, there were 2 policies in effect in Chesterfield for a total of $449,000 worth of insurance. The Town is not a member of the Community Rating System, which entitles policyholders to a discount on flood insurance premiums. The CRS ranking is based on the steps that a town has taken to control flood losses.

The Community Rating System reduces flood insurance premiums to reflect what a community does above and beyond the National Flood Insurance Program's (NFIP) minimum standards for floodplain regulation. The objective of the CRS is to reward communities for what they are doing, as well as to provide an incentive for new flood protection activities. To participate in the CRS, a community must fill out an application and submit documentation that shows what it is doing and that its activities deserve at least 500 points. More information including instructions and applications is available at *http://training.fema.gov/EMIWeb/CRS/m3s1main.htm*.

Table 5-1: Existing Flood Hazard Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Flood Control Structures	Seven dams.	Flood inundation zones below dams	Very effective for preventing flooding downstream.	**Ensure dam owners realize their responsibility to inspect the dams.**
Zoning By-Laws				
Floodplain and Westfield River Protection District Overlay	Areas delineated as part of the 100-year floodplain, and/or within 100 feet of the Westfield River are protected by strict use regulations	100-year flood plain, area around river	Very effective for preventing incompatible development within the floodplain.	**None.**
Water Supply Protection District Overlay	Areas delineated as primary recharge areas for groundwater aquifers, and watershed areas for reservoirs are protected by strict use regulations.	Groundwater recharge areas and reservoir watersheds	Very effective for preventing groundwater contamination and for controlling stormwater runoff.	**None.**
Special Use Regulations	Parking lot drainage must be constructed to contain stormwater run-off on site.	Parking lots	Very effective for controlling stormwater runoff.	**None.**
	Creative developments/common driveway projects must address drainage.	Creative developments/ common driveways	Somewhat effective for managing stormwater.	**None.**
Site Plan Approval	Specific requirements necessary for site plan approval deal with protecting wetlands and other related natural	Lands subject to site plan approval	Very effective for managing very specific impacts.	**None.**

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
	features, water supply, pollution prevention, and underground utilities.			
Subdivision Regulations				
Submission Requirements	Significant site features	All subdivisions	Somewhat effective at protecting water bodies and other features.	**None.**
	Profiles of affected brooks or streams			**None.**
	Water supply and drainage systems		Somewhat effective at managing stormwater	**None.**
	Utility layouts		Effective at preventing power outages in case of flood	**None.**
	Topographic and ground level conditions, natural drainage patterns		Somewhat effective at managing stormwater	**None.**
	Alert Con Com, DPW, and MA DNR prior to any disturbance of water bodies		Effective at protecting water bodies and other features.	**None.**
Design Standards	Requirements for easements for sufficient drainage	Proposed subdivisions	Somewhat effective for managing stormwater runoff	**Consider adding infiltration requirements, impervious surface limits, *etc.***
River and Stream Protection	Required enforcement of standards established by Wetlands Protection Act.	Entire Town.	Somewhat effective at protecting water bodies and wetlands.	**None.**

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Chesterfield Community Development Plan – Open Space Element	Inventories natural features and promotes natural resource preservation in the Town, including areas in the floodplain; such as wetlands, groundwater recharge areas, farms and open space, rivers, streams and brooks.	Entire Town.	Effective in identifying sensitive resource areas, including floodplains. Encourages forestland and farmland protection, which will help conserve the Town's flood storage capacity.	**None.**
Participation in the National Flood Insurance Program	As of 2006, there were two homeowners with flood insurance policies.	Areas identified by the FEMA FIRM maps.	Somewhat effective, provided that the Town remains enrolled in the National Flood Insurance Program.	**The town should evaluate whether to become a part of FEMA's Community Rating System.**

Severe Snowstorms/Ice Storms

Winter storms can be especially challenging for emergency management personnel even though the storm has usually been forecast. The Massachusetts Emergency Management Agency (MEMA) serves as the primary coordinating entity in the statewide management of all types of winter storms and monitors the National Weather Service (NWS) alerting systems during periods when winter storms are expected.[13]

Management Plans

The CEM Plan for Chesterfield lists the following generic mitigation measures for severe winter storms:

1. Develop and disseminate emergency public information concerning winter storms, especially material which instructs individuals and families how to stock their homes, prepare their vehicles, and take care of themselves during a severe winter storm.
2. As it is almost guaranteed that winter storms will occur annually in Massachusetts, local government bodies should give special consideration to budgeting fiscal resources with snow management in mind.
3. Maintain plans for managing all winter storm emergency response activities.

To the extent that some of the damages from a winter storm can be caused by flooding, all of the flood protection mitigation measures described in Table 4-1 can also be considered as mitigation measures for severe snowstorms/ice storms.

The CEM Plan for Chesterfield lists the following generic preparedness and response measures for severe winter storms:

1. Ensure that warning/notification, and communications systems are in readiness.
2. Ensure that appropriate equipment and supplies, (especially snow removal equipment), are in place and in good working order.
3. Review mutual aid agreements.
4. Designate suitable shelters throughout the community and make their locations known to the public.
5. Implement public information procedures during storm ‘warning’ stage.
6. Prepare for possible evacuation and sheltering of some populations impacted by the storm (especially the elderly and special needs).
7. Broadcast storm warning/notification information and instructions.
8. Conduct evacuation, reception and sheltering activities.

[13] Comprehensive Emergency Management Plan for the Town of Chesterfield, August1999.

9. If appropriate, activate media center. Refer to Resource Manual for media center information.
10. Dispatch search and rescue teams.
11. Dispatch emergency medical teams.
12. Take measures to guard against further danger from power failure, downed trees and utility lines, ice, traffic problems, *etc.*
13. Close roads, and/or limit access to certain areas if appropriate.
14. Provide assistance to homebound populations needing heat, food, and other necessities.
15. Provide rescue and sheltering for stranded/lost individuals.

Restrictions on Development

There are no restrictions on development that are directly related to severe winter storms. However, the Town of Chesterfield's Land Development Ordinance sets grade limits on streets, and restrictions on utility placement, which, although not specified as weather hazard mitigation, can serve to minimize accident potential and power loss from severe winter storms:

Section V: Special Use Regulations (Zoning By-Laws)

5.95 Common Driveway Standards

- The slope or grade of a common drive shall in no place exceed 8% if unpaved; or 12% if paved.
- The common driveway, at its intersection with the street, must provide a leveling-off area with a slope no greater than 1% for the first 20 feet and a slope no greater than 5% for the next 30 feet.

Section V: Design Standards (Subdivision Rules and Regulations)

3. Grades

The minimum grades of all streets and ways shall be:

a. Type "A" Subdivision
   1) No grade shall be greater than nine (9) percent.
   2) No grade shall be less than one-half of one (0.5) percent.

b. Type "B" Subdivision
   1) No grade shall be greater than six (6) percent.5
   2) No grade shall be less than one-half of one (0.5) percent.

Section VI: Required Improvements for Subdivisions (Subdivision Rules and Regulations)

11. Installation of Utilities

e. Electrical, telephone, fire alarm, cable TV and other wires and cables shall be installed underground, unless in the opinion of the Planning Board and the appropriate utility company, such installation is impractical or not in the best interest of the Town. Installation of the underground electrical distribution system shall be in accordance with the specifications and regulations of the Western Massachusetts Electric Company.

Other Mitigation Measures

Severe snowstorms or ice storms can often result in a small or widespread loss of electrical service.

State Building Code

For new or recently built structures, the primary protection against snow-related damage is construction according to the State Building Code, which addresses designing buildings to withstand snowloads. The Town of Chesterfield currently employs a building inspector to ensure that construction meets state standards.

Table 5-2: Existing Severe Snowstorms/Ice Storms Hazard Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Special Use Regulations	Standards include street grade regulations (eight to twelve percent maximum); and intersection grade regulations	Entire Town.	Effective.	**None.**
Design Standards	Standards include street grade regulations (six to nine percent maximum).	All Subdivisions	Effective	**None.**
Required Improvements	Utilities must be placed underground	All Subdivisions	Effective for preventing power loss	**None.**
State Building Code	The Town of Chesterfield is under the Massachusetts State Building Code.	Entire Town.	Effective.	**None.**

Hurricanes/Severe Thunderstorms

Of all the natural disasters that could potentially impact Chesterfield, hurricanes provide the most lead warning time because of the relative ease in predicting the storm's track and potential landfall. MEMA assumes "standby status" when a hurricane's location is 35 degrees North Latitude (Cape Hatteras) and "alert status" when the storm reaches 40 degrees north Latitude (Long Island).[14] The flooding associated with hurricanes can be a major source of damage to buildings, infrastructure and a potential threat to human lives. Therefore, all of the flood protection mitigation measures described in Table 4-1 can also be considered hurricane mitigation measures. High winds that oftentimes accompany hurricanes can also damage buildings and infrastructure.

Town of Chesterfield's land development standards and State Building Code regulations, as listed below, are equally applicable to wind events such as hurricanes and tornadoes.

Management Plans

The CEM Plan for Chesterfield includes the following generic mitigation measures for hurricane planning and response:

1. Develop and disseminate emergency public information and instructions concerning hurricane preparedness and safety.
2. Community leaders should ensure that Chesterfield is enrolled in the National Flood Insurance Program.
3. Develop and enforce local building codes to enhance structural resistance to high winds and flooding. Build new construction in areas that are not vulnerable to direct hurricane effects.
4. Maintain plans for managing all hurricane emergency response activities.

The CEM Plan for Chesterfield includes the following generic preparedness and response measures for hurricanes:

1. Ensure that warning/notification systems and equipment is ready for use at the 'hurricane warning' stage.
2. Review mutual aid agreements.
3. Designate suitable wind and flood resistant shelters in the community and make their locations known to the public.
4. Prepare for coordination of evacuation from potentially impacted areas including alternate transportation systems and locations of special needs facilities.
5. Activate warning/notification systems to inform public of protective measures to be taken including evacuation where appropriate.
6. Conduct evacuation of affected populations.

[14] Comprehensive Emergency Management Plan for the Town of Chesterfield, August 1999.

7. Open and staff shelters and reception centers.
8. Dispatch search and rescue teams.
9. Dispatch emergency medical teams.
10. Activate mutual aid activities.
11. Take measures to guard against further danger from downed trees and utility lines, debris, *etc.*

Evacuation Options

According to the Chesterfield CEM plan, the following facilities are listed as Mass Care Shelters:

Church of Christ – Main Road (Route 143), Capacity = 200
Chesterfield Scout Reservation – 27 Sugar Hill Road, Capacity = 400
New Hingham Regional Elementary School – 30 Smith Road, Capacity = 750

Land Development Standards

There are no restrictions on development that are directly related to hurricanes. However, the Town of Chesterfield's Land Development Ordinance does have some provisions that are wind-related, specifically, zoning bylaws related to wireless communications facilities and mobile homes parks. In addition, the Ordinance sets restrictions on utility placement, which, although not specified as weather hazard mitigation, can serve to minimize accident potential and power loss from severe wind. (See previous section)

Section IV: Overlay Districts – Wireless Communications Overlay District

4.21 Purpose

The purpose of the Wireless Communication Facility Bylaw is to:

a. Minimize the adverse impact of any wireless communication structures, buildings and/or appurtenances on adjacent properties and residential neighborhoods;
b. Limit the height of such facilities and structures to reduce the need for new facilities; and
c. Promote shared use of existing facilities and structures to reduce the need for new facilities; and
d. Protect, to the maximum extent practicable, the historic and residential character of Chesterfield, the property values of the community and the health and safety of citizens.

4.26 Special Permit Requirements

d. Lattice style towers and/or any tower requiring guy wires shall not be permitted except on public land. All towers shall be pre-engineered to fail at a pre-determined height enabling the structure to collapse upon itself in the event of a catastrophic failure.

4.261 Siting and Construction Guidelines

b. The setback of a tower from the property line of a lot on which it is located shall be at least equal to the height of the pre-engineered fault, as described in section 4.26.d above, measured at the finished grade of the tower base. No wireless communications facility shall be located within 200 feet of an existing residential building or within 750 feet of the district designated as Town Center (TC) on the Chesterfield Zoning Map.
c. All towers shall be designed to be constructed to the minimum height necessary to accommodate the anticipated and future use. No wireless communications facility shall exceed 130 feet in height as measures from ground level at the base of the tower.

Section V: Special Use Regulations

5.2 Mobile Homes/Recreation Vehicles

Mobile Homes/Recreation Vehicles designed or used for human occupation as dwellings shall not be kept within the boundaries of the Town of Chesterfield unless they are in bona fide storage or unless they are being used as temporary dwellings. The use of recreational vehicles as seasonal camping shelters shall not exceed one hundred thirty (130) days in any calendar year.

State Building Code

For new or recently built structures, the primary protection against wind-related damage is construction that adheres to the State Building Code, which, when followed, results in buildings that withstand high winds. The Town of Chesterfield currently employs a building inspector to ensure that construction meets state standards.

Tornadoes/Microbursts

Worcester County and areas just to its west, including portions of Hampshire County, have been dubbed the "tornado alley" of the state because the majority of significant tornadoes in Massachusetts's weather history have occurred in that region.[15] According to the *Institute for Business and Home Safety,* the wind speeds in most tornadoes are at or below design speeds that are used in current building codes.[16] Like earthquakes, the location and extent of potential damaging impacts of a tornado are completely unpredictable. Most damage from tornadoes comes from high winds that can fell trees and electrical wires, generate hurtling debris and, possibly, hail.

Management Plans

The CEM Plan for Chesterfield includes the following generic mitigation measures for tornado planning and response:

1. Develop and disseminate emergency public information and instructions concerning tornado safety, especially guidance regarding in-home protection and evacuation procedures, and locations of public shelters.
2. Strict adherence should be paid to building code regulations for all new construction.
3. Maintain plans for managing tornado response activities. Refer to the non-institutionalized, special needs and transportation resources listed in the Resource Manual.

The CEM Plan for Chesterfield includes the following generic preparedness and response measures for tornadoes:

1. Designate appropriate shelter space in the community that could potentially withstand tornado impact.
2. Periodically test and exercise tornado response plans.
3. Put Emergency Management on standby at tornado 'watch' stage.
4. At tornado 'warning' stage, broadcast public warning/notification safety instructions and status reports.
5. Conduct evacuation, reception, and sheltering services to victims.
6. Dispatch search and rescue teams.
7. Dispatch emergency medical teams.
8. Activate mutual aid agreements.
9. Take measures to guard against further injury from such dangers as ruptured gas lines, downed trees and utility lines, debris, *etc.*

[15] Comprehensive Emergency Management Plan for the Town of Chesterfield, August 1999.
[16] *www.ibhs.org.*

10. Acquire needed emergency food, water, fuel, and medical supplies.

11. Take measures relating to the identification and disposition of remains of the deceased.

Evacuation Plans

According to the Chesterfield CEM plan, the following facilities are listed as Mass Care Shelters:

Church of Christ – Main Road (Route 143), Capacity = 200
Chesterfield Scout Reservation – 27 Sugar Hill Road, Capacity = 400
New Hingham Regional Elementary School – 30 Smith Road, Capacity = 750

Table 5-3: Existing Hurricane and Tornado Hazard Mitigation Measures (Wind-Related)

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Wireless Communication Overlay District	Restrictions on height, and other features of wireless communication towers	Overlay district area	Somewhat effective for preventing damage to nearby property	**None.**
Special Use Regulations	Mobile homes/RVs are not permitted within town limits as permanent living quarters.	Entire Town	Somewhat effective for preventing damage to susceptible structures (mobile homes).	**None.**
Utilities	Electric, cable, communications, and gas utility lines are to be placed underground.	New subdivisions	Somewhat effective for ensuring that utility service is uninterrupted by severe storms in new areas of residential development	**Work with utility companies to underground new utility lines in general and existing utility lines in locations where repetitive outages occur.**
State Building Code	The Town of Chesterfield is under the Massachusetts State Building Code.	Entire Town.	Effective.	**None.**
Debris Management Plan	A debris management plan could be developed.[17]	Entire Town.	Effective.	**Consider participation in the creation of a Regional Debris Management Plan.**
Shelters	There are 3 shelters identified for victims of hurricanes.	Entire Town.	Somewhat effective.	**None.**

[26] Natural disasters can precipitate a variety of debris, including trees, construction and demolition materials and personal property. After a natural disaster, potential threats to the health, safety and welfare of impacted citizens can be minimized through the implementation of a debris management plan. Such a plan can be critical to recovery efforts after a disaster, including facilitating the receipt of FEMA funds for debris clearance, removal and disposal. Additional information is available at *http://www.fema.gov/rrr/pa/dmgbroch.shtm.*

Wildfires/Brushfires

Hampshire County has approximately 252,000 acres of forested land, which accounts for 71 percent of total land area. Forest fires are therefore a potentially significant issue. In Chesterfield, approximately 88 percent of the **Town**'s total land area is in forest, or about 17,750 acres, and is therefore at risk of fire. On average, there are about three brush fires per year in the Town of Chesterfield as reported by the Fire Chief.

Management Plans

The CEM Plan for Chesterfield includes the following generic mitigation measures for Wildfires/Brushfires planning and response:

1. Promote fire safety measures such as fire-safe landscaping and construction practices to the public and business communities.

The CEM Plan for Chesterfield includes the following generic preparedness and response measures for Wildfires/Brushfires:

1. Restrict outside burning *etc.* based on moisture levels, fuels supply conditions such as drought.
2. Identify high vulnerability or problem areas.
3. Utilize mutual aid, including the State Fire Mobilization Plan, as needed.

Regulatory Measures

Burn Permits

Burn permits for the Town of Chesterfield are issued from the Chesterfield Fire Department. Approximately 250 permits were issued in 2006**.** During this process, the applicant is read the State Law, which includes guidelines for when and where the burn may be conducted as well as fire safety tips provided by the control center. Specific burn permit guidelines are established by the state, such as the burning season and the time when a burn may begin on a given day. Currently, residents may only burn between 10 a.m. and 4 p.m.

Subdivision Review

Preliminary and Definitive Subdivision Plans are reviewed by the Chesterfield Fire Department to ensure that their trucks will have adequate access and that water supplies are adequate for firefighting purposes.

Restrictions on Development

There are currently no restrictions on development that are based on the need to mitigate the hazards of wildfires/brushfires in the Town of Chesterfield.

Table 5-4: Existing Wildfire/Brushfire Hazard Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Burn Permits	Residents are permitted to obtain burn permits over the phone. The Fire Chief provides information on safe burn practices.	Entire Town.	Effective.	**None.**
Subdivision Review Fire Safety	The Fire Department is involved in the review of subdivision plans and site plans.	Entire Town.	Effective.	**None.**

Earthquakes

Although there are five mapped seismological faults in Massachusetts, there is no discernable pattern of previous earthquakes along these faults nor is there a reliable way to predict future earthquakes along these faults or in any other areas of the state. Consequently, earthquakes are arguably the most difficult natural hazard to plan for. Most buildings and structures in the state were constructed without specific earthquake resistant design features.

In addition, earthquakes precipitate several potential devastating secondary effects such as building collapse, utility pipeline rupture, water contamination, and extended power outages. Therefore, many of the mitigation efforts for other natural hazards identified in this plan may be applicable during the Town's recovery from an earthquake.

Management Plans

The Chesterfield CEM Plan lists the following generic mitigation measures for earthquakes:

1. Community leaders in cooperation with Emergency Management Personnel should obtain local geological information and identify and assess structures and land areas that are especially vulnerable to earthquake impact and define methods to minimize the risk.
2. Strict adherence should be paid to land use and earthquake resistant building codes for all new construction.
3. Periodic evaluation, repair, and/or improvement should be made to older public structures.
4. Emergency earthquake public information and instructions should be developed and disseminated.
5. Earthquake drills should be held in schools, businesses, special care facilities, and other public gathering places.

The Chesterfield CEM Plan lists the following generic preparedness and response measures for earthquakes:

1. Earthquake response plans should be maintained and ready for immediate use.
2. All equipment, supplies and facilities that would be needed for management of an earthquake occurrence should be maintained for readiness.
3. Emergency Management personnel should receive periodic training in earthquake response.
4. If the designated Emergency Operations Center (EOC) is in a building that would probably not withstand earthquake impact, another building should be chosen for an earthquake EOC.
5. Mass Care shelters for earthquake victims should be pre-designated in structures that would be most likely to withstand earthquake impact.
6. EOC will be activated and response will immediately be engaged to address any and all earthquake effects listed.

7. Emergency warning/notification information and instructions will be broadcast to the public.
8. Search and rescue teams will be dispatched.
9. Emergency medical teams will be dispatched.
10. Firefighters will address fires/explosions, and HAZMAT incidents.
11. Law enforcement personnel will coordinate evacuation and traffic control.
12. Reception centers and shelters will be opened and staffed.
13. Animal control measures will be taken.
14. Law enforcement personnel will protect critical facilities and conduct surveillance against criminal activities.
15. Immediate life-threatening hazards will be addressed such as broken gas lines, downed utility wires, and fire control resources.
16. Emergency food, water, and fuel will be acquired.
17. Activate mutual aid.
18. Measures will be taken relating to identification and disposition of remains of deceased by the Chief Medical Examiner.

Evacuation Options

According to the Chesterfield CEM plan, the following facilities are listed as Mass Care Shelters:

Church of Christ – Main Road (Route 143), Capacity = 200
Chesterfield Scout Reservation – 27 Sugar Hill Road, Capacity = 400
New Hingham Regional Elementary School – 30 Smith Road, Capacity = 750

State Building Code

State and local building inspectors are guided by regulations put forth in the Massachusetts State Building Code. The first edition of the Massachusetts State Building Code went into effect on January 1, 1975 and included specific earthquake resistant design standards. These seismic requirements for new construction have been revised and updated over the years and are part of the current, 6th Edition of the Massachusetts State Building Code. Given that most structures in Massachusetts were built before 1975, many buildings and structures do not have specific earthquake resistant design features. According to the 2000 U.S. Census, 58% of the housing in Chesterfield was built before 1970. In addition, built areas underlain by artificial fill, sandy or clay soils are particularly vulnerable to damage during an earthquake.

Restrictions on Development

There are no seismic-related restrictions on development.

Table 5-5: Existing Earthquake Hazard Mitigation Measures

Type of Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
State Building Code	The Town of Chesterfield is under the 6th Edition of the State Building Code.	Entire Town but applies to new construction only.	Effective for new buildings only.	**Evaluate older structures to be used as shelters to determine if they are earthquake resistant.**
Debris Management Plan	A debris management plan could be developed.	Entire Town.	Effective.	**Consider participation in the creation of a Regional Debris Management Plan.**
Shelters	4 Mass Care Shelters have been identified in Chesterfield CEM Plan.	Entire Town.	Effective.	**None.**

Dam Failures

The only mitigation measures in place for dams are the state regulations that control their construction and inspection.

Management Plans and Regulatory Measures

The Chesterfield CEM Plan states that there are three categories of dam failure or overspill and that action should be taken according to hazard rating:

Type 1: Slowly Developing Condition

1. Activate EOC
2. Activate all communication networks
    - Establish communications with Command Position on a 24-hour basis.
3. Release public information
4. Notify:
    - MEMA Region Headquarters
    - American Red Cross
    - Downstream communities
5. Review Plans for evacuation and sheltering
    a. Evacuation
        - routes
        - notification
    b. Shelter
        - availability and capacity
        - food, supplies, and equipment
        - shelter owners and managers
        - other communities (if out of town sheltering is required)
6. Require “Stand By” status of designated emergency response forces.

Type 2: Rapidly Developing Condition

1. Establish a 24-hour communications from dam site to EOC.
2. Assemble, brief and assign specific responsibilities to emergency response forces.
3. Release public information.
4. Obtain and prepare required vehicles/equipment for movement.
5. Prepare to issue warning.

Type 3: Practically Instantaneous Failure

1. Issue warning
2. Commence immediate evacuation.

3. Commit required resources to support evacuation.
4. Activate shelters or coordinate activation of shelters located outside the community.
5. Notify:
    - MEMA Region Headquarters
    - Red Cross
6. Initiate other measures as required to protect lives and property.

The Chesterfield CEM Plan contains the following generic mitigation measures for dam failure:

1. Develop and conduct public education programs concerning dam hazards.
2. Maintain up-to-date plans to deal with threat and actual occurrence of dam over-spill or failure.
3. Emergency Management and other local government agencies should familiarize themselves with technical data and other information pertinent to the dams, which impact Chesterfield. This should include determining the probable extent and seriousness of the effect to downstream areas.
4. Dams should be inspected periodically and monitored regularly.
5. Repairs should be attended to promptly.
6. As much as is possible burdens on faulty dams should be lessened through stream re-channeling.
7. Identify dam owners.
8. Determine minimum notification time for down stream areas.

The Chesterfield CEM Plan contains the following generic preparedness and response measures for dam failure:

1. Pre-place adequate warning/notification systems in areas potentially vulnerable to dam failure impact.
2. Pre-place procedures for monitoring dam site conditions at first sign of any irregularity that could precipitate dam failure.
3. Identify special needs populations, evacuations routes, and shelters for dam failure response.
4. Have sandbags, sand, and other items to reinforce dam structure or flood proof flood prone areas.
5. Disseminate warning/notification of imminent or occurring dam failure.
6. Coordinate evacuation and sheltering of affected populations.
7. Dispatch search and rescue teams.
8. Coordinate evacuation and sheltering of affected populations.
9. Activate mutual aid if needed.

10. Acquire additional needed supplies not already in place, such as earth moving machinery.
11. Establish incident command post as close to affected area as safely possible.
12. Provide security for evacuated public and private property.

Permits Required for New Dam Construction

Massachusetts State Law (M.G.L. Chapter 253 Section 45) regulates the construction of new dams. A permit must be obtained from the Department of Conservation and Recreation (DCR) before construction can begin. One of the permit requirements is that all local approvals or permits must be obtained.

Dam Inspections

The DCR requires that dams rated as Low Hazards are inspected every ten (10) years, dams that are rated as Medium/Significant Hazards are inspected every five (5) years, and dams that a rated as High Hazards are inspected every two (2) years. This is the responsibility of the dam owner.

Restrictions on Development

There is no mention made regarding the construction of new dams in the Town of Chesterfield zoning or subdivision regulations, although alterations of watercourses must be reported. There are no Town restrictions on dam locations. The DCR issues permits for new dams and does have the authority to deny a permit if it is determined that the design and/or location of the dam is not acceptable.

Table 5-6: Existing Dam Failure Hazard Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
New Dam Construction Permits	State law requires a permit for the construction of any dam.	Entire Town.	Effective. Ensures dams are adequately designed.	**None.**
Dam Inspections	DCR has an inspection schedule that is based on the hazard rating of the dam (low, medium, high hazard).	Entire Town.	Low. The responsibility for this is now on dam owners, who may not have sufficient funding to comply.	**Identify sources of funding for dam safety inspections.** **Incorporate dam safety into development review process.**
Evacuation Plans	Comprehensive evacuation plans would ensure the safety of the citizens in the event of dam failure.	Inundation areas in Town.	None.	**None.**

Drought

Although Massachusetts does not face extreme droughts like many other places in the country, it is susceptible to dry spells and drought. And unlike other places, drought can most likely be effectively mitigated in regions like the Pioneer Valley if measures are put into place. Hadley has several water protection regulations in place, as evidenced in the section on flooding. Additional regulations and mitigation options, specific to drought mitigation, are included here.

Management Plans

The Chesterfield CEM Plan contains the following generic mitigation measures for drought:

1. Seeks to balance demand on water supply through land use, zoning and other tools.
2. Encourages water conservation and water control measures to ease demand on water supply.
3. Improves efficiency and capacity of the water supply system, including leak detection and repair.

The Chesterfield CEM Plan contains the following generic preparedness and response measures for drought:

1. Identify potential emergency water sources, such as purchase from adjoining communities if available.
2. Keep abreast of drought forecasts issued by the State Drought Task Force.
3. Encourages businesses and other bulk users to develop water conservation and shortage plans.
4. Implement water use controls as needed.
5. Coordinate requests for potable water in emergency situations.

Land Development Regulations

Chesterfield's Land Development Ordinance has several sections governing flood and stormwater management, proper drainage, and groundwater protection. The bylaws protecting these features of the landscape can also be seen as preventing drought, as they promote the natural processes of infiltration and groundwater recharge. (See language in Flood section, above.)

Chesterfield Community Development Plan

The Open Space and Recreation Element of the Chesterfield Community Development Plan makes the following recommendations relative to water resources:

Goal #2: The quality of ground and surface water is excellent.

Policy	Action Step
Keep wetlands healthy and protected.	Identify lands around headwaters and wetlands, including vernal pools (See Appendix E). Send flyers out to private landowners near these water

	resources describing benefits of preserving these areas. Have workshops for interested residents on methods of protecting these water resources.
Protect rivers, streams, and brooks from pollutants.	Assess the feasibility, through research and experimentation, of reducing salt content in sand/salt mixes for winter road treatments. Fund a member of the Planning Board to attend a workshop on best management practices (BMPs) and low impact design (LIDs) for new developments (See Appendix G). Include BMPs and LIDs in Creative Development and road zoning to encourage reduction of impermeable surfaces, use of permeable paving, shared driveways, *etc.* (see Appendix G) Investigate placing building restrictions on slopes that are naturally steeper than 25%. Investigate the effects new Title V Codes will have on building permits, and consider maintaining stricter local requirements for septic system percolation tests.

Table 5-7: Existing Drought Hazard Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Zoning By-Laws				
Water Supply Protection District Overlay	Areas delineated as primary recharge areas for groundwater aquifers, and watershed areas for reservoirs are protected by strict use regulations.	Groundwater recharge areas and reservoir watersheds	Very effective for preventing groundwater contamination and for controlling stormwater runoff.	**None.**
Chesterfield Community Development Plan – Open Space Element	Inventories natural features and promotes natural resource preservation in the Town, including areas in the floodplain; such as wetlands, groundwater recharge areas, farms and open space, rivers, streams and brooks.	Entire Town.	Effective in identifying sensitive resource areas, including floodplains. Encourages forestland and farmland protection, which will help conserve the Town's flood storage capacity.	**None.**

Man-Made Hazards/Hazardous Materials

Hazardous materials are in existence throughout Town, and are constantly being moved on Chesterfield's roads and highways. However, there is no way to anticipate where and when a hazardous materials spill or explosion could take place. Therefore, it makes is somewhat difficult to determine mitigation strategies, but Chesterfield has some regulations currently in place to mitigate the impacts of a hazardous materials disaster.

Management Plans

A Model Hazardous Materials Response Plan is provided in the Chesterfield CEM Plan framework for community and/or LEPC use under the Specific Hazards Annexes section. Complete plans may be attached to the CEM or referenced as a separate document. The CEM Plan may also support regional emergency planning committees.

Land Development Regulations

Chesterfield's Land Development Ordinance addresses hazard materials management in the Zoning Bylaw regarding the Water Supply Protection Overlay. The overlay restricts the use, storage, or processing of hazardous materials within this overlay, unless by special permit.

Section IV: Overlay Districts - Water Supply Protection District

4.14 Prohibited Uses

a. Business and industrial uses, not agricultural, which manufacture, use, process, store, or dispose of hazardous materials or wastes as a principal activity or which involve on-site disposal of industrial process waste water, including but not limited to metal plating, fuel oil sales, leather tanning, plastics processing, degreasing operations, chemical manufacturing, wood preserving, furniture stripping, dry cleaning, and auto body repair.

4.172 Requirements for Special Permit in the Water Supply Protection District

The site plan shall at a minimum include the following information where pertinent.

a. A complete list of chemicals, pesticides, fuels and other potentially hazardous materials to be used or stored on the premises in quantities greater than those associated with normal household use.
b. Those businesses using or storing such hazardous materials shall file with the Planning Board and Board of Health a hazardous materials management plan which shall include:
    1. Provisions to protect against the discharge of hazardous materials or wastes to the environment due to spillage, accidental damage, corrosion, leakage or vandalism, including spill containment and clean-up procedures.
    2. Provisions for indoor, secured storage of hazardous materials and wastes with impervious floor surfaces.
    3. Evidence of compliance with the Regulations of the Massachusetts Hazardous Waste Management Act 310 CMR 30, including obtaining an EPA identification number from the Mass. Department of Environmental Protection.

c. Drainage recharge features and provisions to prevent loss of recharge.
d. Provisions to control soil erosion and sedimentation, soil compaction, and to prevent seepage from sewer pipes.

Chesterfield Community Development Plan

The Community Development Plan identifies all the potential hazardous waste sites in Chesterfield – including town-owned gas pumps and a capped landfill.

Table 5-8: Existing Man-Made Hazard/Hazardous Materials Mitigation Measures

Existing or Proposed Protection	Description	Area Covered	Effectiveness	Potential Changes
Water Supply Protection District Overlay	Areas delineated as primary recharge areas for groundwater aquifers, and watershed areas for reservoirs are protected by strict use regulations.	Groundwater recharge areas and reservoir watersheds	Very effective for preventing groundwater contamination	**None.**
Chesterfield Community Development Plan	Identifies potential hazardous sites in Town.	Entire Town.	Effective at bringing to light the risk of hazardous waste contamination.	**None.**

6 – FUTURE MITIGATION STRATEGIES

Goal Statements and Action Items

As part of the natural hazards mitigation planning process that will be undertaken by the Chesterfield Natural Hazards Planning Committee, existing gaps in protection and possible deficiencies will be identified and discussed. The Committee will then develop general Goal Statements and Action Items that, when implemented, will help to reduce risks and future damages from natural hazards. The Goal Statements, Action Items, Town department(s) responsible for implementation, and the proposed timeframe for implementation for each category of natural hazard are described below.

Several of the Action Items have multiple benefits because, if implemented, these Action Items will mitigate or prevent damages from more than one type of natural hazards. For example, updating the Subdivision Regulations to require new utility lines be placed underground will prevent property damage and loss of service in the event of high winds (tornado or hurricane) or severe snow and ice storms.

General Mitigation Action Items

Goal Statement: To provide adequate shelter, water, food and basic first aid to displaced residents in the event of a natural disaster and to provide adequate notification and information regarding evacuation procedures, *etc.*, to residents in the event of a natural disaster.

Action Item: Work with neighboring communities to establish a Community Emergency Response Team (CERT).

Responsible Department/Board: Emergency Management Director, Board of Selectmen, Police & Fire Departments

Proposed Completion Date: On-Going

Action Item: Identify existing shelters that are earthquake resistant as well as outside of floodplain and inundation areas. Disseminate this information to appropriate Town departments.

Responsible Department/Board: Building Inspector, Emergency Management Director

Proposed Completion Date: On-going

Action Item: Inventory supplies at existing shelters and develop a needs list and storage requirements. Establish arrangements with local or neighboring vendors for supplying shelters with food and first aid supplies in the event of a natural disaster.

Responsible Department/Board: Emergency Management Planning Committee, School Facilities Manager

Proposed Completion Date: 2008

Action Item: Examine current notification system including feasibility of Reverse 911.[18] Develop a preliminary project proposal and cost estimate.

Responsible Department/Board: Board of Selectmen, Emergency Management Director

Proposed Completion Date: 2009

Action Item: Collect, periodically update, and disseminate information on which local radio stations provide emergency information, what to include in a 'home survival kit,' how to prepare homes and other structures to withstand flooding and high winds, and the proper evacuation procedures to follow during a natural disaster.

Responsible Department/Board: Emergency Management Director

Proposed Completion Date: 2007

Flooding

Overall, the Town of Chesterfield's existing land use regulations regulate development, reduce or eliminate localized flooding events and control the quantity and quality of stormwater runoff. Long-range planning documents such as the Town's Open Space and Recreation Plan and Community Development Plan also address flood prevention and mitigation either directly or indirectly in the goals and objectives listed in these documents.

Goal Statement: To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to flooding.

Action Item: Implement standards in the Subdivision Rules and Regulations to require temporary and permanent erosion control measures for streams and surface water bodies.

Responsible Department/Board: Planning Board, Conservation Commission

Proposed Completion Date: 2007

[18] In essence, Reverse 911 is a Windows compatible software program, which uses GIS and database technology to create call lists of phone numbers within a specified geographical area and provide prerecorded messages to the residents at those numbers. Call lists can be created ahead of time or as emergency or other situations arise. The system is voluntary and it is a simple matter to remove those residents who do not wish to participate. Cost of the system varies depending on a number of factors. The Town of Green Tree, Pennsylvania was able to subsidize their purchase of a Reverse 911 system through a $10,000 Community Development Block Grant.

Action Item: Add more specific requirements to address flood related issues in the Special Permit and Site Plan Approval provisions in the Chesterfield Zoning Bylaw including topographic change, removal of cover vegetation, risk of erosion or siltation and increased stormwater runoff.

Responsible Department/Board: Planning Board, Conservation Commission

Proposed Completion Date: 2009

Action Item: In regards to the Chesterfield Open Space and Recreation Plan, consider implementing the Five-Year Action Plan strategies, particularly those dealing with protection of forests and farmland.

***Responsible Department/Board*:** Conservation Commission and the Board of Selectmen

***Proposed Completion Date*:** Ongoing

Action Item: The Town should evaluate whether to become a part of FEMA's Community Rating System.

Responsible Department/Board: Building Inspector, Board of Selectmen, Emergency Management Director

***Proposed Completion Date*:** 2008

Action Item: Participate in the creation of a Regional Debris Management Plan.

Responsible Department/Board: Board of Selectmen, Planning Board, and Emergency Management Director

Proposed Completion Date: 2010

Action Item: Identify all Pre-FIRM structures throughout Town that need to be elevated above the base-flood elevation.

Responsible Department/Board: Building Inspector, Fire Department

Proposed Completion Date: 2010

Action Item: Develop a priority list and seek funding through the Hazard Mitigation Grant Program (HMGP) for the replacement of undersized culverts throughout Town.

Responsible Department/Board: Board of Selectmen, Highway Department

Proposed Completion Date: 2008

Severe Snow Storms/Ice Storms

Goal Statement: To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to severe snow and ice storms.

***Action Item*:** Develop a plan for providing access to water, information, shelter, and food stores to people in remote locations in Town in the event of a severe winter storm.

***Responsible Department/Board*:** Emergency Management Director

***Proposed Completion Date*:** 2008

Action Item: Participate in the creation of a Regional Debris Management Plan.

Responsible Department/Board: Board of Selectmen, Planning Board, and Emergency Management Director

Proposed Completion Date: 2010

Hurricanes and Tornadoes

The Action Items listed above, under flooding, address the flooding that can result from a hurricane.

Goal Statement: To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to high winds associated with hurricanes and tornadoes.

Action Item: Participate in the creation of a Regional Debris Management Plan.

Responsible Department/Board: Board of Selectmen, Planning Board, Emergency Management Director

Proposed Completion Date: 2010

Wildfires/Brushfires

***Goal Statement*:** To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to wildfires/brushfires.

Action Items: Develop and distribute an educational pamphlet on fire safety and prevention.

Responsible Department/Board: Fire Department

Proposed Completion Date: On-going

Action Items: Consider amending the Subdivision Rules and Regulations Required Improvements section to include fire suppression provisions for new residential developments.

Responsible Department/Board: Planning Board, Fire Department

Proposed Completion Date: 2007

Earthquakes

***Goal Statement*:** To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to earthquakes.

Action Item: Evaluate all Mass Care Shelters and Reception Centers to determine if they are earthquake resistant.

Responsible Department/Board: Building Inspector, Emergency Management Director

Proposed Completion Date: On-going

Action Item: Ensure that all identified shelters have sufficient back-up utility service in the event of primary power failure.

Responsible Department/Board: Building Inspector, Emergency Management Director

Proposed Completion Date: 2009

Dam Failure

Goal Statement: To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to dam failures.

Action Item: Identify sources of funding for dam safety inspections.

Responsible Department/Board: Emergency Management Director

Proposed Completion Date: Ongoing

Drought

Goal Statement: To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to drought.

Action Item: Prepare a Water Conservation Plan for the Town.

Responsible Department/Board: Board of Selectmen, Conservation Commission

Proposed Completion Date: 2009

Prioritized Implementation Schedule

Summary of Critical Evaluation
The Chesterfield Hazard Mitigation Planning Committee reviewed each of the actions identified above, as well as existing mitigation strategies using the following factors to prioritize mitigation projects:

- Ability to reduce disaster damage
- Social acceptability
- Ability to complete or be combined w/other actions
- Technical feasibility / potential success
- Impact on the environment
- Administrative workability
- Ability to meet regulations
- Political acceptability
- Ability to save or protect historic structures
- Legal implementation
- Ability to meet other community objectives
- Economic impact
- The duration of its implementation period
- Environmental compatibility

Project Prioritization
The Chesterfield Hazard Mitigation Planning Committee created the following prioritized schedule for implementation of prioritized items. The table lists items in order of priority.

Note: As additional information becomes available regarding project leadership, timeline, funding sources, and/or cost estimates, the Plan will be reviewed and amended accordingly.

PRIORITIZED IMPLEMENTATION SCHEDULE
(ACTION PLAN)
IMPLEMENTATION STRATEGY FOR PRIORITY MITIGATION ACTIONS

The Chesterfield Hazard Mitigation Planning Committee created the following prioritized schedule for implementation:

MITIGATION ACTION	RESPONSIBLE DEPARTMENT/BOARD	PROPOSED COMPLETION DATE	POTENTIAL FUNDING SOURCE(S)	ESTIMATED COST
Work with Neighboring Communities to Establish a Community Emergency Response Team (CERT)	Board of Selectmen, Police & Fire Departments, EMD	On-going	Town Staff/Volunteers	N/A
Identify Existing Shelters that are Earthquake Resistant as well as Outside of Floodplain and Dam Inundation Areas	Building Inspector, EMD	On-going	Town Staff	N/A
Develop and Distribute an Educational Pamphlet on Fire Safety and Prevention (SAFE PROGRAM)	Fire Department	On-going	Town Staff	N/A
Collect, Update, and Disseminate Information on Local Radio/TV Stations Emergency Information	EMD	2007	Town Staff	N/A
Inventory Supplies at Existing Shelters and Develop a Needs List and Storage Requirements	Emergency Management Planning Committee, School Facilities Manager	2008	Town Staff	N/A
Develop a Plan for Providing Access to Water, Information, Shelter, and Food Stores to People in Remote Locations in Town in the Event of a Severe Winter Storm	EMD	2008	Town Staff/Volunteers	N/A
Ensure that all Identified Shelters have Sufficient Back-up Utility Service in the Event of a Primary Power Failure	Building Inspector, EMD	2009	DHS	$50,000
Develop a Preliminary Project Proposal and Cost Estimate for Updating Current 911 System including Feasibility of Reverse 911	Board of Selectmen, EMD	2009	Town Staff/Volunteers	N/A
Implement Standards in the Subdivision Rules and Regulations to Require Temporary and Permanent Erosion Control Measures	Planning Board	2007	Town Staff/Volunteers	N/A
Consider amending the Subdivision Rules and Regulations Required Improvements Section to include fire suppression provisions for new residential development	Fire Department, Planning Board	2007	Town Staff/Volunteers	N/A

PRIORITIZED IMPLEMENTATION SCHEDULE
(ACTION PLAN)
IMPLEMENTATION STRATEGY FOR PRIORITY MITIGATION ACTIONS

The Chesterfield Hazard Mitigation Planning Committee created the following prioritized schedule for implementation:

Amend the Special Permit and Site Plan Approval Provisions in the Chesterfield Zoning Bylaw by adding more specific Requirements to Address Flood Related Issues	Conservation Commission, Planning Board	2008	Town Staff/Volunteers	N/A
Evaluate whether to become a part of FEMA's Community Rating System	Building Inspector, Board of Selectmen, EMD	2008	Town Staff	N/A
Prepare a Water Conservation Plan	Board of Selectmen, Conservation Commission	2009	Smart Growth Technical Assistance Grant Program	$7,500
Participate in the Creation of a Regional Debris Management Plan	Board of Selectmen, Planning Board, EMD	2010	Western Region Homeland Security Advisory Council Funding	To be Determined
Identify all Pre-FIRM Structures throughout Town that need to be Elevated above the Base-Flood Elevation	Building Inspector, Fire Department	2010	Town Staff	N/A
Prepare a Priority List for the Replacement of Undersized Culverts throughout Town	Board of Selectmen, Highway Department	2009	HMGP	To be Determined

7 – PLAN ADOPTION & IMPLEMENTATION

Plan Adoption

Upon completion, copies of the final draft of the Chesterfield Hazard Mitigation Plan were distributed to the Chesterfield Hazard Mitigation Planning Committee for their review and approval. The final draft of the plan was forwarded to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for their conditional approval (all required components of the plan were completed with the exception of local adoption). Once conditional approval is given by MEMA/FEMA, a public meeting will be held by the Chesterfield Board of Selectmen to present the final copy of the Chesterfield Hazard Mitigation Plan to Town officials and residents and to request comments from this board and the general public. Once the Chesterfield Hazard Mitigation Plan is formally approved by the Board of Selectmen, it will be forwarded to MEMA/FEMA for their final approval.

Plan Implementation

The implementation of the Chesterfield Hazard Mitigation Plan will begin following its formal adoption by the Chesterfield Board of Selectmen and approval by MEMA and FEMA. Specific Town departments and boards will be responsible for ensuring the development of policies, bylaw revisions, and programs as described in Sections 5 and 6 of this plan. The Chesterfield Hazard Mitigation Planning Committee will oversee the implementation of the plan.

Plan Monitoring and Evaluation

The measure of success of the Chesterfield Hazard Mitigation Plan will be the number of identified mitigation strategies implemented. In order for the Town to become more disaster resilient and better equipped to respond to natural disasters, there must be a coordinated effort between elected officials, appointed bodies, Town employees, regional and state agencies involved in disaster mitigation, and the general public.

The Chesterfield Hazard Mitigation Planning Committee will meet on an annual basis or as needed (*i.e.*, following a natural disaster) to monitor the progress of implementation, evaluate the success or failure of implemented recommendations, and brainstorm for strategies to remove obstacles to implementation. Following these discussions, it is anticipated that the Committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different Town departments and/or revise the goals and objectives contained in the plan. At a minimum, the Committee will review and update the plan every five years, beginning in the fall of 2011. The meetings of the Committee will be organized and facilitated by the Emergency Management Director or the Chesterfield Board of Selectmen.

CERTIFICATE OF ADOPTION

TOWN OF CHESTERFIELD, MASSACHUSETTS

BOARD OF SELECTMEN

A RESOLUTION ADOPTING THE CHESTERFIELD

HAZARD MITIGATION PLAN

WHEREAS, the Town of Chesterfield established a committee to prepare the Chesterfield Hazard Mitigation Plan; and

WHEREAS, several public planning meetings were held between October 2006 and April 2007 regarding the development and review of the Chesterfield Hazard Mitigation Plan; and

WHEREAS, the Chesterfield Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the Town of Chesterfield; and

WHEREAS, a duly-noticed public meeting was held by the Chesterfield Board of Selectmen on July 21, 2008 to formally approve and adopt the Chesterfield Hazard Mitigation Plan:

NOW, THEREFORE, BE IT RESOLVED that the Chesterfield Board of Selectmen adopts the Chesterfield Hazard Mitigation Plan.

ADOPTED AND SIGNED this July 21, 2008.

Roger A. Fuller, Chair
Chesterfield Board of
Selectmen

Robert Recos
Chesterfield Board of
Selectmen

David Kielson
Chesterfield Board of
Selectmen

ATTEST

APPENDICES

Appendix A

TECHNICAL RESOURCES

1) Agencies

Massachusetts Emergency Management Agency (MEMA).....508/820-2000
Hazard Mitigation Section 617/626-1356
Federal Emergency Management Agency (FEMA) 617/223-4175
MA Regional Planning Commissions:
Berkshire Regional Planning Commission (BRPC)……...413/442-1521
Cape Cod Commission (CCC)……...508/362-3828
Central Massachusetts Regional Planning Commission (CMRPC)……...508/693-3453
Franklin Regional Council of Governments (FRCOG)……..413/774-3167
Martha's Vineyard Commission (MVC)……508/693-3453
Merrimack Valley Planning Commission (MVPC)……...978/374-0519
Metropolitan Area Planning Council (MAPC)……...617/451-2770
Montachusett Regional Planning Commission (MRPC)……978/345-7376
Nantucket Planning and Economic Development Commission (NP&EDC)…….508/228-7236
Northern Middlesex Council of Governments (NMCOG)…….978/454-8021
Old Colony Planning Council (OCPC)……..508/583-1833
Pioneer Valley Planning Commission (PVPC)……..413/781-6045
Southeastern Regional Planning and Economic Development District (SRPEDD)……..508/823-1803
MA Board of Building Regulations & Standards (BBRS)……617/227-1754
MA Coastal Zone Management (CZM)……617/626-1200
DCR Water Supply Protection……..617/626-1379
DCR Waterways……617/626-1371
DCR Office of Dam Safety……...508/792-7716
DFW Riverways……617/626-1540
DEP Wetlands and Waterways……..617/292-5500
MA Dept. of Housing & Community Development…….617/573-1100
Woods Hole Oceanographic Institute……508/457-2180
UMass-Amherst Cooperative Extension……..413/545-4800
National Fire Protection Association (NFPA)……...617/770-3000
New England Disaster Recovery Information X-Change (NEDRIX – an association of private companies & industries involved in disaster recovery planning)……..781/485-0279
MA Board of Library Commissioners……...617/725-1860
MA Highway Dept, District 2……413/582-0599
MA Division of Marine Fisheries……..617/626-1520
MA Division of Capital & Asset Management (DCAM)…….617/727-4050
Massachusetts Association of Regional Planning Agencies (MARPA)……...413/781-6045
University of Massachusetts/Amherst……...413/545-0111
Natural Resources Conservation Services (NRCS)……...413/253-4350
MA Historical Commission……...617/727-8470
U.S. Army Corps of Engineers……..978/318-8502
Northeast States Emergency Consortium, Inc. (NESEC).....781/224-9876
U.S. Department of Commerce: National Oceanic and Atmospheric Administration: National Weather Service; Tauton, Massachusetts 508/824-5116
U.S. Department of the Interior: US Fish and Wildlife Service 413/253-8200
U.S. Geological Survey 508/490-5000

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) .....Massachusetts Emergency Management Agency
406 Public Assistance and Hazard Mitigation .....Massachusetts Emergency Management Agency
Community Development Block Grant (CDBG)…….....DHCD, also refer to RPC
Dam Safety Program.....MA Division of Conservation and Recreation

Disaster Preparedness Improvement Grant (DPIG) .....Massachusetts Emergency Management Agency
Emergency Generators Program by NESEC[‡] ....Massachusetts Emergency Management Agency
Emergency Watershed Protection (EWP) Program.....USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) ..... Massachusetts Emergency Management Agency
Flood Plain Management Services (FPMS).....U.S. Army Corps of Engineers
Mitigation Assistance Planning (MAP)..... Massachusetts Emergency Management Agency
Mutual Aid for Public Works.....Western Massachusetts Regional Homeland Security Advisory Council
National Flood Insurance Program (NFIP)[†] ..... Massachusetts Emergency Management Agency
Power of Prevention Grant by NESEC[‡].....Massachusetts Emergency Management Agency
Roadway Repair & Maintenance Program(s).....Massachusetts Highway Department
Section 14 Emergency Stream Bank Erosion & Shoreline Protection ……....U.S. Army Corps of Engineers
Section 103 Beach Erosion……...U.S. Army Corps of Engineers
Section 205 Flood Damage Reduction…….U.S. Army Corps of Engineers
Section 208 Snagging and Clearing ....U.S. Army Corps of Engineers
Shoreline Protection Program……MA Department of Conservation and Recreation
Various Forest and Lands Program(s).....MA Department of Environmental Protection
Wetlands Programs ..... .MA Department of Environmental Protection

[‡]NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NESEC for more information.

[†]Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS): The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. MEMA can provide additional information regarding participation in the NFIP-CRS Program.

3) Websites

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/litbase/ha zards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxp.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center "Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/dis aster/	Searchable database of sites that encompass a wide range of natural disasters.
NASA Natural Disaster Reference Database	http://ltpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/g eog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.html	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links
National Lightning Safety Institute	http://lightningsafety.com/	Information and listing of appropriate publications regarding lightning safety.
NASA Optical Transient Detector	http://www.ghcc.msfc.nasa.gov/ot d.html	Space-based sensor of lightning strikes
LLNL Geologic & Atmospheric Hazards	http://wwwep.es.llnl.gov/wwwep/g hp.html	General hazard information developed for the Dept. of Energy.
The Tornado Project Online	http://www.tornadoroject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iiaa.iix.com/ndcmap.html	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

Appendix B

Documentation of the Planning Process

Chesterfield Hazard Mitigation Planning Committee

Meeting #1

AGENDA

October 5, 2006
7:00 p.m.

1) Introduction

2) Purpose of Committee

- Why selected to serve on Committee
- What we are doing and why

3) What is Hazard Mitigation Planning?

- PowerPoint Presentation on Hazard Mitigation

4) Step 1: Organize Hazard Mitigation Team

- Establish a chairperson/point of contact

5) What must we do to prepare a Hazard Mitigation Plan?

- Explain/set milestones (4-5 committee meetings)
- Agree on next Committee meeting date

6) Question and Answer Period

Chesterfield Hazard Mitigation Planning Committee

Meeting #2

AGENDA

November 16, 2006
7:00 p.m.
Location: Chesterfield Town Offices

1) Identify Hazards (past and potential) on Base Map

- What are the hazards?
- What is at risk from those hazards?

2) Develop Base Map with Critical Facilities

- Identify Critical Facilities on Base Map. The following list contains items that should be clearly identified on the map, as they apply to your community:

- Emergency Operations Center
- Emergency Fuel Facilities
- Town/City Hall
- Police Station
- Fire Station
- Public Works Garages
- Water Treatment Facilities
- Sewage Treatment Plants
- Water Tower/Supply Pumps
- Power Plants
- Electrical Power Substations
- Schools
- Major Highways and Roadways
- Bridges
- Dams
- Nursing Homes
- Elderly Housing
- Day-Care Facilities
- Correctional Facilities
- Other Congregate Care Facilities
- Shelters
- Special Needs Populations
- Hazardous Materials Facilities
- Access Roads to Critical Facilities
- Evacuation Routes
- Unique or Historic Resources
- Commercial Economic Impact Areas
- Socio-Economic Impact Areas
- Areas with Second Language Needs
- Hospitals

3) Question and Answer Period

4) Set Goals for Next Meeting

Chesterfield Hazard Mitigation Planning Committee

Meeting #3

AGENDA

December 21, 2006
7:00 p.m.
Location: Chesterfield Town Offices

1) Review Identification of Hazards

- Past and Potential
- Critical Facilities

2) Analyze Development Trends

- Looking at Community Change
- Map out Development Patterns

3) Existing Protection Measures

- Review of Draft Existing Protection Measures

4) Question and Answer Period

5) Set Goals for Next Meeting

Chesterfield Hazard Mitigation Planning Committee

Meeting #4

AGENDA

January 18, 2007
7:00 p.m.
Location: Chesterfield Town Offices

1) Identify What's in Place & Identify gaps in the current protection

- Review Draft Existing Protection Measures
- Identify gaps in existing protection

2) Review of Draft Goal Statements

3) Brainstorm Mitigation Actions

- What actions can be taken?
- Evaluating Action Feasibility

4) Prioritize Final List of Actions

- Select Actions which Best Suit Community's Needs
- Include actions that can be implemented quickly

5) Question and Answer Period

6) Set Goals for Next Meeting

Chesterfield Hazard Mitigation Planning Committee

Meeting #5

AGENDA

February 28, 2007
7:00 p.m.
Location: Chesterfield Town Offices

1) Develop Strategy to Implement Selected Prioritized Actions

- Who will be responsible for implementing each prioritized action;
- When will these actions be implemented?
- How will the community fund the projects?

2) Develop Process for Adoption and Monitoring of the Plan

3) Review & Revise as Necessary Final Draft of the *Chesterfield Hazard Mitigation Plan*

4) Discuss Next Steps for the *Chesterfield Hazard Mitigation Plan* including FEMA Review and Adoption by the Board of Selectmen.

5) Question and Answer Period

Chesterfield

Agenda

October 17, 2007

Pre-Disaster Mitigation Plan Review

7:00 p.m.

Chesterfield Town Offices

---

1) Committee Sign-in

2) Pre-Disaster Mitigation Planning Process Update

3) Remaining Tasks for PVPC to Complete

    a. Public involvement (press releases, news stories, website postings) ☑
    b. Notifying neighboring communities (WRHSAC/HREPC) ☑

4) Remaining Tasks for PDM Committee to complete with PVPC
    a. Identify hazards for future construction (including existing buildings that are in hazard zones) ☒
    b. Matrix of the types and number of structures in hazard areas ☒
    c. Explanation of the strategies that will be employed in the future to make sure the public remains involved (i.e. annual public meeting update, postings on progress, etc.) ☒

Appendix C

List of Acronyms

FEMA	Federal Emergency Management Agency
MEMA	Massachusetts Emergency Management Agency
PVPC	Pioneer Valley Planning Commission
EPA	Environmental Protection Agency
DEP	Massachusetts' Department of Environmental Protection
NWS	National Weather Service
HMGP	Hazard Mitigation Grant Program
FMA	Flood Mitigation Assistance Program
SFHA	Special Flood Hazard Area
CIS	Community Information System
DCR	Massachusetts Department of Conservation and Recreation
FERC	Federal Energy Regulatory Commission
TRI	Toxics Release Inventory
FIRM	Flood Insurance Rate Map
NFIP	National Flood Insurance Program
CRS	Community Rating System
BOS	Board of Selectmen
DPW	Department of Public Works
LEPC	Local Emergency Planning Committee
EMD	Emergency Management Director
Con Com	Conservation Commission
Ag Com	Agricultural Commission
EOC	Emergency Operations Center
CEM Plan	Comprehensive Emergency Management Plan
EMA	Emergency Management Agency
RACES	Radio Amateur Civil Emergency Service
WMECO	Western Massachusetts Electric Company
HAZMAT	Hazardous Materials

Appendix D

(Documentation of Public Process)

PRESS RELEASE

CONTACT: Andrew Smith, Pioneer Valley Planning Commission, (413) 781-6045

FOR IMMEDIATE RELEASE
September 12, 2007

Public Input Sought on Pre-Disaster Mitigation Plans

The Pioneer Valley Planning Commission has completed final working drafts of pre-disaster mitigation plans for thirteen communities in the region: Agawam, Chester, Chesterfield, Easthampton, Hadley, Hampden, Hatfield, Holland, Holyoke, Ludlow, Monson, Northampton, and South Hadley.

This planning effort is being undertaken to help communities assess the risks they face from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

The draft plans are posted for public review and comment on PVPC's website at www.pvpc.org. Please submit comments to PVPC's Andrew Smith at (413) 781-6045 or asmith@pvpc.org no later than November 30, 2007. Communities with approved plans will be eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

These pre-disaster mitigation plans are being developed with assistance from the Pioneer Valley Planning Commission with funding provided by the Massachusetts Emergency Management Agency.

—30—

The Republican.

'Predisaster plans' readied for grants

Sunday, September 23, 2007

By NANCY H. GONTER
ngonter@repub.com

It's the public's turn to weigh in on plans prepared by local communities to keep the damage from natural disasters to a minimum.
Sixteen "predisaster mitigation plans," developed by the Pioneer Valley Planning Commission working with local officials from each community, are part of an effort to secure grant money from the Massachusetts Emergency Management Agency, said Catherine M. Miller, principal planner with the commission.

"This comes from an effort by the Federal Emergency Management Agency that while we are aware you can't prevent natural disasters from happening, you can prevent the long term consequences," Miller said.

The plans, which average more than 100 pages each, can be viewed on the agency's Web site at www.pvpc.org Plans for Agawam, Chester, Chesterfield, Easthampton, Hadley, Hampden, Hatfield, Holland, Holyoke, Ludlow, Monson, Northampton, South Hadley, Southwick, Ware and Wilbraham are available, she said.

"This is largely an education exercise so people know local government is looking into these things and thinking about what the consequences of natural disasters would be. It's reassuring to know local governments are looking at this kind of thing especially after all the awareness following (hurricane) Katrina," Miller said.

Comments may be made by calling Andrew Smith at the Commission at (413) 781-6045 or by e-mailing him at asmith@pvpc.org by Nov. 30.

The plans were developed with a state grant of $224,962 which was supplemented by local communities for total cost of just under $300,000, she said.

Each plan looks at the risks communities may face from natural disasters such as flooding, tornadoes, drought and earthquakes, and what can be done to prevent damage to property and loss of life. They also prioritize projects for funding for mitigation efforts, Miller said.
An example of a mitigation project is Greenfield's purchase of the Wedgewood Gardens mobile home park which was badly flooded by the Green River in 2005 and had previously been flooded, although that was not part of this program, Miller said.

The commission is working with 32 communities in this area and a second round of 16 more communities will soon be started. They are Amherst, Belchertown, Brimfield, Chicopee, Cummington, Goshen, Granby, Huntington, Palmer, Southampton, Springfield, Westfield, West Springfield, Westhampton, Williamsburg and Worthington.

After that, a plan for the entire region will be prepared, Miller said.

Northampton Deputy Fire Chief Dana Cheverette, a member of the local committee that worked with the commission on the city's plan, said going through the process of preparing the plan was helpful.

"You identify the flood plans and you identify the area where you need to put your resources. In 1988 when the Oxbow area flooded, a lot of people got isolated. Now we know where the people could get isolated," Cheverette said.

Sunday's news briefs

Posted by The Republican Newsroom September 30, 2007 12:04PM

Predisaster plan drafts
The Pioneer Valley Planning Commission has completed final working drafts of predisaster mitigation plans for 13 communities in the region. The draft plans are posted for public review and comment on the commission's Web site at www.pvpc.org. The deadline for comments is Nov. 30.

This planning effort is being undertaken to help communities assess the risks they face from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. Communities with approved plans will be eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

Affected are Agawam, Chester, Chesterfield, Easthampton, Hadley, Hampden, Hatfield, Holland, Holyoke, Ludlow, Monson, Northampton and South Hadley.

Appendix E

(Past and Potential Hazards/Critical Facilities Map)