2012
GARRETT COUNTY
HAZARD MITGATION PLAN

Garrett County, Maryland

Department of Public Safety & Emergency Management

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GARRETT COUNTY HAZARD MITIGATION PLAN

1. 1 INTRODUCTION

In response to continuing large-scale federal outlays of disaster funds to states and communities during the decade of the 1990's, Congress passed the Disaster Mitigation Act of 2000. Section 322 of this Act requires that all states and local jurisdictions develop and submit Mitigation Plans designed to meet the criteria set forth in 44 CFR Parts 201 and 206. The purpose of these plans is to prevent or reduce loss of life and injury and to limit future damage costs by developing methods to mitigate or eliminate damage from various hazards. Beginning in 2002, states were provided funding under this act to carry out the planning process.

In January 2000, the Maryland Emergency Management Agency published the Maryland Hazard Analysis that provides an overview of various hazards affecting the state. These hazards include winter storms, riverine flooding, storm surge, hurricanes, tornadoes, thunderstorms, epidemics, soil movement, drought, extreme heat, hazardous materials, wildfire, fire and explosions and transportation accidents.

Additional funding is being made available to counties to develop Hazard Mitigation Plans for local communities. Each incorporated community has the option of joining with its county government in the preparation of this plan. Local Mitigation Plans follow a planning methodology that includes public involvement, a risk assessment for various hazards, an inventory of critical facilities and other at-risk structures, a mitigation strategy for high risk hazards, and a method to maintain and update the Plan.

2012 Status Update: As an incentive for State and local governments to develop hazard mitigation plans, the Federal Government requires mitigation planning as a component of eligibility for hazard mitigation project funding. The 2009 *Hazard Mitigation Assistance Unified Guidance*, produced by the Federal Emergency Management Agency (FEMA), states that mitigation plans are the foundation for effective hazard mitigation. As such, local jurisdictions must have a FEMA-approved local hazard mitigation plan at the time of obligation of grant funds in order to be eligible for grant funding under the unified Hazard Mitigation Assistance (HMA) programs. This requirement reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

1. 2 PLANNING PROCESS

Garrett County chose to develop a Hazard Mitigation Plan meeting the above guidelines and created a Planning Committee composed of representatives from various county and municipal agencies, including Emergency Management, Planning, and the Health Department to review information concerning the hazards that are most likely to affect the County and provide public information to citizens concerning the planning process.

Planning Committee meetings were scheduled to coincide with key phases of the planning process. The first meeting was introductory in nature, to explain the overall process being used in developing the plan. This meeting also allowed committee members to rank each hazard within the county. The second meeting was designed to discuss hazard rankings and profiles and the vulnerability of various critical facilities in the county. The third meeting included a further review of critical facilities and allowed each committee member to review mitigation actions that the county can take to lessen damage from each hazard. The fourth and final meeting included a review of the proposed plan and preparation for the required public hearing.

2012 Status Update: During the Plan Update Process various meetings and outreach activities occurred. Table 1 identifies members of the LEPC-HMPC committee.

- On 20 January 2011, the Kick-Off Meeting for the new Hazard Mitigation Planning Committee (HMPC) was held at the Garrett County Airport. As in the previous Plan development process, Garrett County chose to utilize their multi-hazard Local Emergency Planning Committee (LEPC) as their HMPC. The LEPC is composed of a cross-section of the community, including government agencies, education, non-profits, businesses, and citizen representatives. At this meeting the group reviewed previously identified hazards within the *2005 Garrett County Hazard Mitigation Plan* and in the review of the new hazard data gathered during the Plan update process. During this meeting, hazard data, coupled with local knowledge from various committee members, was utilized to assess the County's vulnerabilities to hazards.
- On 2 March 2011, public outreach materials were distributed to all eight municipalities within Garrett County. These materials contained data collection handouts and information pertaining to the Plan development process.
- On 14 April 2011, the LEPC-HMPC reviewed hazards that were identified in the previous Plan and performed a Hazard Identification and Ranking exercise for inclusion into the 2011 Plan Update. Copies of draft Plan Chapters 1-4, including Hazard Profiles, were distributed during the meeting.
- On 8 September 2011, the LEPC-HMPC discussed the Hazard Identification and Prioritization process along with the status of the Previous Mitigation Strategies and Action Items. Draft Plan Chapters 1-11 were completed and distributed for review and comment.
- In November 2011, a municipal meeting including all eight incorporated jurisdictions was held to review the Hazard Mitigation Plan Update Process. Each municipality worked on hazard identification and rakings specific to their jurisdiction.
- In January 2012, packets of information containing critical facilities, hazards, and mapping products for each municipality were distributed for review and comment. These materials were newly added during this Plan Update. Each municipality reviewed the materials and provided comments.
- On 7 March 2012, critical facilities, hazards mapping products were presented to the LEPC-HMPC members. A listing of repetitive flooding issues on roadways was distributed. Committee members ranked each roadway as a low, medium or high priority.

Table 1: 2011 Garrett County Hazard Mitigation Planning Committee

Member	Organization/Agency
Alicia Streets	Department of Social Services
Jay Moyer	Roads Department
John Hill	Community Action Committee
Linda Lindsay	Public Utilities
Jeff Hinebaugh	Garrett Memorial Hospital
Craig Umbel	Garrett County Health Department
Robert Corley	Sheriff's Office
William Ewing	Citizen Representative
Jean Tressler	Garrett College
Brad Frantz	Department of Public Safety & Emergency Management, Director
Virginia Smith	Department of Public Safety & Emergency Management
Jeff Broadwater	Public Utilities
Mike Bittinger	Sheriff's Office
Rick Cosner	MD SHA
John Feather	Oakland VFD
Don Shilobod	Constellation Energy
Commissioner Gatto	Garrett County Commissioner
Commissioner Raley	Garrett County Commissioner
Steve Vincent	Maryland State Police
Steve Smith	Department of Public Safety & Emergency Management
Ron Bay	Board of Education
Lou Battistella	Citizen Representative
Linda Lindsey	Public Utilities

1. 3 PUBLIC MEETINGS

All LEPC meetings held within Garrett County are open to the public and are listed on the Garrett County website. These open public meetings included a portion of the meetings set aside for the Hazard Mitigation Plan Update held on 20 January 2011, 14 April 2011, and 8 September 2011. Copies of meeting minutes are located in Appendix H of this Plan.

In addition, two public meetings were scheduled, one to coincide with the review of the draft plan, and the other to coincide with the public hearing for the Hazard Mitigation Plan adoption. Copies of meeting minutes for both the planning committee meetings and the public meetings are included in the Appendix.

1. 4 MEDIA ANNOUNCEMENTS

Media announcements designed to coincide with the public meeting schedule provide the public with an overview of the planning process and the mitigation measures being considered.

1. 5 MUNICIPAL PARTICIPATION

The eight county municipalities were invited to participate in the planning process and have their mitigation concerns made part of the county plan. These municipalities are Accident, Deer Park, Friendsville, Grantsville, Kitzmiller, Loch Lynn Heights, Mountain Lake Park and Oakland.

2012 Status Update: Of the eight municipalities, five chose to participate in the 2005 Garrett County Hazard Mitigation Plan. These municipalities were Friendsville, Grantsville, Accident, Kitzmiller, and Oakland. All eight municipalities in the County participated in the 2012 update to the Plan.

1. 6 TIMELINE

The timeline for completion of the Hazard Mitigation Plan called for the work plan to be completed in August 2003; the planning process to be outlined by September 2003; the risk assessment to be completed by January 2004; and the mitigation strategy to be completed by March 2004. The plan was completed in draft form in April 2004. Following review and approval by the Maryland Emergency Management Agency and the Federal Emergency Management Agency the Plan was adopted by the Garrett County Commissioners on January 18, 2005.

2012 Status Update: The timeline for completion of the 2012 Hazard Mitigation Plan Update called for the plan to be completed in 2012. Various meetings held throughout the planning process have been detailed in Appendix G.

GARRETT COUNTY PROFILE

2. 1 PHYSICAL LOCATION

Garrett County is the western-most county in the State of Maryland and is surrounded on three sides by the states of Pennsylvania and West Virginia as shown on Figure 1. Its neighbor to the east is Allegany County from which Garrett was created in 1872. The county was named for John W. Garrett (1820-1884) who was president of the Baltimore and Ohio Railroad from 1858 until his death. Garrett is the second largest of Maryland's 24 counties, containing 666 square miles of territory. As shown on Figure 2, Garrett County is located in the Allegheny Plateau province of the Appalachian Mountains. The county is also situated on the Eastern Continental Divide between the headwaters of the North Branch of the Potomac River, which flows into the Chesapeake Bay, and the Youghiogheny River which flows into the Monongahela River in the Ohio River basin as shown on Figure 3. Other major streams in the county include the Casselman River, Bear Creek and Deep Creek in the Youghiogheny Basin, and Savage River in the Potomac Basin.

2. 2 CLIMATE

Because of its mountainous terrain and relatively high elevation (3360 ft on Backbone Mountain), Garrett County is susceptible to heavy rains and winds during summer thunderstorms and heavy snowfall and blizzard conditions during the late fall and winter months. Precipitation averages between 40 and 48 inches annually as shown on Figure 4, of which a significant portion falls as snow or ice between the months of November and March. As noted on Figure 5, most communities in Garrett County record between 60 and 80 inches of snow per season. Some communities at higher elevations, like Bittinger, at an elevation of 2700 feet, receive, on average, more than 100 inches of snow per season. Unlike the remainder of Maryland, Garrett County receives much of its snowfall from air masses generated over the Great Lakes that rise and cool as they cross the Allegheny Plateau. This "Lake Effect" snow can result in 10-12 inches of snow on the Plateau, while areas downslope to the east receive little or no snow. By contrast, Allegany County, just to the east, averages 32-36 inches of precipitation and less than 40 inches of snow per season.

Temperatures usually average 5-10 degrees cooler in Garrett County than in the rest of Maryland throughout the year as shown on Figures 6 and 7. In fact, according to the National Weather Service, the coldest temperature recorded in the State was –40 degrees F in January 1912 in Garrett County. In addition, the county has to deal with dense fog conditions during many precipitation events when low hanging clouds hamper visibility. These events occur on average more than 50 times annually as shown on Figure 8. Temperature inversions, which are common in winter, cause foggy conditions, particularly when warmer air contacts accumulated snow. Occasionally these fog events will last many hours and hamper transportation to a greater degree than snow or ice storms.

A synopsis of weather and climatic data for the Oakland Weather Station is shown on Figure 9. Additional weather information appears in the hazard profiles for winter storms, riverine flooding, hurricanes and tornadoes.

2. 3 GEOLOGY AND SLOPE

As shown on Figure 10, steep slopes along the mountain ridges ensure rapid runoff from rainfall and snowmelt, while the broad limestone valleys in the center of the Plateau contain sizeable wetland areas which create marshy conditions that prevail throughout the year. Flash flooding is a serious problem, particularly down-slope from the major ridge-tops in the Potomac and Youghiogheny River valleys.

The rock units that make up the county's undulating surface contain large deposits of limestone, sandstone and shale as noted on Figure 11. The sandstones also contain bituminous coal, peat and clay that have been mined since the mid-1800's. The broad up-warped valleys also contain natural gas deposits that have been exploited in the past. Normally, the sandstone units form the ridge-tops while the valleys are underlain by softer shale or limestone. Slope failure, particularly in cut or fill areas where shale is overlain by sandstone, is not uncommon. Subsidence in areas underlain by old coal mine diggings is possible in the coal measures.

2. 4 SOILS

According to the Garrett County Soil Survey, most of the soil associations in Garrett County are related to the rock type of the parent material and the slope of the land. These soils are shown in general fashion on Figure 12. Most of these soils contain steep, stony units that are moderately well drained. Unit 4 soils contain peat deposits and are generally poorly drained. Units 1 and 5 have soils that are generally formed on shales and siltstones that are moderately to steeply sloping, while units 2 and 3 are generally formed on sandstones that are moderately to steeply sloping. Unit 6 soils are formed on sandstone that is usually more resistant to erosion and is steep and stony. Approximately 150,000 acres of land are classified as steep in the county Soil Survey. Another 42,500 acres of land contain soils on colluvial materials at the foot of slopes. These soils have essentially formed on steep slopes and moved downslope over time. Another group of soils containing more than 11,000 acres are classified as alluvial. These soils have been deposited by streams over time. When disturbed by road construction, surface mining or other land development, soils on steep slopes, colluvial soils, and alluvial soils are more prone to movement than other more stable soil types.

2. 5 TRANSPORTATION

Throughout its history Garrett County has served as an east-west transportation corridor, with I-68 replacing U.S. Rt. 40 as the main highway route through the county in the 1970's. During the same time decade the B & O Railroad became part of the CSX transportation system. Today I-68 serves as a major trucking route while CSX serves as both a through rail system and a local rail service to coal mining facilities. Figure 13 shows major transportation routes in Garrett County along with the Garrett County Airport at McHenry that provides local air service. So far as mass transit is concerned, the Garrett County Community Action Agency provides

transportation for elderly and handicapped residents through a state subsidized bus service. Finally, Greyhound Bus Lines includes scheduled service along Rt. 40 in the northern section of the county as part of its Baltimore-Pittsburgh run.

2. 6 ECONOMIC DEVELOPMENT

Since its initial settlement, Garrett County has gone through several phases of economic development including a period of frontier hunting and trapping beginning before the French and Indian War; a period of rapid transportation development when the National Road (later U.S. Rt. 40) and the Baltimore and Ohio Railroad were built across the county, linking the east coast with the developing mid-western states; a period of agricultural development when much of present day farmland was created; a period of resource development when timbering and deep mining of coal created employment opportunities that led to the creation of a number of smaller communities in the county; and a period of recreation and tourism development linked primarily to the construction of Deep Creek Lake and its subsequent development as a second home location.

Today, Garrett County has an economy that retains much of its past flavor while it attracts new industrial and commercial growth, particularly in the area near the county seat in Oakland. The county also continues to show strong recreational and tourism development around Deep Creek Lake. Out of a labor force of 13,852 people, 13,069 were employed in 2000, compared to a labor force of 12,700 in 1990 when 11,748 people were employed.

2012 Status Update: Table 2 details the number of people comprising the labor force in Garrett County by year and the percentage of population. The percent of the population occupied by the labor force peaked in 2000 at 59.5 percent and slowly decreases by approximately one percent every five years through 2030. Economic growth for the County will continue to be concentrated in and around the eight municipalities in the County, as well as the five industrial parks including the new McHenry Business Park. McHenry and the surrounding areas will continue to grow in recreation and tourism, as well as in the development of new rental homes and properties.

Table 2: Labor Force

Year	Population 16+	Labor Force	Percent in Labor Force
1970	14,497	6,975	48.1
1980	19,301	10,605	54.9
1990	21,433	12,700	59.3
2000	23,299	13,852	59.5
2005	23,590	13,800	58.5
2010	24,260	14,120	58.2
2015	25,340	14,580	57.5
2020	26,180	14,790	56.5
2025	26,640	14,740	55.3
2030	26,840	14,580	54.3

Source: Projections prepared by the Maryland Department of Planning, Planning Data Services as of February 2009

2. 7 POPULATION

Garrett County's population growth has mirrored the above economic periods with higher rates of growth occurring during the early settlement of the county, during the coal and timber booms of the early part of the 20th century, and during the period of recreation and tourism development that continues into the present. In the 2000 Census report, Garrett County had a population of 29,846, an increase of 1,708 over the 1990 Census.

In the year 2000, the incorporated towns in the county had populations ranging from 302 in Kitzmiller to 2,248 in Mountain Lake Park. During that Census year 16,319 people lived in the election districts surrounding Oakland, Mountain Lake Park, Loch Lynn Heights and Deep Creek Lake. This is an increase of 1,270 above the number recorded in 1990 by the Census Bureau. During the same decade the northern tier of election districts from Finzel to Accident increased by 687 people. The remaining election districts remained stable or lost population during the decade. Projections completed by the Maryland Department of Planning in 2002 indicate Garrett County's population will grow to 31,600 by the year 2010, and to 32,850 by 2020.

According to the Maryland Hazard Analysis completed in 2000, Garrett County has a high percentage of residents over the age of 65 and a small percentage of residents of Hispanic origin. According to the state Hazard Analysis, these residents are considered "at risk" populations. The U.S. Census for 2000 shows a total of 4,461 residents over the age of 65 and a total of 131 residents of Hispanic origin.

2012 Status Update: Table 3 depicts the population for Garrett County's municipalities. According to the 2010 U.S. Census, Garrett County's population has increased by 251 people since 2000; a sharp decline compared to the increase of 1,708 between 1990 and 2000. This new trend indicates that growth is still continuing in the County, but at a slower rate than the previous decade.

Table 3: 2010 Census Population

Jurisdiction	2010 Census Population
Accident	325
Deer Park	399
Friendsville	491
Grantsville	766
Kitzmiller	321
Mountain Lake Park	2,092
Oakland	1,925
Lock Lynn Heights	552
Garrett County	**30,097**

Source: US Census Bureau, Census 2010 and 2000 Census, PL94-171 release
Prepared by the Maryland Department of Planning, Projections and Data Analysis/State Data Center February, 2011

2. 8 HOUSING

According to the U.S. Census, the county's residents were housed in 16,761 units in 2000 of which 514 were constructed in 1999 and 2000. This compares to 14,119 units in 1990. In addition, permits for more than 570 single-family dwellings have been issued by the county in the last two years. A substantial percentage of new housing is related to recreation development around Deep Creek Lake and does not represent year round occupancy. In terms of at-risk housing, the Maryland Hazard Analysis 2000 states that there are more than 300 mobile homes in the census tracts in the northwestern part of the county that may be at risk for tornado damage, and a substantial number of houses in the floodplain areas of the Potomac and Youghiogheny Rivers.

In terms of value, the median value of owner occupied housing was $86,400 in 2000 as compared to $60,200 in 1990. Median monthly rents were $382/month in 2000, as compared to $310/month in 1990. These values may be somewhat skewed by recreation rentals in the Deep Creek Lake area.

2012 Status Update: Table 4 displays the number of households and household size projections for the County calculated by the Maryland Department of Planning (MDP). According to these figures, the number of households is expected to increase while the expected household size is projected to decrease. Due to the minimal change in population projections over this time period, and the increase in number of households, the household size is predicted to decrease, as is shown in the table.

Table 4: Household Projections

Year	Households	Household Size
2005	11,850	2.47
2010	12,325	2.44
2015	12,850	2.41
2020	13,325	2.37
2025	13,725	2.34
2030	14,000	2.31

Source: Maryland Department of Planning 11-06

2. 9 INCOME

So far as household income is concerned, the U.S. Census indicates that Garrett County continues to show improvement in its economic condition with a median household income of $22,733 in 1990 increasing to $32,238 in 2000. The poverty rate for the county has also declined from 11.6% in 1990 to 9.8% in 2000.

2012 Status Update: The Maryland Department of Planning also estimated median household income utilizing U.S. Census data. The median household income for Garrett County has increased quite rapidly between 2000 and 2009, indicating positive economic growth. Section *2.6 Economic Development*, located on page 6, further details the County's economic growth.

Table 5: Median Household Income for Garrett County

Year	Average Household Income
2000	$34,250
2001	$37,000
2002	$37,900
2003	$40,050
2004	$41,450
2005	$43,150
2006	$44,850
2007	$46,900
2008	$49,350
2009	$50,800

Source: U.S. Census Bureau, 1989 & 1999, and the Maryland Department of Planning, Planning Data Services, May 2010

2. 10 SCHOOL ENROLLMENT

Public school enrollment has been relatively stable in recent years with 4,739 students in 2001. Even though the county's population is projected to increase by 1,754 people through the year 2010, school enrollment is projected to decline by several hundred students during the current decade to 4,320 in 2010 according to the Maryland Office of Planning.

2012 Status Update: According to Maryland Department of Planning, the declining trend in public school enrollment will slowly continue from 2009 to 2019. By 2019, the public school enrollment is estimated to at 3,800 students. This decrease in school enrollment, and the slight increase in overall population of the County, indicates that the ratio of children to adults and elderly persons will decrease in the future.

Table 6: Total Public School Enrollment (Grades K-12)

Year	Public School Enrollment (K-12)
2009	4,189
2010	4,120
2011	4,010
2012	4,000
2013	3,900
2014	3,850
2015	3,850
2016	3,830
2017	3,820
2018	3,800
2019	3,800

Source: Maryland Department of Education, "Statistics on Enrollment and Number of

Schools Public and Non-Public, 2009" Maryland Department of Planning, Planning Data Services, 2010 to 2019

2. 11 LAND USE PROFILE-COMPREHENSIVE PLAN-BUILDING PERMITS

According to the Garrett County Comprehensive Plan adopted in 1995, most residential and commercial development is concentrated in the areas within or in close proximity to the county's municipalities and to Deep Creek Lake. Projections in that plan call for a continuation of this development style with most new urban development in the Oakland-Mountain Lake Park area and around Deep Creek Lake through 2010. Secondary growth areas include Grantsville and Accident. The most recent countywide land use tabulations from 1990 showed a total of 426,483 acres of land in the county with nearly 12,821 acres being devoted to urban type development. This was an increase of more than 5,000 acres of developed land since 1973. Based on county Permit Records since 2000, it appears reasonable to conclude that another 4,000-5,000 acres have been developed countywide since 1990. More than 250 single family dwellings are being built each year with more than 50 % of these being in the Deep Creek Lake Watershed.

Even with this new urban development, the vast majority of land in Garrett County remains in either in agriculture (100,973 acres in 1990) or forest use (294,843 acres in 1990) with more than 77,000 acres in State Forests and Parks. A substantial amount of forest and agriculture land has been mined (10,095 acres) and reclaimed in recent years.

2012 Status Update: The 2008 Garrett County Comprehensive Plan shows the changes in land use and land cover for the County from 1973 to 2005. This data indicates major land use and land cover change in Garrett County. Of the changes, the two most substantial increases occurred in low density residential development with an increase of 18,322 new acres and a decrease of 13,724 acres in agricultural use over the 33 year period between 1973 and 2005. All development, including low, medium and high density residential, commercial/industrial increased in the County. These increases in development led to the decrease in agricultural and forest acreage in the County. In contrast, through the purposeful protection of important natural resources, including wetlands and water resources, these land cover types increased by 781 acres during this time.

In terms of hazard mitigation inclusion into the in the 2008 Garrett County Comprehensive Plan, the Sensitive Areas Element of the Plan details hazard specific information. Sensitive areas include floodplains, wetlands and vernal pools, steep slopes, and other hazard prone land use problems. In addition, the floodplain ordinance and County building codes include wind and snow loading requirements for new construction are developed and implemented within the context of hazard mitigation planning and are linked directly to the Hazard Mitigation Plan.

Finally, the new 2012 Garrett County Hazard Mitigation Plan will be referenced and utilized during the development of existing and future County plans and studies.

Table 7: Garrett County Land Use/Land Cover

Land Use	Acres in 1973	Acres in 2005	Change in Acres
Developed Land			
Low Density Residential	3,702	22,024	+18,322
Medium/High Density Residential	1,368	3,318	+1,950
Commercial/Industrial	941	1,808	+868
Other	7,960	9,372	+1,412
Resource Lands			
Agriculture	102,865	89,142	-13,724
Forest	295,116	285,508	-9,608
Wetlands	2,043	2,663	+620
Water	5,635	5,795	+161

Source: Maryland Dept. of Planning 2002 Land Use Land Cover dataset; Garrett County (Garrett County made minor adjustments to the 2002 dataset to update it to 2005).

2. 12 WATER AND SEWER PLAN

According to the 1997 County Water and Sewer Plan, all municipalities in the county have public water and sewer service as shown on Figures 15 and 16. The unincorporated communities of Bloomington, Crellin, and Gorman also have public water and sewer service. In addition, a

2012 Status Update: Garrett County is currently in the process of updating their Water and Sewer Master Plan.

large area around Deep Creek Lake is served by a public sewer system managed by the Department of Public Utilities. The Deep Creek Lake area also has a large number of private water systems that serve portions of the lake community. Planned extensions to water and sewer systems are also addressed in the Water and Sewer Plan.

2. 13 MUNICIPAL PERSPECTIVES

The eight municipalities in Garrett County are in large part still the centers for most residential and commercial activity in the county with the exception of the area around Deep Creek Lake. The two largest municipalities (Oakland and Mountain Lake Park) are neighbors while Loch Lynn Heights and Deer Park are within 5 miles of Oakland. Between these four municipalities, the total population was 5,052 in the 2000 Census, an increase of 493 since 1990. While the two larger communities provide the commercial hub for the county, Loch Lynn Heights and Deer Park are primarily residential in nature.

The four remaining municipalities are more isolated from the Oakland - Mountain Lake Park area and even though small in population, they continue to serve as hubs for community activities and have commercial activities that serve the surrounding countryside. Accident is located north of Deep Creek Lake on U.S. Rt. 219 in the center of a farming area and has a relatively stable population, while Grantsville is located near the junction of Rt. 219 and I-68 along old U.S. 40. Accident has some new commercial and industrial growth along Route 219, while Grantsville has grown by 114 people since 1990 and has seen new commercial and

industrial development along Rt. 40 and at the intersection of I-68 and Rt. 219. Friendsville is located along I-68 near the western boundary of the County on the Youghiogheny River while Kitzmiller is located on the North Branch of the Potomac River above the Bloomington Dam.

2. 14 POPULATION PROJECTIONS AND LAND USE TRENDS

As noted earlier in the Population Profile, the Maryland Department of Planning projects Garrett County to have a population of 31,600 by the year 2010, and a population of 32,850 by 2020. The Garrett County Comprehensive Plan projects that most of the population growth and associated urban development in the county will continue to be centered on designated growth areas in the Oakland-Mountain Lake Park vicinity and at Deep Creek Lake and in the secondary growth areas around Grantsville and Accident. As noted under the Water and Sewer paragraph, a good portion of the land in these growth areas is served or is projected to be served by public water and sewer as shown on Figures 15 and 16. The Comprehensive Plan states that an additional 50,000 people could be accommodated on the approximately 8,000 buildable acres of land within the growth areas shown on Figure 17.

2012 Status Update: The actual population of Garrett County provided by the 2010 Census is 30,097. As described in the *2008 Garrett County Comprehensive Plan*, "The County had approximately 18,326 housing units in 2005. However, Garrett County has a large number of seasonal (vacation) homes—almost 4,000 such units in 2000—which is why the number of housing units is large when compared to the population. Because of the County's relatively small population, the effects of vacation homes and other types of visitation is pronounced, especially in the Deep Creek Lake area. For example, the peak-day population in the Deep Creek area in 2003 was estimated at 27,044, compared to a year round population in the Lake area of 4,246. While these visitors and seasonal residents do not count toward the County's year-round population, they often have the same impacts on traffic and transportation, drinking water, wastewater, and most community services (except education) as permanent residents. Therefore this Plan evaluates future growth in Garrett County primarily from the perspective of housing units, rather than population."

Evaluating future growth in Garrett County is accomplished through various planning efforts. In terms of the 2011 Hazard Mitigation Plan, assuring development and placement of development is a crucial component in determining the vulnerability from future hazards. Population and housing projections for Garrett County indicate that the County will continue to develop; therefore, it is important that hazard prone areas are restricted and/or limited in the types and number of structures built in these areas. The following table shows population and housing in Garrett County by geographic location for 2000, 2005, and 2030 (projections).

Table 8: Population and Housing , 2000, 2005, and 2030

Geography	2000		2005		2030	
	Population	Housing Units	Population	Housing Units	Population	Housing Units
All Towns	6,865	3,130	6,640	3,287	8,003	3,962
Accident	353	162	340	168	390	193
Deer Park	405	181	392	181	517	256
Friendsville	539	266	518	281	618	306
Grantsville	619	298	593	305	818	405
Kitzmiller	302	155	288	164	382	189
Loch Lynn Heights	469	202	449	210	475	235
Mountain Lake Park	2,248	948	2,164	1,017	2,357	1,167
Oakland	1,930	918	1,896	961	2,446	1,211
Unincorporated Area	22,981	13,631	23,310	15,039	25,397	21,114
Total	**29,846**	**16,761**	**29,950**	**18,326**	**33,400**	**25,076**

Source: US Census; Maryland Department of Planning; Garrett County

PREVIOUS HAZARD MITIGATION EFFORTS

3. 1 ACQUISITION AND ELEVATION OF HOMES

Garrett County has engaged in a number of mitigation projects within the past decade, using federal and state funding provided through the Maryland Emergency Management Agency, the Maryland Department of the Environment and the Maryland Department of Housing and Community Development. These projects include the acquisition of 6 residences in the floodplain of the Potomac River in the community of Shallmar, 10 residences along the upper reaches of the Youghiogheny River in the vicinity of Crellin, and one residence in Oakland on the Little Youghiogheny.

Table 9: NFIP Insurance Report

2012 Status Update: Garrett County participates in the National Flood Insurance Program (NFIP) however the County is not enrolled in the Community Ratings System (CRS) at this time. The following table contains the NFIP Report, detailing flood insurance policies within Garrett County.

Community Name	Total Premium	A-Zone	Policies	Total Coverage	Total Claims	Total Paid Since 1978
Accident	$1,349	1	3	$203,800	0	$0
Friendsville	$23,748	20	26	$3,694,400	9	$17,121
Unincorporated Areas of County	$53,176	44	100	$15,439,700	91	$869,577
Grantsville	$326	0	1	$210,000	0	$0
Kitzmiller	$3,994	2	9	$1,477,700	3	$17,480
Mountain Lake Park	$6,570	8	9	$1,056,900	3	$ 3,532
Oakland	$14,719	8	18	$2,825,900	4	$40,131
Total	**$103,882**	**83**	**83**	**$24,908,400**	**110**	**$947,841**

Source: Federal Emergency Management Agency, May 2010

3. 2 STRUCTURAL MITIGATION

During the late 1960' and early 1970's, Garrett County partnered with the Soil Conservation Service to construct 6 flood control structures in the upper reaches of the Youghiogheny River as shown on Figure 23. These dams are all in the Oakland-Mountain Lake Park area and also serve as recreation areas for the community. The county has also worked with MEMA to obtain funding to construct a flood wall around the Friendsville water treatment plant along the Youghiogheny River.

3. 3 WARNING SYSTEM

In 2001, Garrett County participated with MEMA, Allegany County and Mineral County, West Virginia, to develop an early warning telephone system for communities downstream of the Bloomington Dam and the Savage River Dam in the Potomac Basin. This system has subsequently been expanded to include the entire county for all hazard events. The county has also installed stream level sensors at Crellin on the upper Youghioghcny River and at Kitzmiller and Bloomington on the Potomac. These sensors will be tied to the warning system in the near future.

2012 Status Update: Garrett County currently utilizes the Reverse 9-1-1 Public Notification System. This system combines the 9-1-1 database with GIS mapping technology to deliver outbound emergency notification from the 9-1-1 Center.

3. 4 WINTER STORM MITIGATION

In terms of winter storms, Garrett County is probably the best prepared and equipped county in the state to handle snow and icy conditions through its Roads Department and Emergency Management Agency. Both the county and state have made major expenditures to purchase modern snow removal equipment and communications technology to ensure that roads are kept open to the greatest extent possible during winter storms.

2012 Status Update: Garrett County building code requirements include an ice shield underlayment and a snow load requirement. The ice shield underlayment requires a waterproof barrier specially designed for use in climates that create ice dams (build ups of ice and snow) or high wind and rain events. The snow load requirement for Garrett County is 40 Pounds per Square Foot (psf).

3. 5 GOVERNORS FLOOD MITIGATION TASK FORCE

Following two devastating floods which occurred in January and September 1996, Governor Glendening appointed a task force consisting of local, state and federal officials and representatives of local communities in the four Western Maryland counties to develop a mitigation strategy to lessen future flood damage along the Potomac and Youghiogheny Rivers and their tributaries. This task force met on numerous occasions during the next five years and developed a number of recommendations that led to mitigation projects. These projects included the acquisition or elevation of homes in floodplain areas in all four counties as well as the installation of warning systems and structural devices in certain stream basins.

2012 Status Update: This Task Force is no longer in operation.

3. 6 COMPREHENSIVE PLAN and LAND USE REGULATIONS

The Garrett County Comprehensive Plan, adopted in 1995, includes a number of goals and objectives that promote mitigation activities. This plan also is in compliance with the Maryland Economic Growth, Resource Protection and Planning Act of 1992. That Act requires each county to address seven visions that, in large part, promote hazard mitigation through land use regulation. These visions are designed to concentrate development in suitable areas having existing or planned water and sewer service, protect sensitive areas, including 100-year floodplains and steep slopes, and direct growth to existing population centers.

The Comprehensive Plan Goals include measures designed to meet the above visions. These measures include the provision of adequate environmental safeguards to control and minimize development in floodplain areas and on steep slopes. The plan also calls for measures to control or eliminate environmental health hazards, and calls for measures to provide adequate public safety services. The county Subdivision Regulations, Sensitive Areas Ordinance, Sediment and Erosion Control Ordinance, Stormwater Management Ordinance, Floodplain Regulations, Deep Creek Watershed Zoning Ordinance and Municipal Zoning Ordinances all address regulatory measures designed to meet the above visions, goals and objectives.

2012 Status Update: The 2008 Garrett County Comprehensive Plan was adopted on October 7, 2008 and is available on the Garrett County Website. In 2006, House Bill 1141 was added to state law. This Bill mandated a new Water Resources Element for all counties and municipalities in the State that exercise planning and zoning authority. This new Water Resources Element was added into the 2008 Garrett County Comprehensive Plan and includes water supply planning and stormwater management.

3. 7 WATER AND SEWER PLAN

The Water and Sewer Plan shares many of the goals and objectives set forth in the Comprehensive Plan, including the concentration of development in areas having adequate water and sewer service and the elimination or treatment of hazardous pollutants. Requirements for water and sewer service require that utilities be elevated 3’ above the base 100-year flood elevation.

2012 Status Update: Garrett County is currently in the process of updating their Water and Sewer Master Plan.

3. 8 BUILDING CODE

During the mid-1990’s Garrett County adopted the state-mandated BOCA Building Code. This code contains wind and snow loading requirements for new structures tailored to the climate of the county. The code also contains footer depth requirements related to the frost line and tie-down requirements for mobile homes. These requirements are shown on Figure 19. The county

had a Building Code Effectiveness Grading Report completed by the Insurances Services Office, Inc. in 2002 but has not received a score from the ISO.

2012 Status Update: Garrett County adopted the 2009 International Building Code (IBC) Standards on 27 July 2010.

3. 9 FLOODPLAIN REGULATIONS AND FLOOD INSURANCE PROGRAM

Garrett County has a FEMA approved Floodplain Ordinance that requires a 1' freeboard for the first floor of new structures and additions. The ordinance also requires a setback from stream channels. The county FIRM maps were originally prepared in 1985, while the Little Youghiogheny Basin maps were updated in 1994. This update included the towns of Oakland, Mountain Lake Park, Loch Lynn Heights and Deer Park.

2012 Status Update: Garrett County currently utilizes their Floodplain Ordinance from 1991. The State of Maryland is coordinating with the Federal Emergency Management Agency (FEMA) to update all Flood Insurance Rate Maps (FIRMs) into digital format (DFIRMs). According to Maryland Department of the Environment (MDE), Garrett County's DFIRMs preliminary release date is November 2011 and its adoptive date will be late 2013.

3. 10 REPETITIVE LOSS PROPERTIES

The county also participates in the Flood Insurance Program and has included a number of repetitive loss properties in its acquisition program. Current repetitive loss properties are shown on Figure 18. The Flood Insurance Program also offers incentives to lower flood insurance rates to communities that participate in the Community Rating System (CRS). Because of staff constraints Garrett County has not participated in this program.

2012 Update:

3. 11 STORMWATER MANAGEMENT

Garrett County's revised Stormwater Management Ordinance was developed in response to the State of Maryland's Stormwater Management Act of 2007. The revised ordinance was approved by the Maryland Department of the Environment and was then adopted on 15 June 2010 as required by State law.

The purpose of the Stormwater Management Ordinance is to protect, maintain, and enhance the public's health, safety, and general welfare by establishing minimum requirements and procedures that control the adverse impacts associated with increased runoff. The goal is to manage stormwater by using Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation, sedimentation, and local flooding, and use appropriate structural Best Management Practices (BMPs) only when necessary. These actions will restore, enhance, and maintain the chemical, physical, and biological integrity of streams, minimize damage to public and private property, and reduce the impacts of land development.

HAZARD IDENTIFICATION AND RISK

4.1 INTRODUCTION

Chapter 4 indentifies hazards and provides priority hazard rankings for Garrett County from various perspectives. These hazards are detailed separately in Chapters 5-17. Each hazard chapter contains historical data, risk, and previous mitigation measures. Descriptions of the update process for each hazard chapter are provided in grey boxes throughout the chapters.

4. 2 MARYLAND HAZARD ANALYSIS

2012 Status Update: The Maryland Emergency Management Agency (MEMA) published the *2011 Maryland State All-Hazard Mitigation Plan Update*, a document designed to show the probability and impact of various hazards across the state. As shown by Table 11, Garrett County ranked "High" for the risk of tornado and winter storm; "Medium-High" for the risk of flood, landslide, wildfire, and high wind. The county ranked "Low" or "Medium-Low" for the risk of coastal, drought, thunderstorm, karst/sinkhole, and earthquake.

The *2011 Maryland State All-Hazard Mitigation Plan Update* identified hazards that differed from the 2000 Plan in that hazards were categorized and grouped in a new way. MEMA is encouraging local plan revisions to approach classifying hazards in a similar fashion as done in this revised risk assessment. Table 11 provides an outline of what types of events could fall within the designated Hazard Identification and Risk Assessment (HIRA) hazard categories.

The following hazards were identified and ranked by MEMA for Garrett County in the *2011 Maryland State All-Hazard Mitigation Plan Update*:

Table 10: 2011 Maryland All-Hazard Mitigation Plan Update Rankings

Identified Hazard	Types of Events	State Ranking:
Coastal	Coastal Flooding; Coastal Storms; Storm Surge; Hurricane/Tropical Storm; Nor'easter; Sea Level Rise; Shoreline Erosion; Tsunami	Medium-Low
Drought	Drought; Extreme Heat	Medium-Low
Flood	Flood	Medium-High
Landslide	Landslide	Medium-High
Thunderstorm	Thunder-storm; Lightning; Hail	Low
Tornado	Tornado	**High**
Wildfire	Wildfire; Brush Fire; Conflagration	Medium-High

High Wind	Thunder-storm winds; Non-thunder-storm wind	Medium-High
Winter Storm	Winter Storm; Extreme Cold; Nor'easter (Snowfall)	**High**
Karst/Sinkhole	Karst; Sinkholes	Low
Earthquake	Earthquake	Low

Source: 2011 Maryland State All-Hazard Mitigation Plan Update

4. 3 PLANNING COMMITTEE ANALYSIS

During the preparation of the county's Hazard Mitigation Plan, one of the first steps taken by the county Planning Committee was to perform a Risk Assessment exercise. During this assessment, made during the summer of 2003, severe winter weather was rated the highest risk, while riverine flooding, dam failure, thunderstorm, tornado, soil movement, and transportation accidents were rated as medium-high. In addition, the committee added two other hazards, fog and high winds, to the medium-high risk list. The committee rated hurricane, wildfire, epidemic and HazMat incidents as medium risks, while drought, extreme heat and fire or explosion were rated as low or medium-low risks. The results of the Planning Committee's risk assessment are shown on the following chart.

Summary of Risk for Garrett County, MD.
Garrett County Planning Committee, 2003

HAZARD	High	Medium High	Medium	Medium Low	Low
Drought				X	
Heat					X
Riverine Flooding		X			
High Wind		X			
Hurricane			X		
Thunderstorm		X			
Tornado		X			
Winter Weather	X				
Soil Movement		X			
Wildfire			X		
Fire/Explosion				X	
Dam Failure		X			
Epidemic			X		
HazMat			X		
Transportation		X			

2012 Status Update: At the first meeting of the Hazard Mitigation Planning Committee on 20 January 2011 hazards that were based upon their agency and/or community perspective were ranked. Results of this assessment are shown below. Hazards that were ranked "High" or "Medium-High" during this assessment process included riverine flooding, high wind, thunderstorm, winter weather, and transportation-fog. Hazards that were ranked at "Medium-Low" or "Low" in this assessment included extreme heat and drought. All other hazards were ranked at a "Medium" risk.

Table 11: Hazard Mitigation Planning Committee Risk Analysis Ranking for Garrett County, 2011

HAZARD	High	Medium High	Medium	Medium Low	Low
Drought				X	
Extreme Heat					X
Riverine Flooding		X			
High Wind		X			
Hurricane			X		
Thunderstorm		X			
Tornado			X		
Winter Weather	X				
Soil Movement			X		
Wildfire			X		
Fire/Explosion			X		
Dam Failure			X		
Epidemic			X		
HazMat			X		
Transportation - Fog		X			

2012 Status Update: The 2011 HMPC rankings were similar to the 2011 State rankings except for coastal and wildfire by plus/minus one rank. Thunderstorm was ranked "Medium-High" by the HMPC and "Low" by the State. Tornado was ranked "Medium" by the HMPC and "High" by the State. A comparison of the results from the previous local 2003 HMPC with the 2011 HMPC shows that most hazard rankings by the HMPC remained the same. Variances occurred in tornado, soil movement, fire/explosion, and dam failure by plus/minus one rank.

4. 4 COMBINED RISK

2012 Status Update: By combining the results of the above studies and exercises, and reviewing frequencies, fatalities, injuries and impacts for the identified hazards from the National Climatic Data Center, the combined risk ranking was developed. Table 13 lists the combined risk for the identified hazards in Garrett County on a scale of 1 to 30 with 30 being the highest risk. The local assessment weight was double the amount of the other factors in determining the final rankings since each committee member represented a community or agency that deals first hand with these hazards. The formula and method involved in obtaining the combined risk are detailed in Appendix F. All combined risk ratings were equivalent to the local assessment except for tornado; this was due to the high number of reported injuries, property damage, and a death due caused by this hazard.

Table 12: Summary of Combined Risk

Hazard	Damages	Frequency	Fatalities	Injuries	Local Assessment	Combined Risk**
Riverine Flooding	$305,000	2.8	0	0	Medium-High	Medium-High (18)
High Wind	$282,000	1.6	0	0	Medium-High	Medium-High (17)
Hurricane	$0	0.2	0	0	Medium	Medium (10)
Thunderstorm	$705,000	1.2	0	0	Medium-High	Medium-High (17)
Tornado	$2.6 M	0.18	1	12	Medium	**High (26)**
Winter Weather	$81,000	4.71	0	0	High	**High (20)**

** Combined Risk is the total of all five categories added together – 30-20="High"; 19 -15="Medium-High"; 14-10="Medium"; 9-5="Medium-Low"; 4-0="Low"

2012 Update:

4. 5 MUNICIPAL PERSPECTIVE

In addition to the risk assessment exercise preformed by the HPMC, the incorporated municipalities within Garrett County were asked to complete the exercise as well. The top hazards, defined by a hazard ranking of "Medium High" or "High" for each of the incorporated municipalities are listed in Table 14.

Table 13: Municipal Hazard Ranking

Hazard	Accident	Deer Park	Friendsville	Grantsville	Kitzmiller	Mt. Lake Park	Oakland	Loch Lynn Heights
Winter Weather	X	X	X	X	X	X	X	X
Thunderstorm		X		X		X	X	X
HazMat		X	X			X		X
Riverine Flooding		X	X	X	X	X	X	
Transportation-Fog				X		X		
High Wind				X	X	X	X	
Hurricane			X					
Tornado			X				X	
Dam Failure			X				X	
Soil Movement		X						
Fire/Explosion		X					X	

SEVERE WINTER WEATHER

5.1 WINTER STORM PROFILE:

The typical winter storm in Maryland usually brings heavy snowfall (6+ inches), sleet or freezing rain accompanied by cold temperatures and occasionally high winds. According to the Maryland Hazard Analysis, such a storm usually starts as a mid-latitude depression in the central U.S. and moves north and east between the Appalachians and the east coast. Depending on the speed at which these storms travel and the airmass temperature, heavy amounts of snow, sleet, freezing rain or some combination will be the result. Typically, a winter storm will last for 24 – 48 hours and move out of the area into New England. Then, depending on the controlling air mass, temperatures will continue to be cold and the snow or ice will linger for days or sometimes weeks, or the temperature will warm quickly and the snow or ice will melt in a short time.

5.2 COUNTY PERSPECTIVE:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "High" for winter storm. The county's HMPC agrees with this ranking.

While the above profile is true for much of the state, in Garrett County winter storms occur with much greater frequency and are usually more severe in terms of cold temperature, wind speed and duration. Sometimes, however, the typical mid-latitude winter storm or nor'easter passes far to the east of Garrett County and the area receives only a dusting of snow while communities east of the mountains receive the bulk of precipitation. The type of storm that is most common in Garrett County in winter months is the "Lake Effect" storm which is generated over the Great Lakes and may continue for days as a time with near constant snowfall, high winds, low visibility and cold temperatures. It is not uncommon for parts of Garrett County to receive 8-10 inches of snow overnight during one of these events, while Allegany County, just to the east and downslope from the Plateau, receives no snow at all. As noted in the County Profile, much of the county receives upwards of 80 inches of snow per season, mostly from this type of storm event.

5.3 WINTER STORM HISTORY:

While each winter season brings with it the possibility of major snow and ice storms, some winter storms do stand out for their severity and duration. As noted on Figure 9, recent storms that stand out include the Blizzard of 1993 that occurred over an extended period of time as "Lake Effect" snow piled up over 50 inches over a span of several weeks causing a shut down of most services, businesses, and transportation for several days. In February and March 1994, snowstorms of more than one foot resulted from passing mid-latitude storms. In January 1996, a storm that covered much of the Appalachians with several feet of snow, deposited a similar amount in Garrett County. Following this storm, temperatures rose and with subsequent rainfall,

triggered a devastating flood in the County and in surrounding counties in the Potomac Basin. Most recently, a prolonged mid-latitude storm in February, 2003 resulted in 2-3 feet of snow throughout the Appalachians, including Garrett County.

2012 Status Update: In the month of February 2010, Garrett County experienced the worst series of sustained winter weather in its recorded history. At the end of the month over 110 inches of snow had fallen in the County. As detailed in the table below, several large winter storms hit Garrett County, including a new record snow fall storm amount for the County.

There were a total of 128 snow and ice events reported by the National Climatic Data Center (NCDC) for Garrett County between 1993 and 2011, those events that were substantial (caused infrastructure damage, death, or >6 inches of snow) are listed in the Table 14. In terms of number of occurrences, the NWS, NCDC listed a total of 33 substantial winter storm events affecting Garrett County from 2004-2010. Therefore, Garrett County experiences 4.71 substantial winter storm events per year. According to the data from the NWS, NCDC, there has been a total of almost $81,000 in property damage due to snow activity.

Table 14: Substantial Winter Storm Events

Location	Date	Event Narrative	Property Damage
January 24, 2004	Heavy Snow	A total of 8 to 9 inches of snow fell from the evening of the 23rd into the morning of the 24th.	Not Available
January 26, 2004	Heavy Snow	Snow began the afternoon of the 25th. Oakland reported 6 inches of snow before 7 AM on 26th.	Not Available
January 27, 2004	Heavy Snow	Snow began the afternoon of the 27th. Oakland reported 8 inches by 3 PM; Friendsville 8 inches by 9 PM.	Not Available
January 26 to 27, 2005	Winter Storm	Snow began about 7 AM on 22nd, changed to freezing rain and sleet around noon or so. By 3 PM, the ice was one quarter inch thick. Precipitation changed back to snow for a time, and by 4 AM on 23rd, Oakland reported 7 inches of snow and ice.	$6,000
March 1, 2005	Heavy Snow	Rain and snow began early in the morning of Feb 28, changed to snow by noon. The heaviest part ended by noon Mar 1, but off and on snow showers added to the storm total through Mar 3. By 7 AM on the 1st, Friendsville had 16 inches; by 7 AM Mar 3, Savage River reported a total of 23 inches.	Not Available
October 25, 2005	Heavy Snow	The first snow storm of the season started at the highest elevations around 6 PM EDT on 24th. Six inches of snow accumulated by 4 AM on 25th. Redhouse and Oakland totaled 8 to 12" of snow. Snow was wet and heavy, knocking down numerous trees, which fell on power lines.	$75,000
December 2, 2005	Heavy Snow	Snow started the morning of the 2nd, ended by 8 PM EST. Oakland got 7 inches of snow.	Not Available
December 8 to 9, 2005	Winter Storm	Snow started the evening of the 8th, and mixed with sleet and freezing rain; and ended the morning of the 9th. Oakland received 6 inches of snow, followed by a thick glazing of ice. McHenry received 7 inches of snow.	Not Available
January 25 to 26, 2006	Heavy Snow	Snow began just after midnight on the 25th. The first 6 inches accumulated by 11 PM on 25th. By the time it ended, Accident had 7 inches, McHenry 9.	Not Available
February 12, 2006	Heavy Snow	Snow became heavy during the afternoon, and diminished by 4 AM on the 12th. Garrett County got 6 inches by 2 AM on	Not Available

		12th, and totaled 7 to 9 inches of snow.	
February 26 to 27, 2006	Heavy Snow	Snow began late in the afternoon of the 27th, and ended around 2 AM on 28th. The first six inches accumulated by 10 PM on 27th. By the time it ended, Friendsville accumulated 11 inches of snow; McHenry and Savage River got only 10 inches.	Not Available
February 13 to 14, 2007	Heavy Snow	Six inches of snow fell across Garrett county by mid afternoon with a storm total of 13 inches. 2 to 3 inches of sleet also fell with the snow.	Not Available
February 18 2007	Heavy Snow	Snow accumulations averaged 6 to 8 inches with up to 15 inches in the highest elevations.	Not Available
March 6 to 7, 2007	Heavy Snow	Spotters reported 6 to 10 inches of snow across the highest elevations of Garrett county.	Not Available
December 5, 2007	Heavy Snow	A trained spotter reported 8 inches of snow in Friendsville with over 6 inches in other parts of the county.	Not Available
January 1 to 2, 2008	Heavy Snow	Snowfall ranged from 6 to 12 inches across parts of western Pennsylvania, and along the ridges of northern West Virginia and Garrett county Maryland.	Not Available
February 1, 2008	Winter Storm	Ice accumulations ranged from one quarter to nearly one half inch. Travel was hazardous across the region and some trees and power lines were reported down.	$25,000
February 29, 2008	Heavy Snow	Snowfall amounts were generally 6 to 8 inches in 12 hours.	Not Available
October 28 to 29, 2008	Heavy Snow	Total snowfall over a 36 hour period was near one foot in higher elevations of northern West Virginia and Garrett county Maryland, with 6 to 8 inches of snow in 36 hours across the lake effect counties and ridges of Pennsylvania.	Not Available
November 17 to 18, 2008	Heavy Snow	Storm total snowfall was up to a foot in the highest elevations with a general snow fall of 8 inches.	Not Available
November 20 to 21, 2008	Heavy Snow	Storm total snowfall was from 6 to 8 inches.	Not Available
November 25 to 26, 2008	Heavy Snow	In the higher elevations of northern West Virginia, western Pennsylvania, and Garrett county Maryland snow showers quickly accumulated from 6 to 12 inches with local amounts of 15 inches in the highest elevations.	Not Available
February 19 to 20, 2009	Heavy Snow	6 to 10 inches of snow fell across portions of Preston and Tucker counties in northern West Virginia as well as Garrett county Maryland.	Not Available
February 22 to 23, 2009	Heavy Snow	Total snowfall was from 8 to 12 inches across the region.	Not Available
December 5, 2009	Heavy Snow	An area of low pressure moving off the Carolina coast produced heavy snow in the ridges of northern West Virginia and Garrett county Maryland with storm totals from 6 to 8 inches in 12 hours.	Not Available
December 18 to 19, 2009	Heavy Snow	Total storm accumulations were from one to 2 feet in Preston and Tucker counties in West Virginia with over a foot in Garrett county Maryland.	Not Available
January 1 to 2, 2010	Heavy Snow	Storm totals ranged from 8 to 12 inches across this region.	Not Available
January 5 to 6, 2010	Heavy Snow	Heavy snow fell across Garrett county Maryland as well as the ridges of northern West Virginia and Fayette county in Pennsylvania. Snow showers accumulated 8 to 16 inches across these regions with the larger amounts across higher elevations.	Not Available
January 7 to 8, 2010	Heavy Snow	Snowfall totals ranged from 8 to 14 inches in Garrett County, with lesser amounts across the remainder of western Pennsylvania and northern West Virginia.	Not Available
February 5 to 6, 2010	Heavy Snow	Over 2 feet of snow fell across portions of Garrett county Maryland, and in Preston and Tucker counties in West Virginia, with locally 3 feet in some locations. Storm totals of 37 inches were reported in Friendsville, MD.	Not Available

February 9 to 11, 2010	Heavy Snow	Over 2 feet of snow fell across Garrett, Preston and Tucker counties with 9 to 24 inches of snow in Fayette and Westmoreland counties. Snowfall amounts ranged from 28 inches at Red House, MD. Winds gusting over 35 MPH in the higher elevations caused whiteout conditions at times with visibilities below one quarter mile for an extended period.	Not Available
February 15 to 18, 2010	Heavy Snow	Snow continued in northwest flow behind the storm into the 18th with storm totals in the ridges of northern West Virginia and Garrett county Maryland from 12 to 18 inches.	Not Available
February 25 to 28, 2010	Heavy Snow	Heavy snow fell in the ridges of Garrett county Maryland with storm totals of 12 to 36 inches. Highest reported storm totals were 34 inches at Red House in Garrett county, MD	Not Available

Source: NWS, NCDC (NOAA)

Table 15: Extreme Cold Events

Date	Event Narrative
January 16 to 17, 2009	The lowest low temperatures ranged from 10 below zero at Pittsburgh to 22 below zero at Accident, Maryland. Low temperatures were generally 10 to 15 degrees below zero elsewhere.
December 11, 2009	Arctic air behind a strong storm system brought wind chill values to between 10 and 15 below zero to the higher elevations of western Pennsylvania, northern West Virginia, and Garrett county Maryland.

Source: NWS, NCDC (NOAA)

5.4 MUNICIPAL PERSPECTIVE:

Winter storms in Garrett County are normally widespread and affect the municipalities in much the same way as they do the county in general. There are occasions when the northern towns, Accident, Friendsville and Grantsville, are affected more by "Lake Effect" snow than the other towns, but by and large, the towns are similar to the county in terms of winter storm effects.

5.5 PREVIOUS MITIGATION STRATEGIES:

Garrett County is probably the best equipped county in the State of Maryland when it comes to dealing with winter storms. Both the State Highway Administration and the County Roads Department have dealt with winter storms for many years and are trained and equipped to do so. The county's Emergency Management Agency and the local police, fire and rescue departments are also trained to deal with winter storms and the types of situations that result from these storms. Additionally, the County's Building Code contains snow loading and wind load requirements for new structures as shown on Figure 19. These codes have been modified to reflect the climate of the area and also include a modified requirement for footings and foundations due to the lower frost line in the county.

RIVERINE FLOODING

6. 1 FLOOD PROFILE:

The FEMA definition for flooding is "a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the rapid accumulation of runoff of surface waters from any source." Floods can be caused by the passage of frontal storms, thunderstorms, hurricanes, snow melt or some combination of the above events. According to the Maryland Hazard Analysis, flood damage in the U.S. averages 3.5 billion dollars per year. Between 1983 and 1997 Maryland averaged near $10 million per year in flood damage. Historically, the greatest flood events remain the 1936 floods on the Potomac and the 1972 flood resulting from Hurricane Agnes.

2012 Status Update: There are two different types of flooding that are associated with rivers and streams: flash flooding and riverine flooding. Flash flooding occurs from the combination of rainfall intensity and duration. High rainfall intensity over a short time period is typically the determining factor that can produce a flash flood. Flash floods can be further influenced by local topography, ground water capacity, and soil moisture content. The sudden release of water, such as the breakup of an ice jam or dam, can also cause flash floods.

Flooding is the most common, destructive, and deadly natural disaster in the nation. Almost 90% of Presidential declarations involve flooding. Annual flood damage nationwide averages six billion dollars. In Maryland, flooding is a concern because it is a coastal state with over 12 percent of its surface area in floodplains, and has approximately 8,000 miles of tidal shoreline.

6. 2 COUNTY PERSPECTIVE:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "Medium-High" for flooding. The HMPC agrees with this ranking due to the high risk of potential loss of life and possible severe property damage both in the upper Youghiogheny and upper Potomac Basins.

In Garrett County flooding is normally associated with rapid runoff from excessive rainfall or from rapid snowmelt or some combination of the two. Steep slopes, poor soil condition for retaining moisture and the geologic structure of the County make flooding more likely for a given amount of precipitation than would be the case in an area having mildly sloping terrain and good soil conditions. Man made activities such as timbering, mining, and road building in this terrain can cause increased runoff that makes downstream areas more susceptible to damage from natural occurring events. Dam failure at one of Garrett County's large impoundments would also cause flooding on a potentially much larger scale.

With the above factors in mind, Garrett County is not only susceptible to widespread flooding along major streams and rivers where the 100 year floodplain has been mapped by FEMA, but is also subject to flash flooding along smaller tributaries in the headwaters of its steep sloped drainage basins. Because local climatic conditions can produce large amounts of precipitation at any time of the year, the potential for flooding is not limited to any particular season. Historically, however, most major floods have occurred in the late winter or early spring when heavy snow accumulations are melted in conjunction with heavy rainfall, or in late summer or early fall during the hurricane season.

2012 Status Update: Flood zones are the geographic areas that FEMA has defined according to their varying levels of flood risk. The flood zones for Garrett County are described in Table 16, and shown in Map 1.

Map 1: Flood Zones

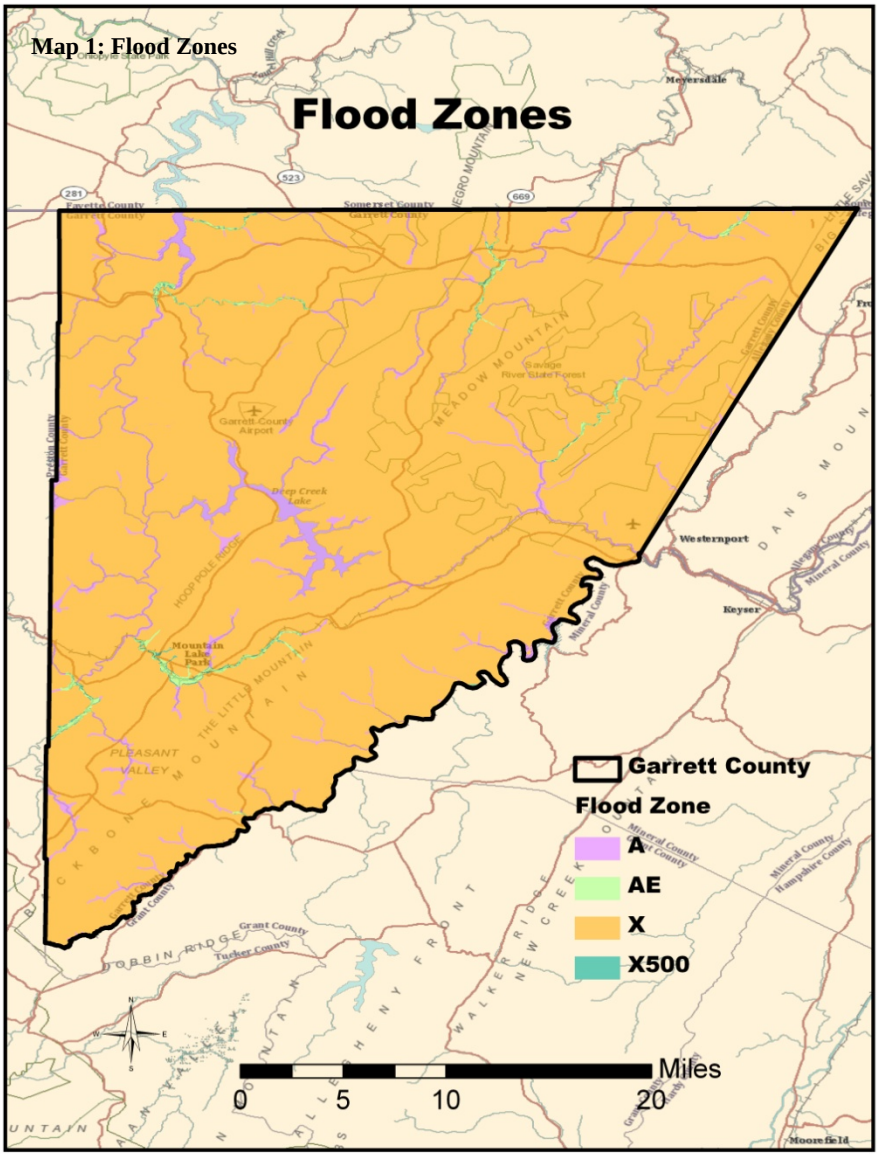


Table 16: Flood Zones in Garrett County

Flood Zone	Description
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30 year mortgage. Because detailed analysis are not preformed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain were base flood elevations are provided. AE zones are now used on the new format FIRMs instead of A1-A30
X	Zone X is the area determined to be outside the 500 year flood and protected by levee from 100 year flood.
X500	Areas of 0.2% annual chance floodplain or the 500 year flood.

Source: FEMA

6. 3 FLOOD HISTORY:

Since 1924, Garrett County has been affected by a number of high water events as shown on Figures 20 and 21, with several events surpassing the 100-year base flood recurrence interval in selected watersheds. Being at the headwaters of two major stream basins, the Potomac and Youghiogheny Rivers, and with each containing a number of significant tributaries, flooding can occur in one part of the county while another basin is relatively unaffected. Examples of major floods since 1924 include the March 1936 snow melt event which affected much of the northern Appalachians, the passage of Hurricane Hazel in the fall of 1954, which affected parts of the Potomac Basin, the passage of Hurricane Agnes in the summer of 1972, which caused widespread flooding throughout the northeast, and the flood of 1985 which resulted from excessive rainfall over a several day period and affected the Potomac Basin, particularly in the South Branch Valley in nearby West Virginia. More recently, flooding from snowmelt accompanied by heavy rain affected both Garrett and Allegany Counties in January 1996. That same year the County was impacted by the passage of Tropical Storm Fran in September.

2012 Status Update: In an effort to update the 4.2.3. Flood History, Table 14 has been added. In terms of number of occurrences, the *National Weather Service, National Climatic Data Center* reported a total of 34 flood events that have occurred in Garrett County between 1998 and 2009. Therefore, Garrett County experiences 2.8 flood events per year. The total amount of reported property damage during this period is $305,000 and according to the data available, most of this property damage was in the form of flooded roads.

Table 17: Flooding Events

Location	Date	Event Narrative	Property Damage
Countywide	April 19, 1998	Heavy rains produced between 2.0 and 3.0 inches of rain across the area. Several small streams briefly came out of their banks and created some minor low-land flooding.	Not Available
Finzel	May 4, 1998	A road was closed due to flooding near Finzel.	Not Available
Countywide	February 18 to 19, 2000	Heavy rains produced road flooding across much of the county. In the Oakland area, water up to one foot deep was reported on some roads.	$20,000
Countywide	July 30, 2000	Strong, slow-moving thunderstorms produced torrential rainfall of up	$25,000

		to 3 inches in just over an hour over portions of Garrett County. In the Keysers Ridge area, minor road flooding was reported on SR 40. Mudslides were also reported along Interstate 68, where nearly half a foot of water and debris covered the roadway. Several other roads in the county reported flooding, including Devils Half Acre Road, which was partially washed away. In the Grantsville area, Mill Camp Road was also flooded.	
Countywide	August 6, 2000	Just north of the Friendsville area, a campground was evacuated due to flooding from Mill Run Creek. More than 20 county roads, mostly in the northern portion of the county, were either damaged or temporarily closed due to flooding. In addition, flooding forced the temporary closure of State Route 42 in the Friendsville area and State Route 135 in Bloomington.	$50,000
Oakland	July 26, 2001	Thunderstorm rains produced minor roadway flooding, including portions of SR 219.	Not Available
Gorman	July 29, 2001	Heavy thunderstorm rains produced over 3 inches of rainfall at several locations across Garrett County. This heavy rain forced creeks out of their banks in the Gorman area, forcing the temporary closure of several roads.	$50,000
New Germany	August 3, 2001	A nearly stationary thunderstorm over Savage River State Forest produced over 2 inches of rainfall in around an hour. This heavy rainfall forced several streams out of their banks in the Merrill area.	Not Available
Countywide	April 28, 2002	Heavy thunderstorm rains forced Buffalo Run Creek out of its banks, producing minor roadway flooding on Buffalo Run Road. Minor street flooding was also reported in the Oakland area.	$5,000
Oakland	May 2, 2002	Heavy thunderstorm rains estimated by radar to be between 2 and 3 inches produced roadway flooding in the Oakland area.	Not Available
Countywide	May 10, 2003	Several roads flooded by overflowing small streams and creeks.	Not Available
McHenry	July 6, 2003	Road flooded	Not Available
Oakland	July 9, 2003	1 to 2 feet of water covered numerous roads near Oakland, including Mason School Rd, Pleasant Rd, and Jasper Valley Rd.	Not Available
Oakland	July 28, 2003	Route 219 flooded, south of Oakland.	Not Available
Crellin	August 9, 2003	Basements flooded along Route 39.	$10,000
Redhouse	August 12, 2003	Flooding on Wilson Carolla Rd near Table Rock.	Not Available
Friendsville	August 27, 2003	Roads flooded.	Not Available
Gorman	September 1, 2003	Route 560 flooded.	Not Available
Countywide	September 19, 2003	After nearly 6 inches of rain, streams overflowed and flooded many roads around Oakland.	Not Available
Grantsville	November 12, 2003	Several roads flooded.	Not Available
Grantsville	November 19, 2003	Route 495 flooded.	Not Available
Not Available	February 6 to 7, 2004	Ice jam break up and movement caused streams to go over their banks. Some roads were flooded.	Not Available
Not Available	March 6, 2004	Floods and mud slides on Route 495 near Grantsville and Route 495 near Swanton.	Not Available
Countywide	August 30, 2004	Post Office flooded in Grantsville. Route 219 flooded in Gortner. Several roads flooded in Oakland.	$5,000
Not Available	September 8 to 9, 2004	Rain from the remnants of Hurricane Frances began early on the 8th and ended early on the 9th. By 7 PM EDT on 8th, Casselman River went out of its banks, near Grantsville.	Not Available
Not Available	September 17 to 18, 2004	A few roads were flooded near Grantsville.	Not Available
Redhouse	July 13, 2005	20 feet of water covered roads.	$20,000
McHenry	April 22, 2006	Several roads closed by flooding and mud slides in Mc Henry and Oakland.	$10,000
Grantsville	June 26, 2006	Roads flooded.	Not Available
McHenry	December 13, 2007	County official reported multiple streams and creeks out of their banks with numerous roads closed due to flooding.	$10,000

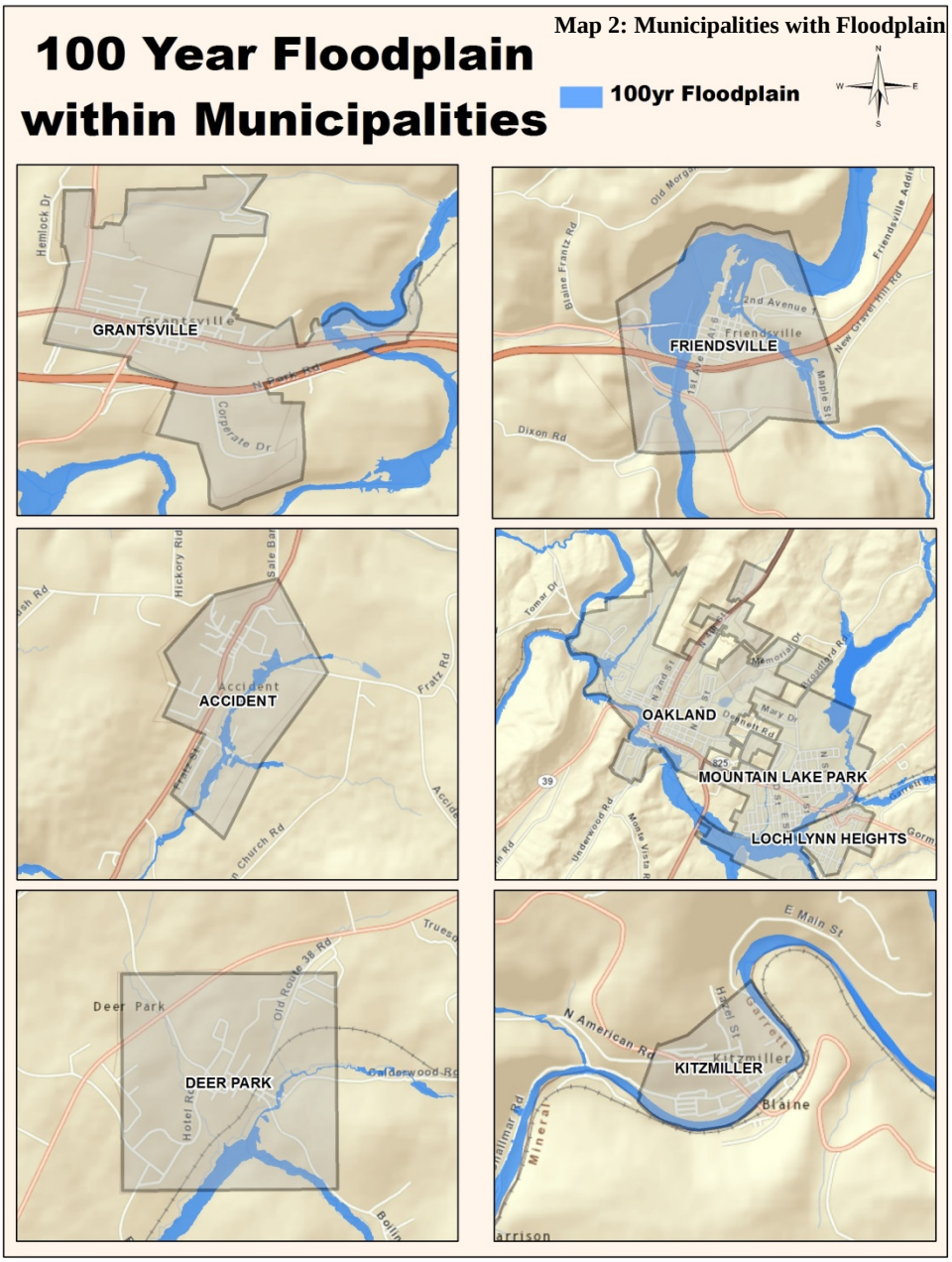
Grantsville	May 31, 2008	Emergency management reported flooding along National Pike, Springs Rd, and River Rd.	$25,000
Sand Spring	August 2, 2008	Emergency management reported a rock slide on SR 42 near Sand Spring due to heavy rain. Basement flooding was also reported in Accident.	$25,000
Blooming Rose	May 4, 2009	A trained spotter reported Laurel Run out of banks and flooding roads near Friendsville. Rain amounts over a 24 to 36 hour period were from 2 to 3 inches on top of soils that were already saturated.	$25,000
Friendsville	June 17 to 18, 2009	Law enforcement reported flooding along Mill Run in Friendsville.	$25,000

Source: NWS, NCDC (NOAA)

6. 4 MUNICIPAL PERSPECTIVE:

Of the eight municipalities in Garrett County, three are located within the floodplain of major streams, and five are located along the headwaters of streams but have floodplain areas within the town limits. Kitzmiller, located on the Potomac River upstream of the Bloomington Dam, has suffered flooding during many of the flood events in Garrett County that have affected the Potomac Basin. Friendsville, located on the Youghiogheny River upstream of the Youghiogheny Reservoir, has also suffered flooding during major events in that basin. Oakland, Mountain Lake Park, Loch Lynn Heights, and Deer Park have sustained limited damage from flooding in the Little Youghiogheny watershed. These four communities are also susceptible to stormwater damage from intense localized storms that produce rapid runoff. New urban development upslope of existing urban areas which have inadequate stormwater facilities can cause runoff problems as these communities expand. The final two communities, Grantsville is situated on higher ground outside mapped floodplains, but is still susceptible to localized flooding from intense storms and from stormwater runoff.

Map 2: Municipalities with Floodplain



6. 5 PREVIOUS MITIGATION MEASURES:

As mentioned in the Hazard Mitigation section, Garrett County has purchased a number of homes in the floodplain areas of both the Potomac River and the Youghiogheny River in the communities of Shallmar, Crellin and Oakland. In addition, the County has worked with the Soil Conservation Service (now the Natural Resources Conservation Service) to construct 6 flood control dams in the upper Youghiogheny basin near Oakland and Mountain Lake Park. The County has also elevated several homes in Crellin and has constructed a flood wall around the Friendsville water treatment plant. More recently the county has installed stream level sensors at

Crellin, Kitzmiller and Bloomington. These sensors will be made part of the county's Hazard Warning System that was recently installed as part of a dam safety initiative.

The County also has adopted a Floodplain Ordinance which establishes criteria for new development in the floodplain of mapped streams and a Stormwater Management Ordinance which prescribes controls for runoff in newly developing areas. These measures are noted on Figure 19.

2012 Status Update: Frequently flooded roads in Garrett County were ranked by the HMPC and are shown in Table 19.

Table 18: Flooded Roadways in Garrett County

Road	Maintained By	Municipality	Ranking
Industrial Park Drive (just east of Fratz Street)	Municipal	Accident	M
Allegheny Drive (from G to Oak Street)	Municipal	Mountain Lake Park	M
N Street (just north of Baltimore Street)	Municipal	Mountain Lake Park	M
Deer Park Avenue (between Dennett Road and Alexander Lane)	Municipal	Mountain Lake Park	M
West Liberty Street (at Bradley Run)	Municipal	Oakland	**HIGH**
Willow Lane (between Fairway and Woodland Drive)	Municipal	Oakland	M
Blue Ribbon Road (at Clark Creek)	County	N/A	M
Silver Knob Road (at Youghiogheny River)	County	N/A	M
Smouse Road (approximately 10 yds southeast of Pleasant Valley Road)	County	N/A	M
Pleasant Valley Road (at Trout Run Creek)	County	N/A	M
Jasper Riley Road (at Trout Run Creek)	County	N/A	M
Lynndale Road (at Trout Run Creek)	County	N/A	M
Bethlehem Road (at Laurel Creek Run)	County	N/A	M
Wilson Corona Road (at Shields Run Creek)	County	N/A	L
Althouse Hill Road (along N. Branch Potomac River)	County	N/A	M
North Hill Road (at Wolfden Run Creek)	County	N/A	**HIGH**
Shallmar Road (along N. Branch Potomac River)	County	N/A	**HIGH**
Underwood Road (at Youghiogheny River)	County	N/A	**HIGH**

King Wildersen Road (at Glade Run Creek)	County	N/A	L
Fish Hatchery Road	County	N/A	M
Dung Hill Road	County	N/A	L
Cranesville Road	County	N/A	M
Sang Run Road	County	N/A	M
Glade Road	County	N/A	L
Buffalo Run Road	County	N/A	L
Aiken Miller Road	County	N/A	L

THUNDERSTORM-LIGHTNING

7. 1 THUNDERSTORM PROFILE:

Thunderstorms are usually high intensity storms of short duration originating in a warm moist air mass that either is forced to rise by mountainous terrain or by colliding with a cooler dense air mass. The process of convection in the atmosphere brings about the release of moisture from the warm air mass as it rises, cools and condenses. This condensation proceeds until most of the moisture in the air mass has been precipitated. Since the motion of the air is nearly vertical, and attains high velocities, rainfall is intense and generally concentrated over a small area in a short time frame. Thunderstorms can be 10-15 miles in diameter and normally last 20 to 30 minutes. Lightning, high winds, and occasionally tornadoes are associated with thunderstorms.

When wind speeds exceed 58 mph, thunderstorms are considered severe. According to the Maryland Hazard Analysis, a downburst or sudden descent of cold air during a severe thunderstorm can result in straight line winds up to 134 mph. One of the most extreme hazards from thunderstorms is a lightning strike. Lightning has been known to strike up to 6-10 miles from the storm in an area of clear sky. It is estimated that more than 30,000,000 points on the ground in the continental 48 states are hit by lightning in a single year.

7. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "Low" for thunderstorms. The HMPC ranks the risk higher, at "Medium-High" based on local experience with flash flooding; thunderstorms are ranked as a high risk.

Garrett County is affected by thunderstorm activity both by the interaction of warm and cool air masses and by the lifting of warm air as it passes over the Appalachian Plateau. Thunderstorms are more common in the spring when frontal zones are passing over the county from west to east and during the summer months when warm, moist air is lifted over the Plateau from the south and west. Intense thunderstorms over the steep terrain in Garrett County result in rapid runoff, particularly in the headwaters of small stream basins. The Potomac, Savage, and Youghiogheny basins are particularly steep and have high runoff rates, particularly where strip mining or timber operations are underway. In urban areas runoff from stormwater is a problem for downstream property owners when new construction occurs upslope from existing developed areas that have inadequate stormwater systems.

2012 Status Update: Between 1956 and 2009, the *National Weather Service, National Climatic Data Center* reported 66 thunderstorms that have occurred in Garrett County. During the 2012 update process, thunderstorm events with reported property damage are included in Table 19.

Table 19: Thunderstorm Events

Location	Date	Event Narrative	Property Damage
Friendsville	May 10, 1995	Trees downed by thunderstorm winds.	$2,000
Countywide	July 15, 1995	Thunderstorm winds downed numerous branches and a few trees across the county.	$1,000
Countywide	August 6, 1995	A few trees were downed by thunderstorm winds throughout the county.	$1,000
Swanton	June 11, 1996	Thunderstorm winds downed trees in Swanton.	$2,000
Bloomington	June 11, 1996	Thunderstorm winds downed trees in Bloomington.	$2,000
Redhouse	July 18, 1997	Thunderstorm winds downed large trees.	$2,000
Oakland	July 28, 1997	A tree fell onto a car in Oakland. Numerous trees were downed near Deep Creek Lake and throughout the county.	$20,000
Oakland	August 17, 1997	Thunderstorm winds downed some trees.	$2,000
Grantsville	June 2, 1998	Thunderstorm winds blew down several large trees.	$5,000
Countywide	June 16, 1998	Thunderstorm winds blew down numerous large trees across the county.	$25,000
Friendsville	June 26, 1998	Thunderstorm winds blew several large trees down.	$5,000
Friendsville	September 7, 1998	Thunderstorm winds downed several trees onto Friendsville Road.	$5,000
Kitzmiller	July 17, 1999	Thunderstorm winds downed several trees and power lines.	$3,000
Oakland	July 31, 1999	Thunderstorm winds downed several trees and power lines.	$3,000
Grantsville	May 13, 2000	Thunderstorm winds downed several trees.	$5,000
McHenry	June 2, 2000	Thunderstorm winds downed a few large trees.	$2,000
Oakland	June 2, 2000	Thunderstorm winds downed several trees.	$5,000
Kitzmiller	June 2, 2000	Thunderstorm winds downed a few large trees.	$2,000
Friendsville	June 15, 2000	Thunderstorm winds downed a few trees and power lines.	$3,000
Countywide	November 9, 2000	Thunderstorm winds downed numerous trees across the county.	$10,000
Oakland	July 1, 2001	Thunderstorm winds downed a few trees.	$2,000
Accident	August 28, 2001	Thunderstorm winds downed several large trees.	$5,000
Countywide	March 9, 2002	As showers formed during the day, strong winds were occasionally brought down to the surface. This combination of strong gradient winds and severe thunderstorm winds produced widespread damage across the area, mostly in the form of downed trees and power lines.	$10,000
McHenry	May 31, 2002	Thunderstorm winds downed several large trees and power lines in the Deep Creek Lake area.	$5,000
Altamont	August 1, 2002	Thunderstorm winds downed several trees.	$5,000
Oakland	August 3, 2002	Thunderstorm winds downed numerous trees in and near the Oakland area.	$10,000
Thayerville	July 8, 2003	Large tree down in Deep Creek Park.	$1,000
McHenry	July 12, 2003	Trees down.	$1,000
Oakland	July 14, 2003	Trees and power lines blown down.	$1,000
Friendsville	August 3, 2003	Many trees down.	$3,000
Oakland	August 26, 2003	Trees and power lines blown down by wind.	$2,000
McHenry	May 15, 2004	Trees snapped off and uprooted along Gap Run Rd. Two sheds damaged.	$15,000
Oakland	May 21, 2004	72 mph wind gust measured. Numerous large trees down.	$10,000
Oakland	August 4, 2004	Trees and power lines blown down onto Rte 219.	$2,000
Oakland	August 20, 2004	Large tree blown down.	$2,000
Hoyes Run	August 9, 2007	Emergency management reported trees down south of Friendsville.	$10,000
Blooming Rose	February 6, 2008	Emergency management reported numerous trees and power lines down across the northern part of the county from near Friendsville to Accident.	$25,000
Neeler Glade	May 31, 2008	An NWS storm survey found a microburst occurred about 5 miles southeast of Friendsville. The path of damage was confined to several hundred yards off of White Rock Rd. The width of damage was 200 to 300 yards. Numerous trees were toppled or snapped.	$10,000
McHenry	June 10, 2008	The public reported trees down in McHenry.	$10,000
Friendsville	June 29, 2008	Emergency management reported large trees down in Friendsville.	$25,000
Kitzmiller	June 17, 2009	The Fire Department reported large trees and power lines down in Kitzmiller.	$50,000
Bittinger	June 24, 2010	Fire Rescue reported trees down blockong a driveway in the town of Bittinger.	$25,000
Friendsville	July 25, 2010	Emergency management reported trees down north of Friendsville.	$25,000

Gortner	July 25, 2010	The public reported trees down and a small metal storage shed destroyed south of Oakland.	$35,000
Friendsville	August 4, 2010	Emergency management reported numerous trees, power poles and power lines down in Friendsville.	$75,000
Accident	August 4, 2010	Emergency management reported numerous trees, power poles and power lines down near Accident.	$75,000
Thayerville	August 4, 2010	Emergency management reported numerous trees, power poles and power lines down in and around Deep Creek Lake Park.	$100,000

Source: NWS, NCDC (NOAA)

2012 Status Update: In terms of number of occurrences, the *National Weather Service, National Climatic Data Center* reported a total of 66 thunderstorms that have occurred in Garrett County between 1956 and 2010. Therefore, Garrett County experiences 1.2 thunderstorm events per year. The total amount of property damage reported between 1995 and 2010 was $705,000, with the majority of the damage being produced by high winds.

7. 3 MUNICIPAL PERSPECTIVE:

The municipalities in Garrett County face the same threat from thunderstorms as the county. In some cases, in older developed areas, inadequate stormwater management contributes to damage from flash flooding in low lying residential areas or in older residential areas downslope from new construction.

2012 Status Update: Low lying and older residential areas downslope of new construction will continue to be more prone to flash flooding in the County. As shown on Table 19, the areas in the County affected by thunderstorms are rather uniform throughout the region.

7. 4 PREVIOUS MITIGATION MEASURES:

As mentioned in the Riverine Flooding Profile, the county has purchased several homes in floodplain areas as shown under 'flood acquisitions' on Figure 18. These purchases were more the result of chronic stream flooding from large-scale rain or snow melt, rather than from thunderstorm events. The County does, however enforce its Floodplain Ordinance in mapped floodplain areas prone to thunderstorm runoff and requires a setback from unmapped streams. In addition, the Stormwater Management Ordinance requires storage and release of runoff at predetermined rates in newly developing areas.

MAJOR TRANSPORTATION-FOG

8. 1 TRANSPORTATION-FOG PROFILE:

In his Physical Geography Text, Arthur Strahler defines fog as a form of stratus cloud lying close to the earth's surface. The two principal types are radiation and advection fog. Radiation fog commonly occurs at night during a temperature inversion when the air temperature at the base level falls below the dew point. Advection fog results from the movement of warm, moist air over a cold or snow-covered surface. While losing heat to the ground, the lower layers of air undergo a drop in temperature below the dew point and condensation sets in. Some of the most dense fog conditions occur over oceans where air from a warm current blows across the cold surface of adjacent cold currents.

8. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: The 2003 HMPC ranked major transportation-fog as "Medium-High". The 2011 HMPC agrees with this ranking.

As shown on Figure 8, Garrett County lies in the area of the eastern U. S. having the greatest number of dense fog days per year. According to the Department of Agriculture's "Climate and Man", most of the Appalachian Plateau has 30 or more dense fog days annually, but the Plateau area from central West Virginia to southern Pennsylvania has more than 50 dense fog days annually. As noted in the County Profile, Garrett County is prone to dense fog conditions in every season, but particularly so during winter and spring months when temperature inversions are common. This condition is more pronounced when the ground is snow covered and warm air flows into the county from the west and south.

This phenomenon produces poor visibility, particularly along I-68 and Rt. 135, the major east-west highways, and Rts. 219 and 495, the primary north-south highways. If dense fog occurs on a weekend when out of area drivers who are not familiar with this type of driving condition are traveling through the county, deteriorating visibility becomes deadly. Unlike most winter storms or heavy rainfall events there is little or no warning before visibility becomes severely limited.

As noted above, dense fog occurs more than 50 times a year on average in Garrett County. While many of these events have resulted in vehicle accidents, the most well known recent event occurred in June 2003, when a very dense fog set in on Big Savage Mountain between Frostburg and the Finzel area along I-68. Before officials could provide a warning or close the highway, two multiple chain reaction accidents occurred, involving more than 70 vehicles and causing 2 deaths.

Source: I-68 Fog Detection System Planning Report

2012 Status Update: The Coordinated Highways Action Response Team (CHART) is a joint effort of the Maryland Department of Transportation, Maryland Transportation Authority and the Maryland State Police, in cooperation with other federal, state and local agencies. CHART's mission is to improve "real-time" operations of Maryland's highway system through a series of cameras placed on major highways throughout the State of Maryland.

The CHART system is used by State Highway Administration (SHA) to inform the public about local traffic information, winter storm information, visibility, and precipitation for a particular area. This system is used to help inform drivers of poor visibility and other weather related problems that may be occurring on major road systems within the County. Two such weather/camera systems are located on I-68 in Garrett County; one is located on the Big Savage Mountain area, and the other is on the Keysers Ridge area.

8. 3 MUNICIPAL PERSPECTIVE:

Like winter storms, there is little difference in the way fog affects municipalities in Garrett County. Fortunately, vehicles are normally traveling slower inside corporate boundaries and existing landmarks do provide some perspective, particularly where lights are on.

2012 Status Update: The *I-68 Fog Detection System Planning Report* was released shortly after the 2003 I-68 incident that occurred. This report stated that there are "three locations on I-68 between Frostburg and the West Virginia state line where fog is a persistent problem: Big Savage, Keysers Ridge, and Friendsville." Therefore, along with Friendsville due to its higher occurrence of fog, the municipalities of Grantsville and Accident also have a greater threat of fog due to their short distance to Keysers Ridge.

8. 4 PREVIOUS MITIGATION MEASURES:

The State Highway Administration has installed digital warning signs at a number of locations in and near the most severe fog areas along I-68 as one method to warn drivers to slow down in poor driving conditions.

2012 Status Update: The *I-68 Fog Detection System Planning Report* recommended a system that makes use of the existing infrastructure already located in the County by using the CHART systems located at Kesyers Ridge and Big Savage Mountain and to add another location at the Friendsville area. Each of these sites would communicate to the District 6 Server via dial-up telephone and control two or more warning signs via spread spectrum radio, which are already located throughout the County on I-68. Although this recommendation has not been completed, this may be an option worth exploring again sometime in the County's future in order to prevent an event such as the one that occurred in 2003.

Source: I-68 Fog Detection System Planning Report

HIGH WINDS

9. 1 HIGH WIND PROFILE:

Wind is essentially the movement of air in response to pressure differences. A pressure gradient force tends to start the flow of air from higher to lower pressure. The stronger the pressure gradient, the stronger the wind. Wind speeds are graded on the Beaufort Scale from 0 (calm) to 12 (hurricane-75 mph). Normally, damage to trees occurs above number 8 (gale force-39 mph on the Beaufort Scale), while structural damage to buildings starts at number 9 (47 mph), with considerable damage to buildings and trees being uprooted at number 10 (55mph). Winds above this speed are seldom experienced inland with the exception of the passage of tornadoes and hurricanes.

9. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "Medium-High" for high winds. The HMPC agrees with this ranking.

Garrett County is situated in the lower part of the westerly wind belt which extends from latitude 35 to latitude 60. Over time, prevailing winds in Garrett County are from the southwest in summer and the northwest in winter. This northwest wind flow in winter has a strong influence on the "Lake Effect" precipitation that brings snow to Garrett County while areas to the east receive little or no precipitation. In winter these winds are very strong and approach gale force on the Beaufort Scale on numerous days from November through April.

In addition to strong winds associated with winter "Lake Effect" storms, Garrett County is also subject to high winds associated with thunderstorms and the occasional hurricane or tornado that passes through or near the county. Because of the prevalence of high wind conditions, the local Planning Committee has ranked high winds as a high risk in Garrett County.

2012 Status Update: High wind events may occur within the County independent of thunderstorms. High winds may accompany strong low pressure systems, cold fronts, remnants of hurricanes, and other meteorological events. Table 20 lists high wind events chronologically in order to assess the history of high wind events that have occurred throughout Garrett County. High wind events as characterized by the *NWS* are winds that are over 50 knots (57.5 mph).

In terms of number of occurrences, the NWS, NCDC listed a total of 24 high wind events affecting Garrett County from 1995-2009. Therefore, Garrett County experiences 1.6 high wind events per year. Also, according to the data from the NWS, NCDC, there has been a total of almost $282,000 in property damage due to high wind activity, or an average of $11,750 per high wind event.

Table 20: High Wind Events

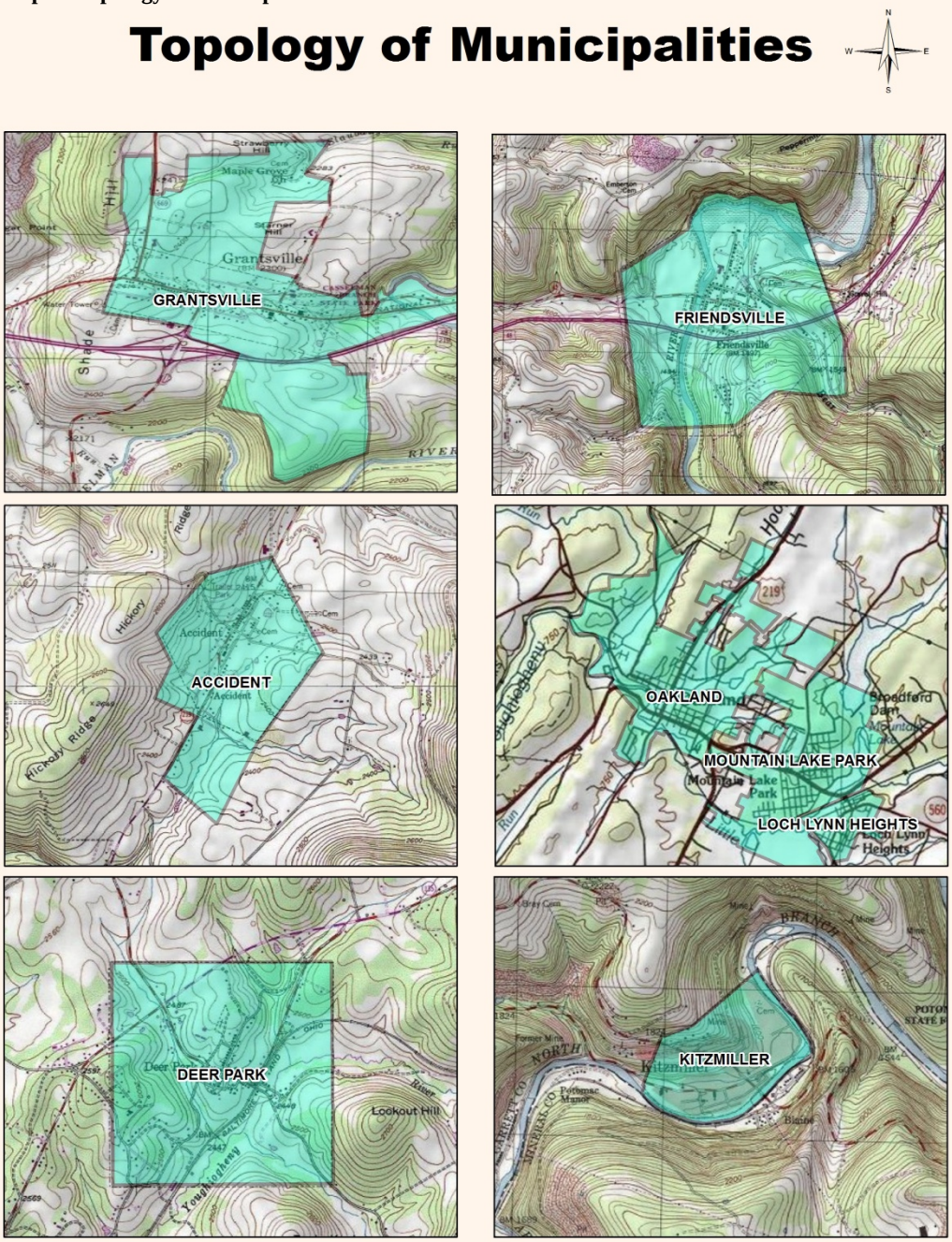
Location	Date	Event Narrative	Property Damage
Bittinger	October 5, 1995	A large tree and large limbs along Route 495 near Bittinger were downed by high winds associated with the remnants of what was once Hurricane Opal	$1,000
McHenry	January 27, 1996	A wind gust to 64 miles an hour was measured at McHenry in Garrett County.	Not Available
Oakland	September 6, 1996	Numerous trees and power lines were downed by high winds associated with the remnants of Hurricane Fran throughout Oakland.	$8,000
Countywide	February 27, 1996	A strong, fast moving cold front with strong winds ahead and behind it, moved through the western panhandle of Maryland and downed some utility lines in the county and fanned some brush fires near Oakland.	$3,000
Countywide	February 17, 1998	A few trees, large limbs and power lines were downed by high winds throughout the county. Strong east to southeast winds, in advance of an intensifying storm system moving northeast up the Ohio Valley, caused some wind damage. Much of the damage was confined to the foothills and ridges of the Allegheny Plateau.	$4,000
Friendsville	January 18, 1999	A front was accompanied by high winds estimated at over 60 MPH, along with a mix of rain, sleet and snow, as it passed across the area. These high winds produced some minor damage across the area as several reports of downed trees were received from around the Friendsville area.	$5,000
Countywide	December 12, 2000	High winds estimated at 65 MPH downed numerous trees and power lines across the county. A strengthening area of low pressure and associated cold front swept across the area during the overnight hours, bringing a several-hour period of high winds to western Maryland.	$25,000
Oakland	December 17, 2000	An intensifying area of low pressure moving across the area produced several wind gusts estimated at 60 MPH. A few trees and several large limbs were downed by the high winds in and around the Oakland area.	$5,000
Countywide	February 10, 2001	Several large trees and power lines were downed by the high wind, with the majority of the damage occurring along the higher elevations of the county.	$5,000
Countywide	February 25, 2001	Several large trees and power lines were downed by the high wind, with the majority of the damage occurring along the higher elevations of the county.	$5,000
Oakland	December 14, 2001	High winds associated with a deep area of low pressure passing over the region downed numerous trees and power lines across the Oakland area.	$5,000
Countywide	February 1, 2002	High winds from the northwest following a cold frontal passage downed numerous trees and power lines across the county. Locations most affected were Oakland, Savage River State Park, and the Deep Creek Lake area.	$10,000
Countywide	March 9, 2002	A strong cold front across western Maryland during the late afternoon/early evening hours of the 9th. This intensifying low produced a large area of strong low-level winds, both ahead of and behind the cold front, with winds between 70 - 80 MPH.	$10,000
Grantsville	February 4, 2003	Trees and power lines down in Grantsville.	Not Available
Countywide	September 18, 2003	Remnants of Hurricane Isabel caused wind gusts in the neighborhood of 60 mph, knocking down trees and utility lines.	$5,000
Countywide	November 13, 2003	Numerous large trees and power lines down in Grantsville and Kitzmiller. Large sign blown down along Route 68 near Kitzmiller.	$8,000
Countywide	December 1, 2004	About 25 trees blown down county-wide. Skywarn spotter in McHenry measured 68 mph (59 knots) at 550 AM.	$15,000
Countywide	December 23, 2004	Roof blown off in Oakland. Several trees downed across county.	$8,000
Oakland	October 28, 2006	Trees and power lines down about 5 miles south of Oakland.	Not Available
Countywide	December 1, 2006	The Public reported trees down countywide due to high winds	$20,000
McHenry	December 17, 2007	Law enforcement reported trees down south of Mc Henry. Law enforcement reported trees down in the Oakland area.	$15,000
Countywide	January 30, 2008	The strong pressure gradient along and behind the front produced wind gusts near 60 MPH in many locations across western Pennsylvania, northern West Virginia, eastern Ohio, and Garrett county Maryland.	$50,000
Countywide	February 12, 2009	High winds gusting over 60 MPH behind the front in a strong pressure gradient produced wind damage across the entire region into midday on the 12th.	$75,000
Countywide	December 9, 2009	Sustained winds were from 30 to 40 MPH with gusts over 60 MPH.	Not Available

Source: NWS, NCDC (NOAA)

9. 3 MUNICIPAL PERSPECTIVE:

As noted in other hazard profiles, municipalities are subject to the same winds as the remainder of the county. However, Grantsville and Accident are more exposed to wind due to their location on high, nearly level land, whereas Friendsville and Kitzmiller are more protected from high winds due to their valley setting.

Map 3: Topology of Municipalities



9. 4 PREVIOUS MITIGATION MEASURES:

Since high winds are usually associated with another event, such as winter storms, thunderstorms, tornadoes and hurricanes, most of the measures associated with those events apply to high winds as well. The county's Building Code contains provisions for wind loading for new structures and tying down of mobile homes as shown on Figure 19.

TORNADO

10. 1 TORNADO PROFILE:

A tornado is defined by Strahler in his Physical Geography Text as a violently rotating column of air extending from a thunderstorm to the ground. Normally thunderstorms and associated tornadoes develop in warm, moist air in advance of strong eastward moving cold fronts in late winter and early spring. Tornadoes can also occur along a "dryline" which separates very warm, moist air to the east from hot, dry air to the west. Both of these scenarios are common in the Central Plains. Another way that tornadoes can be created occurs when warm moist air flows upslope. Under the right temperature and moisture conditions, intense thunderstorms can produce tornadoes in higher terrain.

Tornadoes can occur in every state, although the mid-west states have by far the greatest potential for this type of event. According to the Maryland Hazard Analysis, the state had 210 tornado touchdowns reported between 1950 and 1998. The most recent tornado outbreak occurred in the LaPlata vicinity in 2002.

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "High" for tornado. The HMPC ranks the risk lower, at "Medium" due to low frequency and intensity of tornado events in the county.

Table 21: Fujita Scale

Fujita Scale			Enhanced Fujita Scale
F Number	Fastest ¼ mile (mph)	3 Second Gust (mph)	3 Second Gust (mph)
F0	<73	45-78	65-85
F1	73-112	79-117	86-110
F2	113-157	118-161	111-135
F3	158-206	162-209	136-165
F4	207-260	210-261	166-200
F5	261-318	262-317	Over 200

Source: NOAA

10. 2 COUNTY PERSPECTIVE AND HISTORY:

Even though Garrett County is located in mountainous terrain it still has been subjected to violent storms including tornadoes. Between 1950 and 1998 there were 8 reported touchdowns of tornadoes in Garrett County. Two of these events were rated Class F-3 and the remainder were F-1 or F-2. In 1980 Garrett County suffered a string of tornadoes which caused damage to a number of homes in Crellin. In 1998, two outbreaks of tornado activity occurred at the border of Garrett County and Somerset County, Pennsylvania, just to the north. Both of these events

were related to thunderstorms developing from passing cold fronts. The combination of warm moist air flowing up slope from the southwest and a cold front passing from the north and west created ideal conditions for tornado activity. One of these tornadoes was rated F-4 after it crossed the county line and hit Frostburg in Allegany County.

2012 Status Update: Local National Weather Service (NWS) offices are responsible for issuing tornado warnings. Tornado warnings indicate that a tornado has been spotted or that Doppler radar detects a thunderstorm circulation capable of spawning a tornado. Nationally, tornado season is from March through August. According to the *2008 Maryland Hazard Mitigation Plan*, July is the peak month for activity in Maryland.

Between 1954 and 2008 there have been a total of ten reported tornados in Garrett County and, unexpectedly, zero funnel clouds have been reported within the same time frame. In terms of number of occurrences, the NWS, NCDC listed a total of 10 tornado events affecting Garrett County from 1954-2008. Therefore, Garrett County experiences 0.18 tornado events per year. Also, according to the information from the NWS, NCDC, there has been a total of almost $2.6 million in property damage due to tornado activity, or an average of $258,250 per tornado event. It should also be noted that the 1967 tornado resulted in one death, the 1954 tornado resulted in eight injuries, and the 1980 tornado produced four injuries in the County.

Table 22: Tornado Events

Location	Date	Event Narrative	Magnitude	Width	Property Damage
Garrett County (Unknown)	July 14, 1954	None Reported	F1	880 Yards	$25,000
Garrett County (Unknown)	May 19, 1967	None Reported	F3	33 Yards	$25,000
Garrett County (Unknown)	July 13, 1971	None Reported	F1	400 Yards	$250,000
Garrett County (Unknown)	June 28, 1973	None Reported	F1	33 Yards	$2,500
Garrett County (Unknown)	June 20, 1977	None Reported	F2	50 Yards	$25,000
Garrett County (Unknown)	June 3, 1980	None Reported	F3	117 Yards	$250,000
Finzel	June 2, 1998	An F2 tornado passed through the town of Finzel in extreme northeast Garrett County. Several buildings were destroyed, including a small house and cinder-block garage. This tornado actually began in extreme eastern Fayette County, PA and was on the ground for 33 miles before ending in Allegany County, MD.	F2	700 Yards	$500,000
Friendsville	June 2, 1998	Damage included a completely destroyed dairy barn, two completely destroyed house trailers, and at least 21 other structures heavily damaged, many with	F2	300 Yards	$1 Million

		roofs partially or completely peeled off. Several cows were killed, with one cow thrown through the air over 100 yards.			
Grantsville	July 10, 2001	The tornado moved southeast along a sporadic 4-mile long path to around 5 « miles east of Grantsville. Maximum winds along the 40-yard wide path were estimated to be around 70 MPH. Damage was minimal and consisted of several trees and large branches.	F0	40 Yards	$5,000
Sand Spring	July 30, 2008	The storm caused EF0 damage in Garrett county with maximum winds estimated at 85 MPH, a path length of nearly four and one quarter miles, and a maximum width of 150 yards. Damage in Friendsville was to 12 homes and 2 businesses with minor roof damage, 2 mobile homes with major damage, and 1 small trailer destroyed. Damage in Accident was to 12 homes with minor roof damage, and 2 homes with major damage.	F0	150 Yards	$500,000

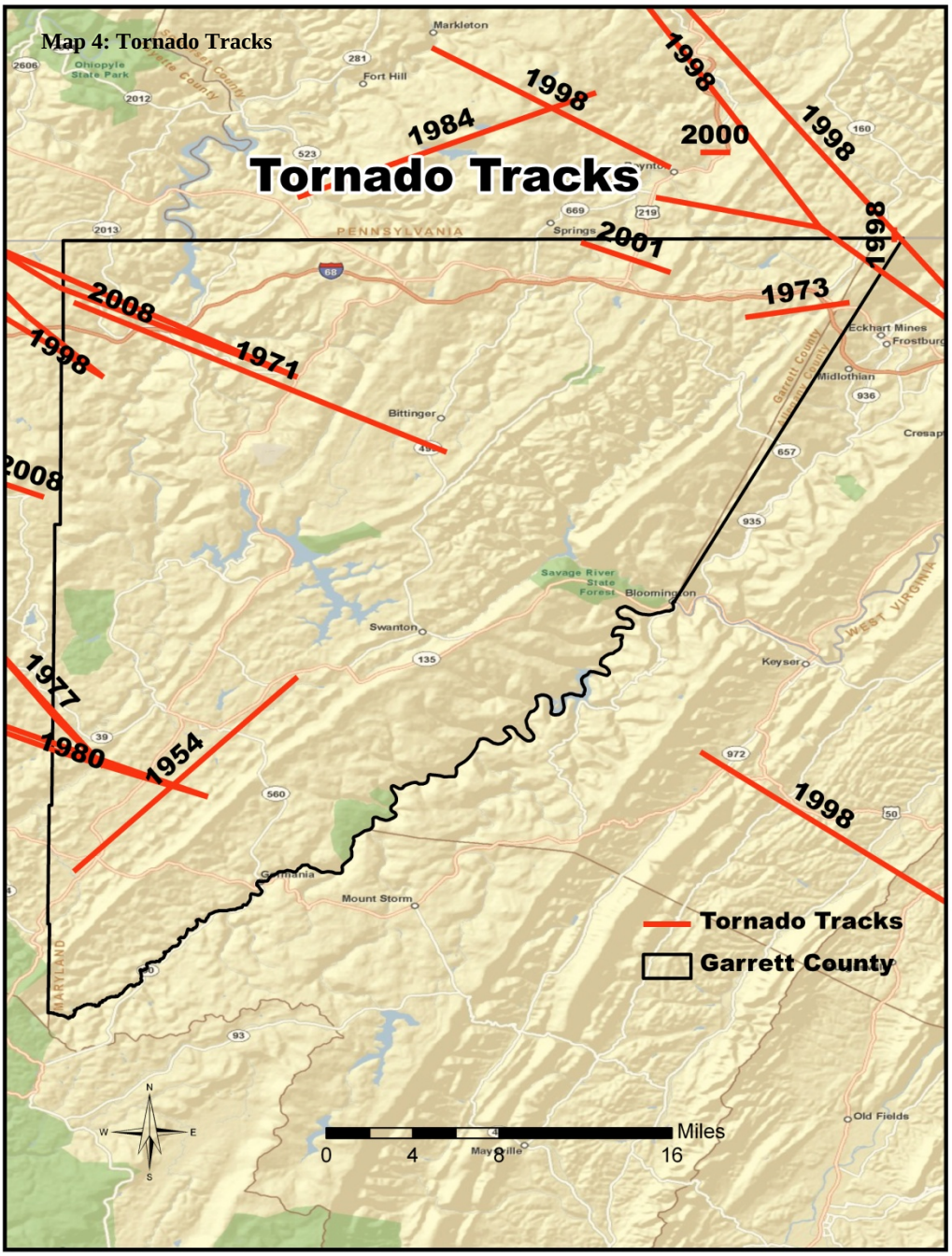
Source: NOAA

10. 3 MUNICIPAL PERSPECTIVE:

As is the case with most other weather related events, municipalities in Garrett County share the same concerns as the county. Two municipalities, Grantsville and Accident, are located on high, relatively flat land, and are probably more susceptible to wind events than municipalities like Friendsville and Kitzmiller, which are located in a valley setting affording some protection by surrounding mountains.

10. 4 PREVIOUS MITIGATION MEASURES:

While mitigating tornado damage is difficult, Garrett County does have a state mandated Building Code which includes wind loading requirements and tie-down requirements for mobile homes as shown on Figure 19. Additionally, the county's hazard warning system can be activated following notification of impending severe weather by NOAA.



Map 4: Tornado Tracks

SOIL MOVEMENT

11. 1 SOIL MOVEMENT PROFILE:

The most common types of soil movement are the landslide and the slump. According to Strahler's Physical Geography, a landslide typically involves earth and rock that have been disturbed by some other action or loosened by moisture and slide downslope. A slump is similar, but involves the slippage of a mass of earth and rock along a rotational axis (slip plane). Usually this mass rotates backward as it slips downslope. Many small slumps are related to slope disturbance of horizontal or folded rock units during road construction or mining activities. The disturbance of colluvial materials having poor soil characteristics also results in the downslope movement of these materials. In this document soil movement is used interchangeably with slope failure.

2012 Status Update: Another common type of soil movement process in Maryland is the soil movement process that is created from expansive soils. Expansive soils have a very slow infiltration rate (high runoff potential) when wet. These soils primarily consist of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission, creating runoff.

11. 2 COUNTY PERSPECTIVE:

2012 Status Update: The 2003 HMPC ranked soil movement as "Medium-High". The 2011 HMPC ranked the risk lower, at "Medium".

As noted in the County Profile, Garrett County is underlain by layered sedimentary rocks that have been folded moderately. These rock units alternate between sandstone, shale and limestone. When exposed on steep slopes, as shown on Figure 10, normally the sandstone forms the cap rock at the top of the slope with shale or limestone lying underneath. When these weaker rocks are disturbed, the sandstone eventually fails and moves downslope. The slump type of soil movement is most common, particularly in road cuts and in strip mining operations. While these movements are not normally on a large scale, they do result in road blockage from time to time, particularly where narrow valley floors are shared by a stream and a road or railroad. Savage River Road and other county roads leading up from the Savage River are prone to this type of slope failure. Fortunately, much of the extreme steep slope land in Garrett County is located within State Forests or Parks, particularly in the Savage River Basin, the Upper Potomac Basin, and the Youghiogheny Basin.

2012 Status Update: The 2011 Hazard Mitigation Planning Committee ranked soil movement as having a medium risk, slightly lower than the *2005 Maryland Hazard Analysis*. Table 23 depicts the amount and types of expansive soils that are within the County.

Homes built on expansive soils have the possibility of being structurally damaged due to the shrink-swell properties of this soil type. Best Management Practices (BMPs) for building on expansive soils include: monitoring for extreme changes in soil moisture content and planting trees 15 to 30 feet away from foundations. The map below illustrates the expansive soils located in Garrett County.

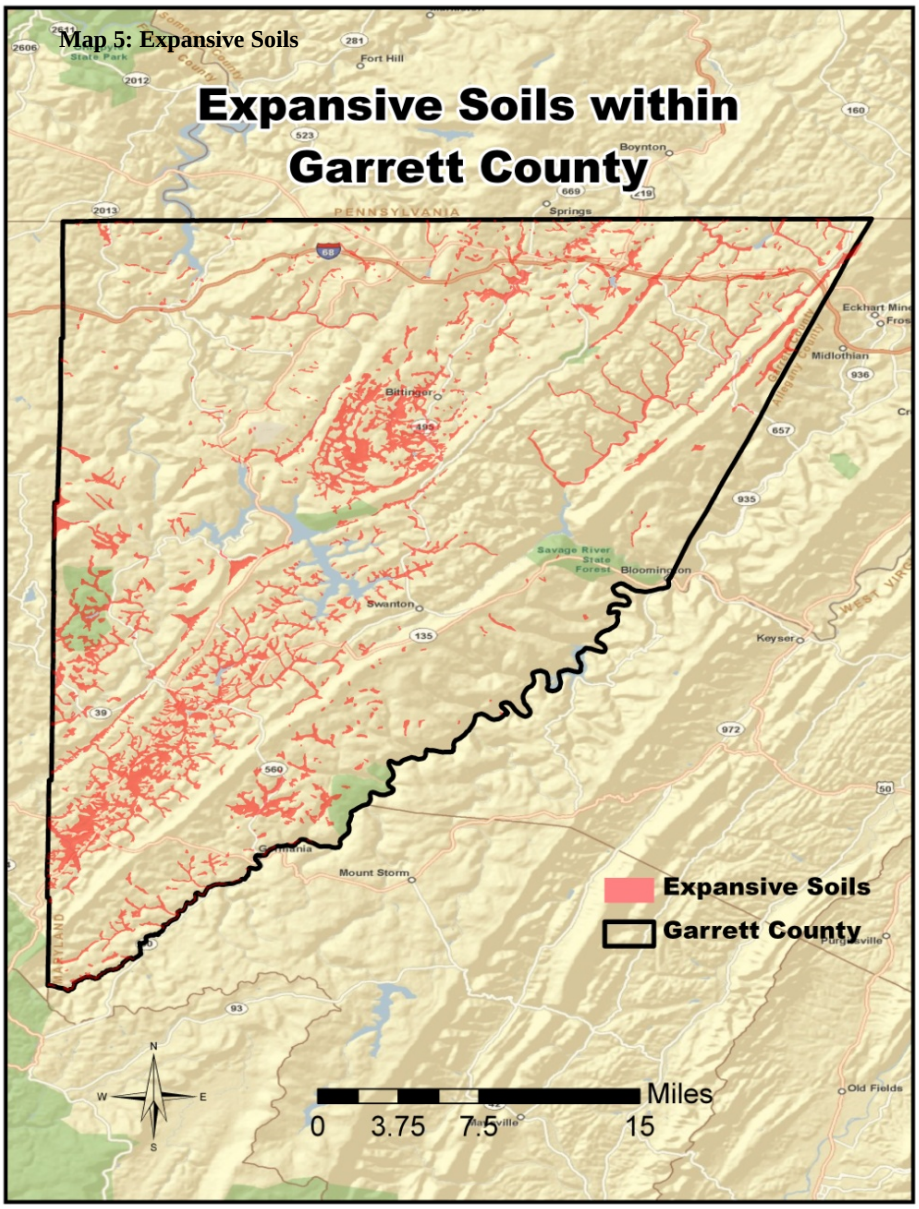


Table 23: Expansive Soils

Map Unit Symbol	Map Unit Name	Acres in County	Percent in County
An	Alluvial Land	1,652.6	0.4
Ar	Armagh Silt Loam	810.2	0.2
At	Atkins Silt Loam	4,733.0	1.1
BrA	Brinkerton and Andover, 0 to 3 percent slopes	6,355.4	1.5
BsC	Brinkton and Andover Silt Loams, 3 to 8 percent slopes	9,765.0	2.3
Ek	Elkins Silt Loam	296.0	0.1
Lc	Lickdale Silt Loam	1,964.9	0.5
Ls	Lickdale Very Stony Silt Loam	334.4	0.1
NoB	Nolo Silt Loam, 0 to 8 percent slopes	1,355.7	0.3
Pe	Peat	401.6	0.1
PuC2	Purdy Silt Loam, 0 to 15 percent slopes, moderately eroded	274.8	0.1
Sw	Swamp	803.6	0.2

Source: 2007 Garrett County Web Soil Survey 2.0

11. 3 SOIL MOVEMENT HISTORY:

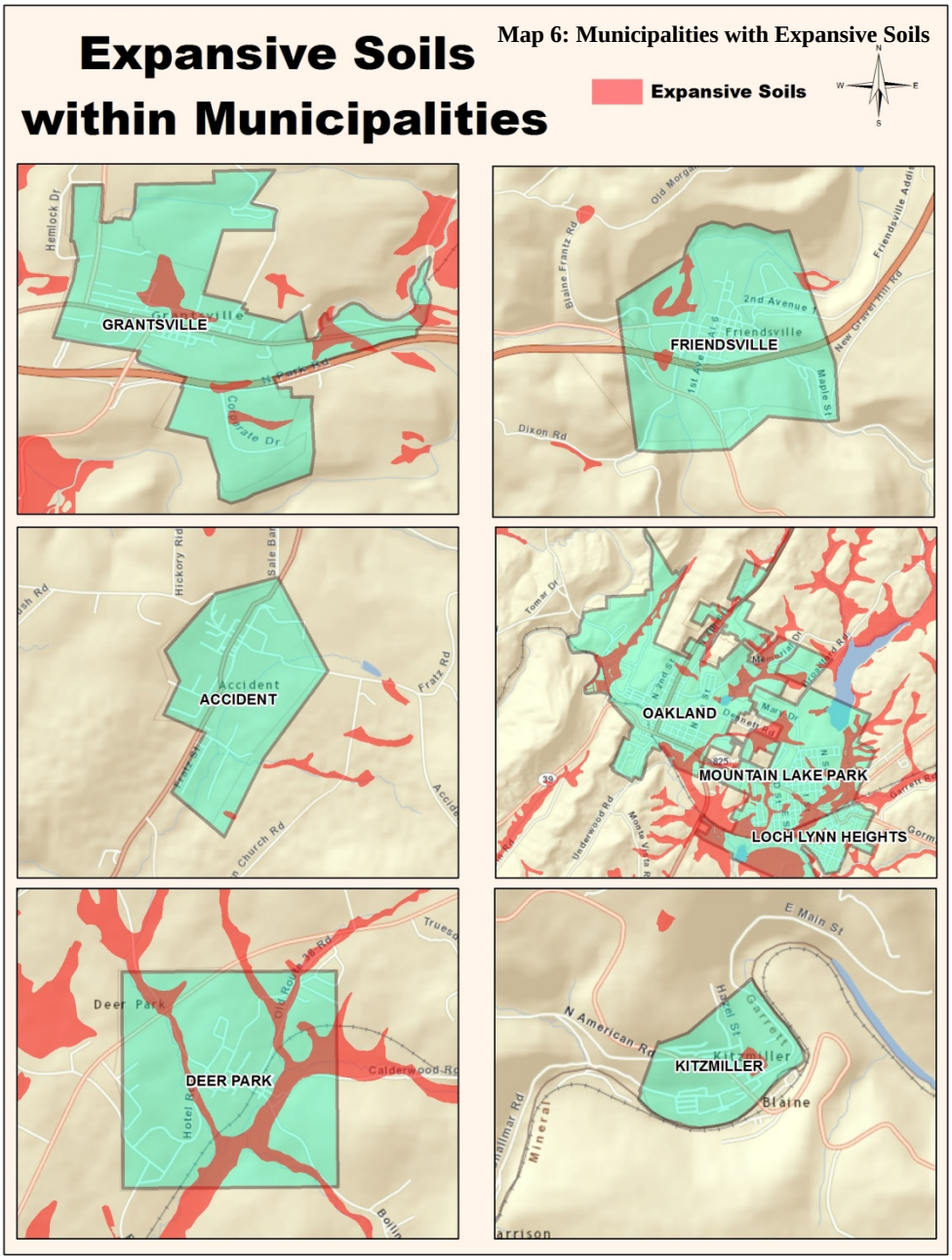
Perhaps the most striking example of soil movement in Garrett County occurred during the Flood of 1995 in the Potomac River Basin when a CSX freight train derailed as a result of slope failure above the Savage River. In this instance heavy rains and subsequent runoff weakened and undermined the slope below the railroad fill. At least one death was attributed to this event.

2012 Status Update: The mapped expansive soils located in the County were examined and several conclusions were determined. These soils are located in the low lying valley portions of the County or in areas that run parallel to stream networks, including surrounding portions of smaller water bodies, and constitute the composition of all the swamps within the County.

11. 4 MUNICIPAL PERSPECTIVE:

The same geologic conditions that affect the County are also prevalent in the municipalities. Fortunately, most municipalities are located on slopes of 10% grade or less and do not currently have heavy development pressure for new roads or streets in steep slope areas. Small sections of Oakland and Deer Park have slopes up to 15% in grade for short distances, mainly rolling topography rather than steeply sloping topography. However, Kitzmiller and Friendsville are located at the foot of extremely steep slopes and are susceptible to storm water run-off from these slopes. The County's Sensitive Area Regulations protect steep slopes and floodplains from intense development.

2012 Status Update: Soil movement concerning slopes is mentioned in section 4.7.4; the information concerning municipalities is still relevant to the County. Although both Friendsville and Kitzmiller are located at the base of very steep slopes due to their location relative to major river networks, Friendsville works with the Garrett County Soil District in order to utilize BMP's for agriculture in order to reduce erosion, as well as agriculture runoff. In terms of expansive soils within municipalities, Accident contains the smallest amount of expansive soils within its boundaries. The remaining municipalities contain scattered amounts of expansive soils shown in the map below.



11. 5 PREVIOUS MITIGATION MEASURES:

Perhaps the most important mitigation measure taken by the county is the enforcement of sediment control and stormwater management measures and the sensitive area regulations. These measures are mandated by state law and have provisions for development on steep slopes as well as limitations for the amount of water that can be stored and released in conjunction with new development. Highway construction and surface mining are also subject to these measures.

TRANSPORTATION AND ON-SITE HAZMAT

12. 1 HAZMAT PROFILE:

A hazardous material may be defined as a substance or material which, because of its chemical, physical or biological nature, poses a threat to life, health, or property if released from a confined setting. A release may occur by spilling, leaking, emitting toxic vapors, or any other process that enables the material to escape its container, enter the environment, and create a potential hazard. Several common HazMats include materials that are explosive, flammable or combustible, poisonous or radioactive. Related combustible HazMats include oxidizers and reactive materials, while toxins produced by etiological (biological) agents are types of poison that can cause disease.

According to the Maryland Hazard Analysis, the release of HazMats while in transit is of great concern to the U. S. Department of Transportation. While most hazardous materials are stored and used at fixed sites, these materials are usually produced elsewhere and shipped to the fixed facility by rail car, truck, or onboard ships or barges. While these vehicles are identified by signs denoting the hazard, the possibility of release is present at any time. Hazardous materials are constantly being moved in Maryland on interstate highways, the rail system and on shipping lanes in the Chesapeake Bay and its tributaries. On site use of HazMats is particularly evident in the Baltimore area near rail, truck and shipping terminals.

12. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: The 2003 HMPC ranked HazMat as “Medium”. The 2011 HMPC agrees with this ranking.

Historically, most HazMats moving through Garrett County have been on the CSX rail system and its predecessors, the Baltimore and Ohio Railroad, and the Western Maryland Railroad. Today, however, the bulk of hazardous materials pass through the county by truck, particularly on I-68, which crosses the northern part of the county from west to east as shown on Figure 13. A number of truck related HazMat events have occurred along this highway, particularly in Allegany County just to the east and downgrade from Garrett County. The potential for a HazMat release also exists along the Texas Eastern Pipeline which transports natural gas in twin 36 inch pipes just north of the county border in Pennsylvania. Texas Eastern also maintains a compressor station near Accident.

So far as on-site HazMats are concerned, Garrett County has a record of each site and the materials stored. These sites include water and sewage treatment plants and a number of wholesale and retail concerns. The site having the greatest bulk of hazardous materials on hand is the Westvaco Paper Mill at Luke, Md. located just across the county line in Allegany County. A release at this site could affect the community of Bloomington in Garrett County. The Maryland Hazard Analysis rates Garrett County at a risk level of 1 on a scale of 1 to 5. Because the Westvaco Paper Mill is in close proximity to the community of Bloomington in a narrow deep valley, the local Planning Committee has ranked on-site HazMat as a medium high hazard.

2012 Status Update: According to the *Garrett County Hazardous Materials Commodity Flow Study* completed in September 2008, the County receives significant amounts of hazardous material truck traffic on a daily basis. This high volume of HazMat truck traffic is due to Interstate 68 East/West, as well as the possibility of the HazMat traffic being diverted from the Pennsylvania Turnpike, which limits HazMat traffic through its tunnels.

Westbound HazMat trucks typically appear to be coming from the Baltimore/Washington area by way of Interstates 70 and 270, with a few from Interstate 81. Most of the HazMat trucks in the Study traveling on Interstate 68 were delivering petroleum products for commercial or industrial use. On US Route 219, HazMat traffic was more local and included deliveries of gasoline, propane, ammonia and other products to businesses in Oakland and surrounding areas.

As for MD Route 135 and 560, HazMat traffic was similar to that of US Route 219, with local deliveries of gasoline, ammonia, propane, and carbon/charcoal being hauled to and from Oakland and surrounding areas. The intersection of MD Route 135 and 560 had more traffic and variety of HazMat trucks as compared to US Route 219. Tables 24, 25, and 26 from the Study detail critical and public facilities within 2,000' of the centerline along Interstate 68, MD Route 135, and US Route 219. These facilities, detailed in the tables below, may be at risk depending upon the type and quantity of hazardous material spilled during a transportation accident.

Table 24: Interstate 68 Facilities at Risk

Interstate 68		
Facility Type	**Facility Name**	**Location**
Park	Friendsville Community	First Avenue
Park	Grantsville Community	Miller Street
Industrial Park	Northern Garrett Industrial	North Park Road
School	Friendsville Elementary	841 First Street
School	Grantsville Elementary	130 Grant
School	Rt. 40 Elementary	17764 National Pike
Post Office	Friendsville P.O.	836 First Avenue
Post Office	Grantsville P.O.	159 Main Street
Town Hall	Friendsville Town Hall	Maple Street
Town Hall	Grantsville Town Hall	171 Hill Street

Library	Friendsville Library	315 Chestnut Street
Library	Grantsville Library	153 Main Street
Fire & Rescue	Fire Co. #110 & Northern Rescue Co. #2	21 Park Street
Fire & Rescue	Fire Co. #80 & Northern Rescue Co. #1	401 Finzel Road
Transportation	SHA - Keysers Ridge	3876 National Pike
Transportation	County Roads Garage	13266 National Pike
Transportation	SHA Storage Building	13336 Beall School Road
Nursing Home	Mennonite Nursing Home	891 Dorsey Hotel Road
Utility	Friendsville Water Plant	849 First Avenue
Utility	Friendsville WWTP	First Avenue
Utility	Grantsville Water Tank	Alt. Route 40 at Amish Road
Utility	Grantsville WWTP	Alt. Route 40 at Casselman River

Source: 2008 Garrett County Hazardous Material Commodity Flow Study

Table 25: MD Route 135 Facilities at Risk

MD Route 135		
Facility Type	**Facility Name**	**Location**
School	Bloomington E.S.	334 N. Branch Avenue
School	Southern Garrett H.S.	345 Oakland Dr., Mt. Lake Park
School	Dennett Rd. E.S.	770 Dennett Rd., Mt. Lake Park
Post Office	Mt. Lake Park P.O.	1325 MD Highway, Mt. Lake Park
Post Office	Bloomington P.O.	35 N. Hamill Avenue
Fire/Rescue	Bloomington Co. 100	77 N. Branch Avenue
Fire/Rescue	Deer Park Co. 20	5353 Maryland Hwy.
Utility	Bloomington WWTP	1227 Bloomington Hill Rd.
Utility	Bloomington WTP	North Street
Utility	Bloomington Water Tank	North Street
Utility	Deer Park WTP	520 Decost Rd.
Nursing Home	Dennett Rd. NH.	113 Mary Dr., Mt Lake Park
Park	Little Mt. Scenic Overlook	Rt. 135 on Back Bone Mt.
Ind. Park	So. Garrett Ind. & Bus. Park	Rt. 135 near Mt. Lake Park
Ind. Park	So. Garrett Bus. Tech Park	Rt. 135 near Mt. Lake Park
Town Hall	Loch Lynn Town Hall	20011 Bonnie Blvd., Mt. Lake Park
Town Hall	Mt. Lake Park Town Office	1007 Alleghany Dr., Mt. Lake Park
Town Hall	Deer Park Town Hall	100 Church Street
Police/Correction	Boys Forestry Camp	234 Recovery Rd.
Government	MVA Oakland	400 Weber Rd., Oakland

Source: 2008 Garrett County Hazardous Material Commodity Flow Study

Table 26: US Route 219 Facilities at Risk

MD Route 219		
Facility Type	**Facility Name**	**Location**
School	Northern Garrett H.S.	86 Pride Parkway
School	Northern Garrett M.S.	371 Pride Parkway
School	Accident E.S.	534 Accident Bittinger Rd.
School	Mountain Top Seventh Day Adventist	Rt. 219, near Foster
School	Young Glades E.S.	70 Wolf Acres Dr., Oakland

School	Swan Meadow E.S.	6709 Garrett Highway, Oakland
College	Garrett County Comm. College	687 Mosser Rd.
Park	The Cove Scenic Overlook	Rt. 219 near Northern Garrett H.S.
Park	Deep Creek Scenic Overlook	Rt. 219 near McHenry
Park	Accident Town Park East	Accident Bittinger Rd.
Park	Accident Town Park West	Accident Friendsville Rd.
Park	Garrett County Fairgrounds	24086 Garrett Highway
Park	Mt. Nebo Wildlife Area	219 N. of Oakland/Sang Run Road
Industrial Park	Central Garrett Industrial Park	Industrial Park Drive
Post Office	Accident P.O.	103 S. South St.
Post Office	McHenry P.O.	1914 Deep Creek Drive
Post Office	Oakland P.O.	22 Second Street, Oakland
Town Hall	Accident Town Hall	104 S. North St.
Town Hall	Oakland Town Hall	15 S. Third St., Oakland
Library	Accident Library	106 S. North St.
Library	Ruth Enlow Library	315 Chestnut St., Oakland
Fire/Rescue	Fire Company 50	109 S. South St.
Fire/Rescue	Northern Rescue Co. 2	109 S. South St.
Fire/Rescue	Deep Creek Co. 30	1906 Deep Creek Drive
Fire/Rescue	Fire Company 40	MD Highway, Mt. Lake Park
Fire/Rescue	Southern Garrett EMS Co. 9	23 S. Third St., Oakland
Transportation	SHA Keysers Ridge	13266 National Pike
Transportation	Accident Roads Garage	80 Accident Garage Rd.
Transportation	CSX RR Station	West Liberty St., Oakland
Transportation	SHA Oakland Garage	95 SHA Drive, Oakland
Transportation	Garrett County Roads Dept.	12778 Garrett Highway, Oakland
County & State Government	Garrett County Health Dept.	1025 Memorial Dr., Oakland
County & State Government	Md. Dept. of Natural Resources	Rt. 219 near Merrill Lane
County & State Government	Md. Dept. of Agriculture	152 Oakland Sang Run Rd., Oakland
County & State Government	Garrett County Courthouse/Jail	203 S. Fourth St., Oakland
County & State Government	MVA Oakland	400 Weber Rd., Oakland
County & State Government	National Guard Armory	High Street, Oakland
County & State Government	Animal Shelter	152 Oakland Sang Run Rd., Oakland
County & State Government	Dept. of Social Services	12594 Garrett Highway, Oakland
County & State Government	Md. Employment Office	216 S. Third St., Oakland
County & State Government	Community Action Agency	104 East Center St., Oakland
Police	Garrett County Public Safety Center	311 East Alder St., Oakland
Police	State Police, DNR Police, Fire Marshall	67 Friendsville Rd.
Hospital	Garrett Memorial	251 S. Fourth St., Oakland
Shopping Center	Thayer Shopping Center	N/A
Shopping Center	Wal-Mart	13164 Garrett Hwy., Oakland
Shopping Center	Market Square Shopping Center	N/A
Utility	Accident WWTP	Near Fratz St.
Utility	Sewage Pump Station	Industrial Park Drive
Utility	Water Pump Station	Accident Bittinger Rd.
Utility	Water Tank	Accident Friendsville Rd.
Utility	Oakland Dump Site	10810 Garrett Highway, Oakland
Comm.	Spectra Tower	Near Keysers Ridge
Comm.	USCOC Tower	Near Keysers Ridge

Comm.	Tower	Near Keysers Ridge
Nursing Home	Cuppett/Weeks NH	706 East Alder St., Oakland

Source: 2008 Garrett County Hazardous Material Commodity Flow Study

2012 Status Update: The *Garrett County Hazardous Materials Commodity Flow Study*, completed in September 2008, collected information pertaining to the CSX Railroad. While collecting data on HazMat trucks on the intersection near MD Route 135 and MD Route 560, the data collector also observed the CSX railroad that crossed though that area over a twelve day period. The observer witnessed 2-3 westbound and eastbound trains per day. The westbound trains had no visible HazMat labels and the eastbound trains contained three separate trains with HazMat materials on them. The materials observed included: 1075-Propane, Butane: 16 Tankers; 1824-Caustic Soda Sodium Hydroxide: 18 Tankers; 1993-Flammable Weed Killer: 2 Tankers.

The *Garrett County Hazardous Materials Emergency Response Plan* was completed in July 2007 and discusses hazardous materials in the County and "responsibilities designed to minimize the threat to life, the environment and property caused by the release of any hazardous substance." This Plan states that there are 9 Extremely Hazardous Substances (EHS) sites in the County. These sites include: ClosetMaid, Comcast, Deep Creek Hydroelectric Station, Southern States Oakland, Verizon-Accident, Verizon-Friendsville, Verizon-Grantsville, Verizon-Thayerville, and U.S. Cellular. Of the many fixed facility sites that use hazardous materials in Garrett County, only those facilities that use certain threshold amounts are required to report these materials under the Emergency Planning and Community Right-To-Know Act (EPCRA) also known as the SARA Title III. In addition, facilities that release toxic materials into the environment must report these on an annual basis. As of 2011, there are 21 facilities in Garrett County that make toxic release reports annually. These facilities are shown in the Table 27.

Table 27: HazMat Facilities in Garrett County, MD

Bruceton Petroleum Rt. 219 & Rt. 40 Keysers Ridge, MD 21520 Harry Wolfe (301) 746-8121 or (304) 379-6584	Clayburn Inc. 16306 Bittinger Rd. Grantsville, MD 21536 William Mohney (301) 895-5111or (814) 233-8028
ClosetMaid Corporation *NEW 1 Closetmaid Drive Grantsville, MD 21536 Greg Swearingen (352) 401-6062or (352) 266-0874	Comcast of CA/MD/VA/WV, LLC *NEW 244 A Locker Lane Grantsville, MD 21536 Dan Cramer (412) 298-5338or (814) 749-3008
Constellation Energy *NEW 1295 Eagle Rock Road Oakland, MD 21550 Don Shilobod (410) 470-9911 or (724) 822-7210	Deep Creek Hydroelectric Station 14 Riverview Terrace Oakland, MD 21550 Randy Garletts (301) 387-6616 or (301) 501-7592
Lowe's of Oakland, MD *NEW 7000 Lowes Drive Oakland, MD 21550 Store Manager (301) 334-7250 or (888) 429-6281	Mettiki Coal, LLC 293 Table Rock Road Oakland, MD 21550 Jim Ashby (301) 334-5336 or (301) 334-3952

Oakland Service Center 12454 Garrett Highway Oakland, MD 21550 Larry E. Haines (301) 707-3112 or (800) 255-3443	Southern States COOP., INC., Oakland 1862 Maryland Highway Mt. Lake Park, MD 21550 Tom Hart (301) 334-3121 or (301) 616-7491
Suburban Propane – Oakland 342 Garrett Highway Oakland, MD 21550 Jennifer Volkman (301) 334-2626 or (301)616-0106	Texas Eastern Transmission, LP PO Box 254, 196 Texas Eastern Drive Accident, MD 21520 Brett Herring (301) 746-6651 or (800) 231-7794
Thomas Gas & Electric, Oakland Branch *NEW 17863 Garrett Highway Oakland, MD 21550 Gary Nouse, (301) 302-8168 or (301) 964-6165	Town of Grantsville Water PO Box 296 Grantsville, MD 21536 Bill Hetrick (301) 895-3144 or (301) 707-3070
U.S. Cellular *NEW 17 East Oak Street Oakland, MD 21550 Ronald Lewis (773) 399-7925or (800) 510-6091	U.S. Cellular *NEW 25235 Garrett Highway McHenry, MD 21541 Ronald Lewis (773) 399-7925or (800) 510-6091
Verizon Accident CDO (MD31080) 220 S. Main Street Accident, MD 21520 Compliance Service Center (888) 696-3973 or (800) 386-9639	Verizon Friendsville CDO (MD31070) 263 Maple Street Friendsville, MD 21531 Compliance Service Center (888) 696-3973 or (800) 386-9639
Verizon Grantsville CDO (MD31920) Ravine Street Grantsville, MD 21536 Compliance Service Center (888) 696-3973 or (800) 386-9639	Verizon Oakland Central Office (MD31950) 525 East Oak Street Oakland, MD 21550 Compliance Service Center (800) 386-9639
Verizon Thayerville CDO (MD31001) 634 Zeddock Miller Road Oakland, MD 21502 Compliance Service Center (888) 696-3973 or (800) 386-9639	

Source: 2011 Garrett County Hazardous Materials Response Plan

12. 3 MUNICIPAL PERSPECTIVE:

The municipalities most susceptible to transportation HazMat incidents include Friendsville and Grantsville, which are adjacent to I-68, and Oakland, Mountain Lake Park, Loch Lynn Heights and Deer Park which are near the CSX rail line that crosses the southern part of the county. On site HazMats include water and sewer plants located in municipalities and the hospital in Oakland.

2012 Status Update: The *U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration's Office of Hazardous Materials Safety* keeps a searchable database on all HazMat incidents that occur during the transportation of these products including air, water, rail, highway, and other. Between 2000 and 2010, Garrett County has had five HazMat transportation incidents, all of which were reported to have occurred on highways. Therefore, the frequency of HazMat transportation incidents for Garrett County is .5 events per year.

Although a HazMat incident is more likely to occur on high traffic roads such as highways, there is no way to predict precisely where an event could take place. As for the data shown in Table 28, the municipalities where these events have occurred are Grantsville and Oakland. The most expensive incident, in terms of clean up and damages, was the Grantsville incident on June 3, 2008 which totaled $106,500.

Table 28: HazMat Transportation Incidents

Date	Location	Carrier	Shipper	Amount of Damages	Commodity	Quantity Released
April 21, 2000	Finzel	Dart Trucking Co. INC	Spring Groove Resources	$500	Flammable Liquids, N.O.S	.03125 LGA
August 9, 2002	Grantsville	Marten Transport LTD	Coca-Cola INC	$1,530	Phosphoric Acid	4 LGA
February 2, 2006	Keysers Ridge	Robbie D Wood INC	Metachem	$1,650	Toxic Liquids, Organic, N.O.S	5 LGA
June 3, 2008	Grantsville	Distributor Service INC	Distributor Service INC	$106,500	Paint or Paint Related Material	80 LGA
July 18, 2008	Oakland	CLI Transport LP	Petroleum Products Corp.	$2,686	Gasoline	N/A

Source: U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration's, Office of Hazardous Materials Safety

12. 4 PREVIOUS MITIGATION EFFORTS:

Although Garrett County does not have a HazMat team, it does have an agreement with Allegany County to call in its HazMat team when an incident occurs. The county can also call on a team from Somerset County, Pennsylvania for assistance with a HazMat incident. In addition, the State of Maryland has HazMat capabilities through the Department of the Environment, the Department of Transportation and the Department of Health and Mental Hygiene. These agencies are all on call through the Emergency Management Agency. In addition, the county's Hazard Warning system can be activated in the event of a HazMat incident in a particular area.

2012 Status Update: Although Garrett County does not have a HazMat team, the County now has eight trained HazMat personnel at the technician level. These technicians are composed of members from local volunteer fire departments within the County. Volunteer fire companies with these qualified persons include the Friendsville Volunteer Fire Department (VFD) with three technicians, Grantsville VFD with three technicians, Eastern Garrett VFD with one technician, and Deep Creek VFD with one technician. These technicians have the ability to be first responders if a HazMat incident were to occur in the County. In the event of a HazMat incident, Garrett County may call upon Allegany County's HazMat Team.

DAM FAILURE

13. 1 DAM FAILURE PROFILE:

Dam failure refers to a collapse, overtopping, breaching or any related condition that causes downstream flooding. Approximately one-third of all dam failures are caused by overtopping due to inadequate spillway capacity, one-third are caused by seepage through or under the structure, and the remainder from improper design or construction or because of earthquake or landside events which trigger the failure of the dam. Examples of dam failure in the United States include the Johnstown Flood in 1889 resulting in 2,209 deaths, the Saugus, California Dam collapse in the Los Angeles Aqueduct system in 1928 resulting in 450 deaths, and the Teton Dam breach on the Snake River in Idaho during a flash flood in 1976 resulting in 11 deaths. During Hurricane Agnes in 1972, concern about the Conowingo Dam on the Susquehanna River led to the opening of all flood gates to release pressure when the water level was three feet higher than the dam's rated capacity.

13. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: The 2003 HMPC ranked dam failure as "Medium-Low". The 2011 HMPC ranked the risk higher at "Medium", possibly due to the emergency situation at the Garrett Memorial Flood Control Dam within the town of Oakland in 2007.

The largest dams in the county include the Savage River Dam, the Bloomington Dam on the Potomac River, and the Deep Creek Lake Dam as shown on the map on Figure 22. Smaller dams include the Piney Creek Dam and the New Germany Dam. Two other dams of significance to the county include the Mt. Storm Dam and the Stony River Dam, both of which are in West Virginia on the Stony River, a tributary of the Potomac. Failure of either of these dams would affect the downstream communities of Kitzmiller and Bloomington and would also impact the Bloomington Dam.

13. 3 MUNICIPAL PERSPECTIVE:

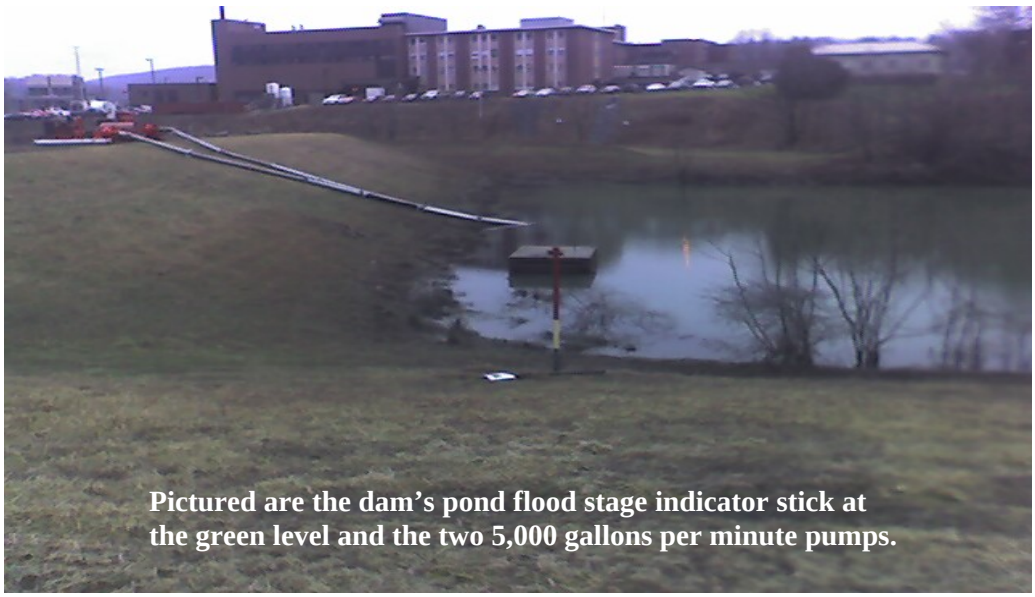
As noted above, the town of Kitzmiller is downstream from both the Stony River Dam and the Mt. Storm Dam. In addition, the town of Friendsville is located downstream from the Deep Creek Lake Dam. Finally, six flood control impoundments constructed by the Soil Conservation Service in the 1970's are located upstream of parts of Oakland, Mountain Lake Park, Loch Lynn Heights and Deer Park in the Little Youghiogheny Watershed as shown on Figure 23. All other municipalities are located on high ground above dam structures.

2012 Status Update: According to Brad Frantz, Director of Public Safety and Emergency Management, in March of 2007 debris clogged the discharge pipe at one of the flood control dams designed to protect the town of Oakland from flooding.

The obstruction, apparently created by beavers, at the dam caused a backup of Wilson Run (shown on the map on Figure 34), resulting in flooding along North Fourth Street and eventually raised water levels in the dam to the critical stage, prompting officials to consider evacuating the town.

In an attempt to mitigate the crisis, the decision was made to locate a dive team to clear the debris. With an impending snow storm forecast for later that night, a request for assistance was sent out across the State through the MDJOC (Maryland Joint Operations Center) located in MEMA headquarters. A team of divers from Baltimore County was dispatched and transported to Oakland in two Blackhawk helicopters provided by the Maryland Air National Guard. Although the divers were not able to clear the debris, they were able to evaluate the extent of the problem, which led to the decision to bring in two high-volume water pumps to lower the water level down. This served two purposes, in that it reduced the water level in the dam below the danger level and it allowed workers to better access the discharge pipe.

The two pumps and a diesel fuel tank had to be placed on the dam, so the Maryland National Guard was summoned once more to assist; they deployed a Chinook helicopter and two support Blackhawk helicopters to place the equipment on the breast of the dam. Once the piping was assembled and put into place, the pumps began discharging water at a combined rate of approximately 10,000 gallons per minute (gpm). Within a few days, the water level was lowered enough so that workers could clear the debris and restore the dam to normal operation.



Pictured are the dam's pond flood stage indicator stick at the green level and the two 5,000 gallons per minute pumps.

13. 4 PREVIOUS MITIGATION EFFORTS:

In 2001, Garrett County joined with Allegany County and Mineral County to institute a telephone warning system for communities downstream of the Savage River and Bloomington Dams. This system has since been expanded to include the entire county for all hazards.

The Savage River and Bloomington Dams are maintained by the Upper Potomac River Commission and are subject to regular inspection and maintenance by the Corps of Engineers. All dams are subject to inspection by the state through its Dam Safety Program, and by the Corps of Engineers.

In addition, the Garrett Soil Conservation District has initiated studies of the flood control dams in the Little Youghiogheny Watershed. Studies of Dams 1, 2 and 3 in Oakland are complete, while the study of Dam 7 above Deer Park is in preliminary form. Figure 38 through 45 and Figures 46 through 53 show the inundation areas and the number of structures potentially affected by the major dams in Garrett County. Future studies of Dam 5, upstream from Oakland, and Dam 6 (Broadford Lake) will provide maps showing the inundation area should either of these dams fail.

2012 Status Update: In 2010, all Emergency Action Plans (EAP's) for all five flood control dams within the town of Oakland had been updated. In 2011, the Savage River Dam EAP was updated to include more accurate flood stage levels.

WILDFIRE

14. 1 WILDFIRE PROFILE:

A wildfire is defined as any large fire that spreads rapidly and is difficult to extinguish. In the United States more than 2,000,000 acres burn each year as a result of wildfire. Since 1960, more than 6,000,000 acres have been consumed during 8 fire seasons, with more than 8,000,000 acres in 2000, and nearly 7,000,000 acres in 2002. Estimated fire suppression costs for federal agencies topped $1 billion in 2000 and $1.6 billion in 2002. Most of the acreage involved and the accompanying suppression efforts are in the western states on land managed by the U.S. Forest Service, the Bureau of Land Management, the Bureau of Indian Affairs, the U.S. Fish and Wildlife Service and the National Park Service. Unfortunately, in recent years, more private property has been affected by wildfires as urban development encroaches on forest and range land.

As noted in the Maryland Hazard Analysis, wildfires in the state are more limited in extent, with more than 95% burning one acre or less. However, in 1990, one fire burned 1,360 acres, and in 1947 more than 5,000 acres burned in Anne Arundel and Baltimore counties. Occasionally brush fires threaten urban development where homes are built in close proximity to forest or brush covered land. As more former agriculture land reverts to brush, this problem will become more prevalent. A recent example of a forest fire threatening residential properties occurred in Allegany County in the late 1990's when a forest fire on Wills Mountain threatened homes built on the ridgetop within the city of Cumberland.

2012 Status Update: Wildfires are fueled by natural cover, including trees, brush, grasses, and crops. Available fuel, topography, and weather provide the conditions that encourage wildfires to spread. Wildfires pose serious threats to human safety and property in rural and suburban areas. They can destroy crops, timber resources, recreation areas, and habitat for wildlife. Wildfires are a growing problem in the wildland/urban interface of the eastern United States, including Maryland.

Climatic and meteorological conditions that influence wildfires include solar insulation, atmospheric humidity, and precipitation, all of which determine the moisture content of wood and leaf litter. Dry spells, heat, low humidity, and wind increase the susceptibility of vegetation to fire. Natural and human agents can be responsible for igniting wildfires. Natural agents include lightning, sparks generated by rocks rolling down a slope, friction produced by branches rubbing together in the wind, and spontaneous combustion. Most wildfires in Maryland are caused from humans, such as arson and accidents from equipment operations.

14. 2 COUNTY PRESPECTIVE AND HISTORY:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "Medium-High" for wildfire. The county's HMPC ranks the risk lower, at "Medium".

Because more than 70% of Garrett County's land surface is covered by forests, wildfire is a major concern. With 70,000 acres owned by the State of Maryland, the Department of Natural Resources takes a leading role in fire suppression throughout the county. According to records kept by Department of Natural Resources, Garrett County averages about 26 wildfires per year, with 53 fires recorded during 1995 and 45 fires recorded in 2001, both particularly dry years in the county.

2012 Status Update: In terms of number of occurrences, the Maryland Forest Service listed a total of 869 wildfire events affecting Garrett County from 1980-2008. Therefore, Garrett County experiences 30 wildfire events per year. As shown in Table 29, the number of fires and the acres burned per year has decreased over the years in Garrett County. There are several explanations for the decrease in wildfires, including wildfire awareness in the County, loss of forestland due to development and agriculture, and an increase in response time by fire departments.

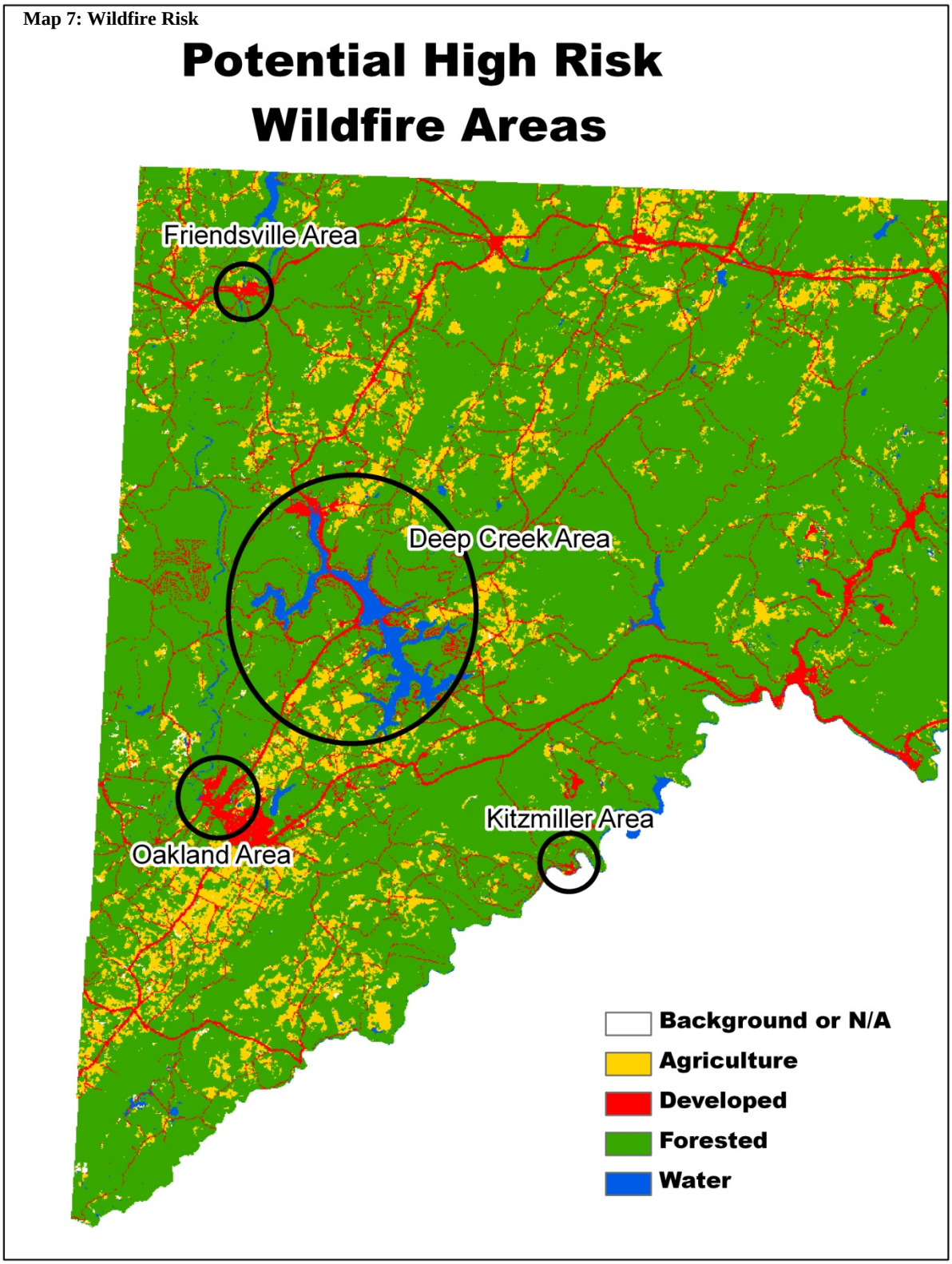
Map 7 was produced using 2009 imagery from the United States Department of Agriculture (USDA) and the Natural Resources Conservation Services (NRCS) – National Cartography and Geospatial Center, Cropland Data Layer. All agriculture, development, and forested areas were grouped together in order to show the relationship between forested areas and development. Areas of high concern for wildfire risk based on this data are the Deep Creek area (in particular McHenry), Kitzmiller area, Oakland area, and the Friendsville area.

Table 29: Wildfire Statistics

Year	Number of Fires	Acres Burned
1980	69	139.3
1981	54	215.7
1982	54	222.1
1983	22	138.6
1984	42	45.1
1985	39	94.9
1986	52	119.0
1987	52	209.7
1988	45	79.7
1989	22	53.4
1990	17	78.5
1991	36	89.3
1992	20	93.2
1993	8	19.4
1994	28	63.1
1995	53	84.3

1996	22	27.9
1997	28	14.7
1998	14	51.1
1999	22	26.7
2000	26	10.9
2001	45	36.0
2002	24	15.2
2003	4	0.4
2004	6	17.6
2005	19	24
2006	17	14.1
2007	15	17.1
2008	14	9.1
Average	30	69.3

Map 7: Wildfire Risk

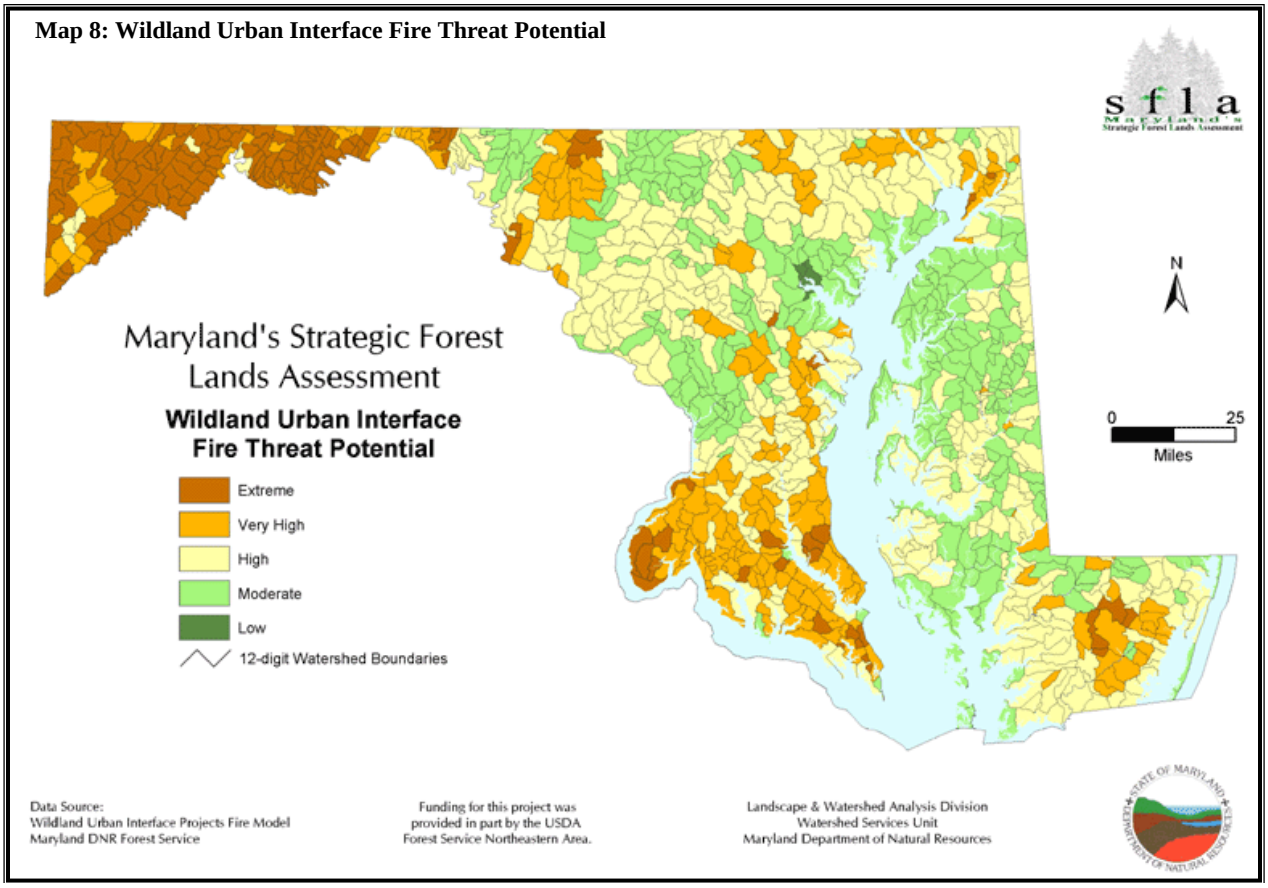


14. 3 MUNICIPAL PERSPECTIVE:

All municipalities in Garrett County are near or adjacent to forest land or agricultural land. As urban development extends into these forest or brush covered lands the possibility of wild fire in urban areas increases as it does throughout the county.

2012 Status Update: *Maryland's Strategic Forest Lands Assessment* is conducted by the Maryland Department of Natural Resources with financial assistance from the United States Department of Agriculture Forest Service and is composed of many types of vulnerability studies applying to the forests of Maryland. Map 8 shows one of the studies conducted on wildland/urban interface fire threat potential. As shown in this figure, the entire County is at a high to extreme urban interface fire threat. When compared to the rest of the State, it is clear that proper forest management and planning should be an important part of Garrett County's future.

Map 8: Wildland Urban Interface Fire Threat Potential



Source: Maryland DNR Forest Service

14. 4 PREVIOUS MITIGATION MEASURES:

As noted above, the Maryland Department of Natural Resources is the lead agency in forest fire suppression in the Western Part of the State. Through the years, this agency has developed working relationships with Garrett County agencies including Emergency Management to suppress and control wildfires. Local volunteer fire companies, police and the Sheriff's office assist with fire suppression and traffic control in fire situations. The county's hazard warning system also can be activated to warn citizens in a fire threatened area.

MAJOR FIRE/EXPLOSION

15. 1 FIRE/EXPLOSION PROFILE:

In this document, fire/explosion refers to a major incident involving a commercial/industrial or transportation fire or explosion. Fire is defined as the state, process, or instance of combustion in which fuel or other material is ignited and combined with oxygen, giving off heat, light and flame. An explosion is defined as an expansion with violent force of materials through a chemical change or through decomposition. As noted in the Maryland Hazard Analysis, more than 8,700 fires and 4 explosions occur each year in the state with a damage toll of more than $15,000 per event. In fact, the field of Emergency Management came into being as a way to coordinate fire control activities. Fire insurance itself dates to attempts to alleviate the damage from fires during the early settlement of the colonies in New England.

15. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: The 2003 HMPC ranked fire/explosion as "Medium-Low". The 2011 HMPC ranked the risk higher, at "Medium", possibly due to the extreme weather conditions encountered when fighting fires during the winter months, and because of the isolated nature of many of Garrett County's smaller communities.

Garrett County is no different than other rural counties throughout the country, having a network of volunteer fire companies whose primary role historically has been to suppress fires and minimize damage to life and property as a result of these fires.

2012 Status Update: Garrett County is no different than other rural counties throughout the country, having a network of volunteer fire companies whose primary role, historically, has been to suppress fires and minimize damage to life and property as a result of these fires. According to a 2007 report by the *United States Fire Administration*, groups at increased risk of fire-related injuries and death include: males, children four and under, older adults ages 60 and older, African-Americans, American-Indians, and rural communities with populations under 2,500.

Table 30:Fire Deaths per Year

Year	Fire Deaths
2000	1
2001	0
2002	0
2003	0
2004	0
2005	1
2006	0
2007	0

2008	0
2009	0
2010	1

Source: Office of the State Fire Marshal

Table 31:Arson Crimes

Year	Arson Crimes
1998	10
1999	3
2000	4
2001	5
2002	2
2003	6
2004	6
2005	6
2006	5
2007	3

Source: Office of the State Fire Marshal

15. 3 MUNICIPAL PERSPECTIVE:

All municipalities in Garrett County share the threat of fire to residential, commercial or other structures. The municipalities of Oakland, Mt. Lake Park, Loch Lynn Hts, Deer Park and Kitzmiller which are near CSX rail lines face the threat of fire or explosion from a transportation incident while Friendsville and Grantsville have the possibility of a similar incident along I-68.

2012 Status Update: Grantsville and Accident have a higher threat of fire to industrial structures because they are the only municipalities in the County with industrial or technological parks. Due to the age of structures, and less building setback in older communities, the threat of fire spreading to other structures is greater than in newly developed areas in the County.

15. 4 PREVIOUS MITIGATION EFFORTS:

As noted earlier, most early efforts at hazard suppression revolved around fire. Garrett County has volunteer fire companies that cover the urban and rural areas of the county. Most of these companies date to the early 20th century when vehicles became available that could cover the distance from a fire station to the fire scene in a relatively short period of time. Over the years, training standards and improved methods of fire fighting have been developed by the Maryland Fire and Rescue Institute and implemented at the local level. The Maryland Fire Marshall's office provides expertise in tracing the origins of fires and explosions at the local level. Educational efforts aimed at alerting residents and property owners to fire prevention measures are transmitted through the Emergency Management Agency.

HURRICANE

16. 1 HURRICANE PROFILE:

According to Strahler's Physical Geography text, a hurricane is essentially a tropical cyclone which develops over oceans in latitudes between 8 and 15 degrees N and S of the equator where the water temperature is normally over 80 degrees Fahrenheit. Warming of the air at low levels creates instability, and along with an easterly "wave" creates a deep circular low pressure area. Once formed, the storm moves north and west in the northern hemisphere. The diameter of a hurricane may be 100-300 miles with wind velocities more than 75 miles per hour and the barometric pressure in the center or eye of the storm commonly falling to 965 mb or lower. Hurricanes are rated for intensity by using the Saffir-Simpson Scale which gives an estimate of the potential damage that a hurricane may cause based on wind speed and surface pressure. This scale, shown on Table 32, ranges from Category 1 to 5, with Category 1 having winds from 74-95 mph and pressure greater than 980 mb, while a Category 5 hurricane can have winds in excess of 156 mph and pressure of less than 920 mb. Some notable hurricanes that have affected Maryland include Fran in 1996, Category 3; Camille in 1969, Category 5; Donna in 1960, Category 4; Hazel in 1954, Category 4; David in 1979, Category 5, and Isabel in 2003, rated at Category 5 at sea, but Category 2 at landfall.

When damages are considered in 1998 dollars, the most expensive recent hurricanes that affected Maryland are Donna at nearly $14,000,000; Camille at $12,700,000; Agnes at $12,400,000; and Hazel at $8,160,000.

Although high winds and excessive amounts of precipitation are common and cause tremendous damage, the most serious effect of hurricanes is coastal destruction caused by storm waves or surge. If a hurricane strikes at high tide, the storm surge can be devastating as was the case in Galveston, Texas in 1900 when more than 6,000 people drowned in a sudden hurricane generated storm surge. In India more than 300,000 people died in 1737 as a result of a 40-foot storm surge accompanying a severe tropical cyclone in the Bay of Bengal. Damage estimates for the 1900 Galveston hurricane topped $30,000,000 in 1998 dollars.

2012 Status Update: Table 32 lists the five categories of hurricane strength.

Table 32: Saffir-Simpson Hurricane Categories

Saffir-Simpson Hurricane Intensity Categories	
Category Wind Speed Storm Surge	**Effects**
Category 1-Weak 74-95 mph 4-5 ft	Minimal Damage: Most damage is to vegetation and unanchored mobile homes. No real damage to building structures. Low-lying coastal roads become inundated.
Category 2-Moderate 96-110 mph 6-8 ft	Moderate Damage: Considerable damage to vegetation, some trees blown over. Major damage to mobile homes. Some cosmetic damage done to homes, such as roofing materials, windows, and doors. Low lying coastal roads flooded and some evacuation of some shoreline residents.

Category 3-Strong 111-130 mph 9-12ft	Extensive Damage: Large trees blown down. Some structural damage to small buildings. Mobile homes are destroyed. Minor amount of failure of certain walls in framed buildings. Some smaller structures near the coast destroyed. Flat terrain <5 feet above sea level flooded inland at least 8 miles. Evacuation of residence within several blocks of shoreline.
Category 4-Very Strong 131-155 mph 13-18 ft	Extreme Damage: All signs down. Extensive roofing, window, and door damage. Failure of roofs on residential housing. Major damage to lower levels of floors of structures near the shore. Major erosion of beeches. Massive evacuation of all residents within 500 yards of shoreline may be required.
Category 5-Devastating >155 mph >18 ft	Catastrophic Damage: Considerable damage to roofs of buildings. Severe and extensive window and door damage. Some complete buildings fail. Small buildings are overturned or blown away. Massive evacuation of residential areas on low ground within 5 to 10 miles of shoreline may be required.

Source: NOAA

16. 2 COUNTY PERSPECTIVE AND HISTORY:

2012 Status Update: According to the *2011 Maryland State All-Hazard Mitigation Plan Update*, Garrett County has a ranking of "Medium-Low" for hurricanes. The county's HMPC ranks the risk higher, at "Medium", due to the potential flooding that may occur from heavy precipitation during the passage of a hurricane. Examples of hurricanes with heavy precipitation include Hurricane Fran in 1996 and Hurricane Frances in 2004.

With its inland situation, Garrett County is not normally as affected by the high winds associated with the passage of a hurricane as a coastal community would be. However, hurricanes do still carry a lot of moisture over the mountainous terrain and the amount of runoff associated with the resulting precipitation can be deadly. As mentioned in the Riverine Flooding Profile, Garrett County has been affected over the years by the passage of hurricanes, including Hurricane Hazel in 1954, Hurricane Agnes in 1972, Hurricane David in 1979, Hurricane Fran in 1996 and most recently, Hurricane Isabel in 2003. Hurricanes that track through the Gulf of Mexico or move inland from the Atlantic and then pass over the Appalachians have the greatest potential for excessive rainfall in the mountainous area extending from Alabama to New York. In 1969 Hurricane Camille stalled over the Blue Ridge in central Virginia, and dropped an estimated 30" of rain on the mountains in Nelson County in a 24-hour period. More than 250 people died in the resulting floods which were accompanied by landslides and slope failure of massive proportions.

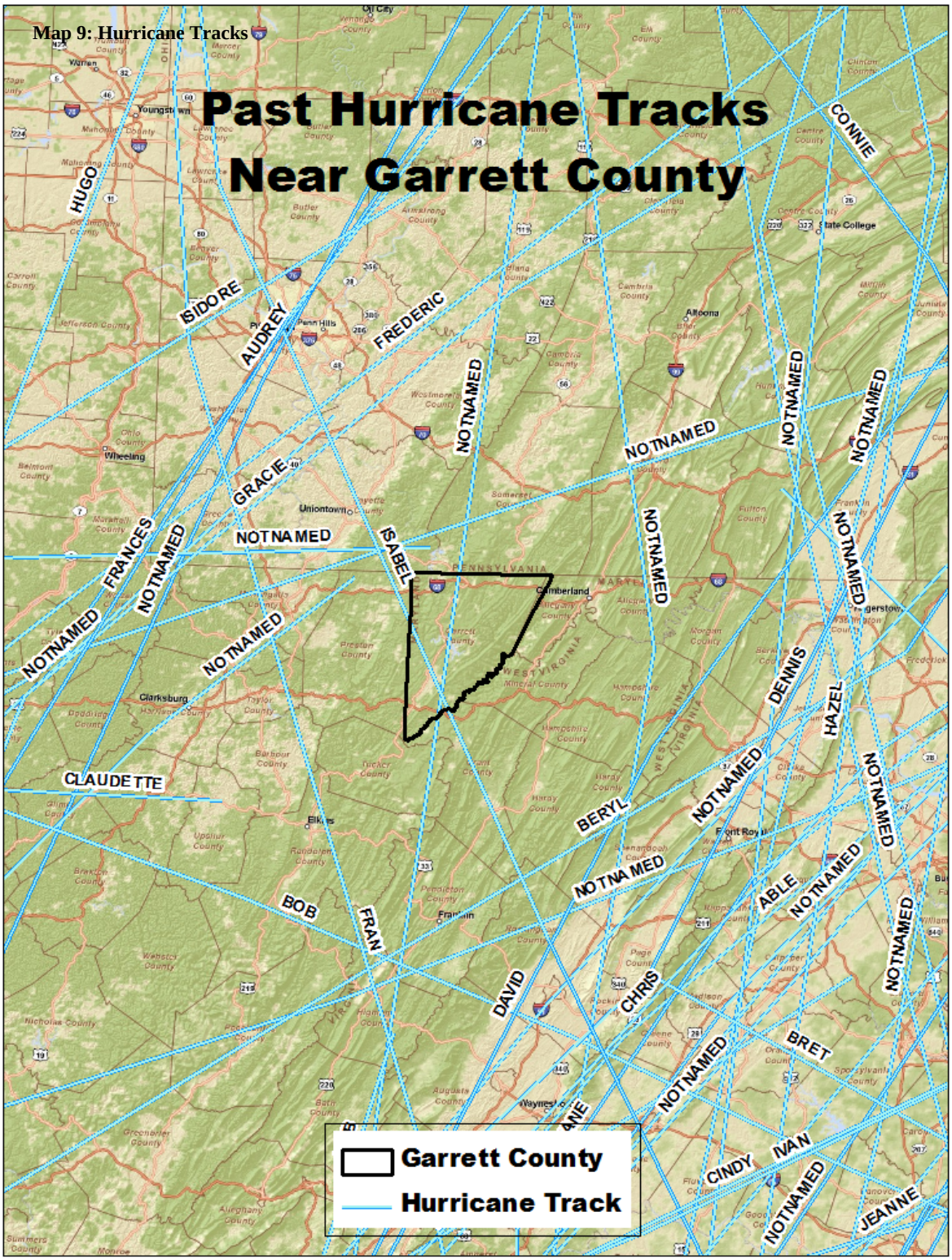
2012 Status Update: Data for this hazard includes events as reported by the National Climatic Data Center and is displayed in Table 33 as well as on the map depicting past hurricane tracks on the following page. In terms of number of occurrences, the NWS, NCDC listed a total of two hurricane events affecting Garrett County from 1996-2004. Therefore, Garrett County experiences 0.2 hurricane events per year.

Table 33: High Wind Events

Location	Date	Event Narrative
Oakland	September 6, 1996	Widespread flooding occurred across the county as the remnants of Hurricane Fran dumped heavy amounts of rain. A total of 8 roads were flooded, including 2 that were closed. Some storm totals include: Oakland 4.20 inches, Savage River Dam 4.60 inches and Kitzmiller 4.86 inches.
Grantsville	September 8 to 9, 2004	Rain from the remnants of Hurricane Frances began early on the 8th and ended early on the 9th. By 7 PM EDT on 8th, Casselman River went out of its banks, near Grantsville.

Source: NWS, NCDC (NOAA)

Map 9: Hurricane Tracks



16. 3 MUNICIPAL PERSPECTIVE:

As with other weather phenomenon, the Garrett County municipalities share the same concerns as the county. The towns of Friendsville and Kitzmiller face more danger from flooding associated with the passage of a hurricane because of their floodplain location, while the towns of Accident and Grantsville are more susceptible to wind damage because of their exposed location on higher, more level ground.

16. 4 PREVIOUS MITIGATION EFFORTS:

As noted under the Riverine Flooding Profile, Garrett County has purchased a number of buildings in floodplain areas, which could have been affected by flooding associated with hurricanes. In addition, the county's hazard warning system can be activated in advance of a hurricane's approach on advice from NOAA.

Finally, the county's Building Code contains requirements for wind loading of new structures, while the Stormwater Management Ordinance and Floodplain Ordinance regulate development in floodplain areas.

EPIDEMIC

17. 1 EPIDEMIC PROFILE:

According to the Maryland Hazard Analysis, epidemics can be considered as part of a broad hazard category that could be termed "public health emergencies". In addition to disease epidemics, such events can take the form of large scale incidents of food or water contamination, infestations of disease bearing insects or rodents, or extended periods without adequate water or sewer service. Epidemics may also be secondary to some other disaster such as flood, tornado, hurricane or hazmat incident. According to the U.S. Centers for Disease Control, in 1997 Maryland ranked high in terms of sexually transmitted diseases, but low for vaccine preventable diseases such as hepatitis B. The state's Department of Health and Mental Hygiene (DHMH) maintains counts for 69 diseases as reported by health care providers and 62 diseases notable by laboratories. The surveillance and reporting of these diseases is the responsibility of the local health department, which investigates and completes reporting both electronically and manually as per DHMH regulations. Notable diseases include measles, hepatitis B, AIDS, salmonellosis, giardiasis, malaria, lyme disease and rabies.

2012 Status Update: According to the 2010 study *America's Health Rankings* by United Health Foundation, Maryland ranked 21st overall in the U.S. based on health information such as behaviors, public and health policies, community and environmental conditions and clinical care data. Notable areas where the State ranked well were a "low percentage of children in poverty, ranked fifth, and the "availability of primary care physicians", ranked second, in the Country. As for the State's weakness in the study, Maryland ranked 50th in the U.S. for infectious disease at 32.8 cases occurring per 100,000 people.

17. 2 COUNTY PERSPECTIVE:

2012 Status Update: The 2003 HMPC ranked epidemic as "Medium". The 2011 HMPC agrees with this ranking.

The county's risk for hepatitis B is one, salmonellosis is one, AIDS is one, TB is one, lyme disease is one, animal bites is 4, giardiasis is 3. Based on this state provided information, the county Planning Committee also ranks the risk for epidemic as medium low, but notes that with the easy and rapid movement of people from place to place, an epidemic that starts in a high risk area could spread to a rural community such as Garrett County at a very fast pace.

2012 Status Update: The Maryland Infectious Disease and Health Administration collects statistics from the County. Table 34 depicts Garrett County's reportable conditions over the past 5 years.

Table 34: Reportable Conditions

Condition	2005	2006	2007	2008	2009
Animal Bites	61	68	66	92	79
Campylobacteriosis	0	0	1	6	4
Chlamydia	20	39	18	15	28
Coccidioidomycosis	0	0	1	0	0
Ehrlichiosis	0	0	0	1	0
Encephalitis - non-Arboviral	0	0	0	0	1
Giardiasis	3	3	0	0	0
Gonorrhea	0	3	1	3	2
H. influenzae - Invasive Disease	1	1	0	1	0
Hepatitis B (Acute-Symptomatic)	0	0	0	1	0
Hepatitis C (Acute-Symptomatic)	0	1	0	0	0
Legionellosis	0	0	1	0	0
Listeriosis	0	1	0	0	0
Lyme Disease	2	0	2	0	1
Meningitis, Aseptic	0	0	2	0	0
Mumps (Infectious Parotitis)	1	0	1	0	0
Mycobacteriosis, Other than TB & Leprosy	0	0	0	0	2
Pertussis	3	0	1	2	2
Pneumonia - Hospitalized Healthcare Worker	0	1	0	0	0
Q Fever	0	0	0	1	0
Rabies - Animal	5	15	8	6	4
Rocky Mountain Spotted Fever (RMSF)	2	0	0	0	0
Salmonellosis - Other than Typhoid Fever	1	3	4	5	3
Shigellosis	0	1	0	0	0
Strep Group A - Invasive Disease	0	0	0	1	0
Strep Group B - Invasive Disease	0	2	3	2	3
Strep pneumoniae - Invasive Disease	0	0	1	4	4
Syphilis - Primary and Secondary	0	0	0	0	1
Tuberculosis	0	0	0	1	3

Source: Maryland Infectious Disease and Health Administration

17. 3 MUNICIPAL PERSPECTIVE:

Because the statistics for disease and epidemics are gathered on a county basis, municipalities are included in the overall risk analysis performed by the state.

17. 4 PREVIOUS MITIGATION MEASURES:

Unlike mitigation strategies for most other hazards, disease and epidemic mitigation measures are handled by the state through the Department of Health and Mental Hygiene. County Health Departments are essentially an extension of the state agency, and any mitigation strategies would have to be addressed at that level. According to DHMH, the state has plans in place to respond to disease outbreaks.

2012 Status Update: The Garrett County Health Department website has a public health preparedness website containing information and links on bioterrorism, fact sheets, articles, documents, and education and training including self learning modules. The site not only consists of epidemic information, but all health related topics, including how to prevent and prepare different types of disasters.

COMMUNITY CAPABILITY

18. 1 GENERAL OVERVIEW:

Through its Emergency Management Office, Garrett County has developed a network of trained agency and volunteer personnel through the Maryland MEMAC, a statewide mutual aid agreement to mitigate and respond to a variety of hazards. This network includes state agencies such as the Maryland State Police, Department of Natural Resources, Department of the Environment, Department of Health and Mental Hygiene, State Highway Administration and the Maryland Emergency Management Agency. County agencies include the Roads Department, Department of Public Utilities, Department of Planning and Land Development, General Services, Board of Education, the Community Action Agency, the Health Department, Department of Social Services and the Sheriff's Office.

The county has mutual aid agreements with all surrounding counties and has also developed working relationships with volunteer organizations including the fire and rescue units that are active in incorporated communities and in rural areas. Fire and rescue units and their service areas are shown on Figure 33. The County also has mutual agreements with the American Red Cross and other groups, such as the Allegany County Haz-Mat team, that may be called upon in special circumstances. In addition, the county has agreements to coordinate mitigation activities with private utility companies, including Allegheny Power and Verizon and with private transportation companies such as CSX for rail transportation HazMat events.

Through its Department of Planning and Land Development, Garrett County has developed a system to regulate land use in sensitive areas, including 100-year floodplains, stream buffer areas, wetlands and steep slopes. The county also has subdivision regulations for the creation of new lots and a zoning ordinance for the Deep Creek Watershed. Each municipality has similar regulations that are administered through the county Department of Planning and Land Development.

WEATHER RELATED EVENTS

18. 2 WINTER STORM CAPABILITY:

As noted in the Introduction, Garrett County is probably the best-prepared county in the state of Maryland when it comes to dealing with winter storms. The County Roads Department, the County Sanitary Commission, the School Board and other local agencies, along with the State Highway Regional Office have long been equipped to deal with major snowstorms and the almost daily occurrence of "Lake Effect" snow that develops in the mountainous terrain from November through March due to the lifting of air that picks up moisture as it crosses the Great Lakes and is carried across the Appalachians. As mentioned in the county profile, the county also has to deal with the occasional ice storm during the winter months and the occurrence of fog on days when the temperature is inverted or when low hanging clouds hamper visibility.

In addition to the County Roads Department and State Highway Administration, the Emergency Management Office has close ties with both Allegheny Power and Verizon which provide electrical and telephone service respectively to the citizens of the county. Both of these utility companies clear dead or overhanging trees from utility rights-of-way during summer months so that ice and wind damage is lessened during winter storms.

With respect to new construction, the county's Building Code has wind and snow loading requirements and footer depth standards that are tailored to the Garrett County climate.

2012 Status Update: The County's website contains links on General Road Maintenance ($3.7 million for 2011), including winter driving tips and information for homeowners. Garrett County Roads Department has three maintenance area garages; Accident, Grantsville, and Oakland. These three garages are responsible for 680 miles of roadway and 127 bridges. During the planning cycle, County snow removal equipment has not been replaced due to budget constraints. Manpower has also been significantly reduced by 20 people due to attrition. Additionally, there is less paving and anti-skid material available for winter storm mitigation than in the past. These setbacks have all resulted in less snow removal occurring in a timely fashion.

18. 3 RIVERINE FLOODING CAPABILITY:

During major flood events, including thunderstorms and the passage of hurricanes, most of the agency and volunteer groups mentioned in the General Overview are called upon for assistance by the Emergency Management Office. Garrett County's capabilities are similar to other mountainous counties that deal with chronic flooding. With its recently activated warning system, residents can be made aware of rising stream levels, particularly along major streams which have monitoring stations. Usually roads or highways are blocked to some extent and people have to evacuate in lower lying areas. Emergency Management has a plan which coordinates evacuation activities with the Roads Department and State Highway Administration and with local fire and rescue units, the Health Department and the Red Cross. While Garrett County makes a great effort to mitigate flood events, the character of the natural environment, with steep slopes and rapid runoff in narrow, confined valleys, lends itself to further mitigation efforts, particularly that of moving people and structures from harms way.

The county also has the capability to mitigate future flood losses through its Sensitive Areas Ordinance, its Subdivision Regulations, its Floodplain Management Ordinance and its Stormwater Management Ordinance. The Floodplain ordinance requires the base elevation for new structures be 1 foot above the base flood level and that stream setbacks be observed in unmapped stream basins. The county also requires utilities to be elevated 3 feet above the base flood elevation. Finally, as noted in the section on Previous Mitigation Efforts, the county participates in the Flood Insurance Program. This allows property owners to purchase insurance through this federally sponsored program.

2012 Status Update: Digital Flood Insurance Rate Maps (DFIRMs) are being developed by FEMA. A preliminary map product was released in November 2011 and the final product is due for completion in September of 2013. After the completion of these new DFIRMS, Garrett County must create a new floodplain ordinance to include the adoption of the new mapping products.

18. 4 TRANSPORTATION-FOG CAPABILITY:

The agencies most involved in dealing with fog conditions are many of the same as involved with winter storms and stream flooding, namely state and county highway departments, state and local police departments and the Emergency Management Agency along with fire and rescue units. Unlike most winter storms and heavy rainfall events, there is usually little warning before visibility becomes severely limited. Warning devices placed outside the fog area have had some positive effect but drivers have to be conscious of the limitations of their field of view and drive accordingly. Methods for mitigating this hazard currently are being studied by a task force of state and county highway and police personnel, along with the Emergency Management Agency.

2012 Status Update: As described in *Chapter 8: Major Transportation-Fog*, the County utilizes the Coordinated Highways Action Response Team (CHART) to monitor local traffic information, winter storm information, visibility, and precipitation for a particular area. There have also been several display warning signs installed on Interstate 68 in Garrett County to alert motorists of expected traffic conditions, including road closures and fog and ice hindering roadways. Weather events and traffic incidents are reported on the CHART website as well, which may be accessed by the public at: http://www.chart.state.md.us/ .

18. 5 HIGH WIND CAPABILITY:

Normally the same agencies and utilities involved in providing assistance during winter storms and flood events are involved in dealing with high wind events. This includes winds associated with cold front passage, blizzard conditions, tornado, or hurricane passage. Once again, the county's warning system can be activated in the event of a tornado or hurricane watch or warning. The Emergency Management Agency coordinates this warning and ensures that local agencies and utilities are on alert for high wind events.

As noted above, the county's Building Code has provisions for wind loading for new construction. These provisions take into account the severe climatic conditions that are common in Garrett County during the winter months. The code also calls for tie-downs for newly installed mobile homes.

Note: There have been no changes to Garrett County's Building Code during this Plan Cycle.

18. 6 HEAT AND DROUGHT CAPABILITY:

As noted in the Hazard Profile, heat and drought are normally not a problem in Garrett County. However when dry conditions disrupt water service in an area of the county, the Emergency Management Agency can ask the Maryland Emergency Management Agency to request the Maryland National Guard to provide temporary water storage tanks for emergency use. Additionally, the Health Department monitors well development through the building permit process and has access to well records through the Department of the Environment to monitor ground water use and replenishment. The Department of Agriculture also monitors soil moisture conditions and provides farmers with information on crop development through the Soil Conservation District during low soil moisture conditions.

2012 Status Update: Garrett County Department of Public Safety and Emergency Management holds briefings with the Health Department, Area Agency on Aging, and other allied agencies during extreme heat events.

18. 7 EPIDEMIC CAPABILITY:

As noted in the Epidemic Profile, the Maryland Department of Health and Mental Hygiene administers the county Health Department. This administrative setup allows the full capabilities of the state to be utilized to mitigate an epidemic or other outbreak of disease in Garrett County.

2012 Status Update: Health related Disaster Planning meetings are held quarterly. These meetings are made-up of a cross-section of agencies and community groups. The Garrett County Health Department website contains fact-sheets on a number of epidemics including influenza, plague, Q fever, sever acute respiratory syndrome (SARS), and Tularemia.

18. 8 SOIL MOVEMENT CAPABILITY:

As noted in the County Profile, soil movement, particularly on steep slopes, poses a significant hazard in Garrett County. Mitigation measures currently in place include county-wide ordinances for Sensitive Areas, including steep slopes and 100-year floodplains, Sediment Control and Stormwater Management. Plans for new construction are reviewed for compliance with these ordinances by county staff and the Soil Conservation District, while inspections are performed by county staff. State agencies such as the Department of the Environment and the Bureau of Mines ensure compliance with these measures on state construction projects and during mining activities.

In addition the county's Building Code has provisions for soil testing in areas where soil conditions are favorable to slippage or other mass movement.

2012 Status Update: As noted in *Chapter 3: Previous Mitigation Efforts*, Garrett County revised their Stormwater Management Ordinance in June 2010. This Ordinance will manage stormwater by using Environmental Site Design (ESD) to Maximum Extent Practicable (MEP) to maintain post-development conditions as nearly as possible to pre-development runoff characteristics, and to reduce stream channel erosion, pollution, siltation, sedimentation, and local flooding, and use appropriate structural Best Management Practices (BMPs) only when necessary.

TECHNOLOGICAL OR OTHER EVENTS

18. 9 FIRE OR EXPLOSION CAPABILITY:

As noted in the Fire/Explosion Profile, Garrett County developed its fire and rescue capability as a response to fire hazard early in the 20th Century. More recently, fire prevention measures such are regulatory requirements mandated through the county's Building Code and the dissemination of public information through the State Fire Marshall's office have become the norm. Safety requirements for explosive materials in containers being shipped by rail or truck are enforced by the Department of Transportation.

2012 Status Update: Improvements have been made to special operation teams and Emergency Management planning. Special operation teams include HazMat, Swift Response Water Rescue, including Dive Team, as well as response to Marcellus shale.

18. 10 WILDFIRE CAPABILITY:

The Department of Natural Resources is the lead agency in wildfire suppression and works with local fire departments in training related to wildfire suppression. In addition, the Department of Natural Resources and Health Department have strict requirements for burning in outdoor areas to help prevent forest and brush wildfires.

18. 11 DAM FAILURE CAPABILITY:

As noted in the Hazard Profile, Garrett County's two largest Dams, Savage River and Bloomington are subject to annual inspection by the Upper Potomac River Commission and the Corps of Engineers. All other dams in the county are subject to inspections by the state's Dam Safety Division and the Corps of Engineers. As also noted in the Hazard Profile section, the Soil Conservation District is working to complete studies for the six flood control dams in the Little Youghiogheny Watershed to determine inundation areas below these dams. A warning system, originally designed to warn residents in the downstream area of the Savage River and Bloomington dams has been expanded to cover the smaller dams in the county.

2012 Status Update: Emergency Action Plans (EAP) are updated annually for the Savage River Dam, Deep Creek Dam, and the Oakland Flood Control Dam.

18. 12 HAZMAT CAPABILITY:

As noted in the Hazard Profile, Garrett County has a working agreement with the Allegany County HazMat Team to be called upon in the event of a HazMat incident. A team from Somerset County Pennsylvania can also be called on for assistance at a HazMat event. The state Department of the Environment is also on call to assist in the cleanup of hazardous materials. In addition, the county's hazard warning system can be activated in the event of an onsite or transportation incident.

2012 Status Update: In January 2012, the HazMat Response Plan was updated and adopted. New equipment purchases and additional HazMat Technicians have been added during this Planning Cycle. Currently, Garrett County has nine HazMat Technicians.

VULNERABILITY ASSESSMENT

2012 Status Update: During the Update process, it was determined that reorganizing this chapter would significantly improve readability and overall understanding. This entire chapter has been modified and/or updated from the previous Plan.

19. 1 HAZARD PRIORITY

As noted in *Chapter 4: Hazard Identification and Risk Assessment*, the Hazard Mitigation Planning Committee (HMPC), hazards were ranked by agency and/or community perspective. Hazards that were ranked for risk purposes "High" or "Medium-High" during this assessment process included flooding, high wind, thunderstorm, winter weather, and transportation-fog. These hazards are considered priority hazards and will be used in the Vulnerability Assessment Table 36 to assess which Critical and Public Facilities are vulnerable to these priority hazards. In addition, due to the number of dams located in Garrett County, as well as the ability to easily map and assess dam inundation areas, dam failure has also been included in Table 38 as part of the Vulnerability Assessment.

19. 2 CRITICAL AND PUBLIC FACILITIES

According to the *2011 Maryland State Hazard Mitigation Plan Update*, a "Critical Facility" is defined as facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals. In this Plan Update, the term "Critical and Public Facility" is used in order to encompass a broader definition of what facilities impacted by the selected priority hazards are important to the public and Garrett County Government.

Critical and Public Facilities have been classified by Fire Districts as shown on Table 37. This inventory includes schools, libraries, government buildings, transportation facilities, post offices, fire and rescue stations, utility structures, hospitals and nursing homes, police and corrections, and communication structures. As noted on Table 36, there are more than 400 Critical Facilities identified in Garrett County including 25 schools, 68 utility structures, 27 communication towers, 104 major bridges, and 12 transportation facilities.

During the 2012 Update, new Critical and Public Facilities that were built during the planning cycle (2004-2011) were analyzed and are listed in Table 35. These new facilities were assessed using the FEMA 2011 Preliminary Digital Flood Insurance Rate Maps (DFIRM), and all were constructed outside the 100 year floodplain.

Table 35: Critical and Public Facilities Built During Planning Cycle (2004-2011)

Facility	Address	Year Built	Fire District	Value
Southern Garrett Rescue Squad - Oakland	200 Baltimore Avenue	2004	Oakland	$1,200,000
Northern Garrett Rescue Squad - Friendsville	320 Chestnut Street	2005	Friendsville	$750,000

Grantsville Volunteer Fire Dept	178 Springs Road	2006	Grantsville	$1,000,000
Airport Terminal (GC Commissioners)	771 Airport Road	2007	Deep Creek	$338,000
T-Hanger (GC Commissioners)	815 Airport	2007	Deep Creek	$379,000
Laurel Mountain Medical Center	1027 Memorial Drive	2007	Oakland	$2,100,000
T-Hanger (GC Commissioners)	827 Airport Road	2008	Deep Creek	$420,495
Northern Garrett Rescue Squad - McHenry	26017 Garrett Highway	2009	Deep Creek	$250,000
New Ag-Trade Center at Fairgrounds	24086 Garrett Highway	2009	Deep Creek	$2,900,000
Aquatic and Fitness Center (Garrett College)	695 Mosser Road	2010	Deep Creek	$11,030,900
New Gymnasium (Garrett College)	65 Laker Drive	2011	Deep Creek	$8,964,000

Note: Figure 24 in Appendix A displays these new critical and public facilities

19. 3 ESTIMATED VALUE

The estimated replacement value of vulnerable Critical and Public Facilities and residential structures for flooding and dam failure hazards is shown on Tables 38 and 39. By using the FEMA guidelines shown on Figure 25 in Appendix A for estimating values of various structures, the value of Critical and Public Facilities affected by flooding are estimated at more than $116,000,000 while the value of Critical and Public Facilities at risk in the event of dam failure (for all dams studied) is more than $92,000,000. Also, please be aware that the value of bridges and certain utilities is not based on FEMA guidelines, but is estimated from information provided by local construction engineers.

As also noted on Tables 38 and 39 the replacement value of residential structures at-risk for flooding is estimated at more than $34,750,000, while the replacement value of residential structures in dam failure inundation areas (for all dams studied) is estimated at nearly $87,000,000.

The total replacement value for residential structures and Critical and Public Facilities for flooding is estimated at more than $151,000,000, while the combined replacement value for structures due to dam failure is more than $179,000,000.

19.4 HAZARD RATING SYSTEM

As noted in section 19.1 of this chapter, hazards that were ranked “High” or “Medium-High” will be included in the Vulnerability Assessment to determine which Critical and Public Facilities could be affected by these hazards. These hazards include riverine flooding, high wind, thunderstorm, winter weather, and transportation-fog. High wind and thunderstorm have been combined under the hazard heading “Severe Weather” in Table 36. In addition, due to the number of dams located in Garrett County, as well as the ability to easily map and assess its inundation area, dam failure has also been included in Table 36 as part of the Vulnerability Assessment.

The estimated values for those Critical and Public Facilities having a high risk for riverine flooding and dam failure can be quantified based on the FEMA DFIRM floodplain and dam inundation mapping areas. Of those facilities listed on the Vulnerability Assessment Table, 87 have been identified as having a high risk for riverine flooding and 56 have been identified as having a high risk for inundation as a result of dam failure.

In terms of vulnerability to other hazards, virtually every Critical and Public Facility is rated as "high" with respect to winter storms and "medium" with respect to fog and "low" with respect to severe weather. Winter weather can occur on more than 120 days per year on a county-wide basis, while fog events usually occur no more than 50 days per year and are more likely to affect ridge-top areas or low lying areas along river valleys. Severe weather can occur at any place in the county. With these factors in mind, it would be difficult to quantify the at-risk value for winter storms, fog and tornado without knowing which Critical and Public Facilities would be directly affected by a specific event.

Note: Table 36 Critical and Public Facilities are based on tax map parcel information.

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
Accident *	Park	Accident Town Park West						Accident Friendsville Rd.	
*		Accident Town Park East						Accident Bittinger Rd.	
	School	Northern High		H	M	L		86 Pride Parkway	
		Northern Middle		H	M	L		371 Pride Parkway	
		Accident Elementary		H	M	L		534 Accident Bittinger Rd.	
		Hickory Environmental Center		H	M	L		604 Pride Parkway	
*	Town Gov't.	Accident Town Hall		H	M	L		104 S. North St.	
*	Library	Accident Library		H	M	L		106 S. North St.	
*	Post Office	Accident Post Office		H	M	L		103 S. South St.	
*	Fire/Rescue	Accident Co. #50		H	M	L		109 S. South St.	
	Transportation	Accident Roads Garage		H	M	L		80 Accident Garage Rd.	
*	Utility	Accident WW Treatment Plant	H					Near Fratz St.	$500,000.00
*		Sewage Pump Station	H					Industrial Park Drive	$100,000.00
*		Water Pump Station	H					Accident Bittinger Rd.	$100,000.00
		Water Tank				L		Accident Friendsville Rd.	
		Texas East. Comp. Station						Texas Eastern Dr.	
	Communication	Spectra Tower		H	M	L		Near Keysers Ridge	
		USCOC Tower		H	M	L		Near Keysers Ridge	
		Tower		H	M	L		Near Keysers Ridge	
*	Ind. Park	Central Garrett Ind. Park		H	M	L		Industrial Park Drive	
	Bridge	Accident Bittinger Rd.	H	H	M			Bear Creek	$1,500,000.00
		Accident Bittinger Rd.	H	H	M			Cherry Creek	$1,500,000.00
		Fish Hatchery Rd.	H	H	M			Bear Creek	$1,500,000.00
		Fish Hatchery Rd.	H	H	M			Bear Creek	$1,500,000.00
		Rabbit Hollow Rd.	H	H	M			Little Bear Creek	$1,500,000.00
		Route 219-Bear Creek	L	H	M			North of Accident	

*Municipal

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
Bittinger	Park	Pleasant Valley 4-H	L	H	H	L		4-H Camp Rd.	
	School	Dry Run Mennonite		H	M	L		10707 Bittinger Rd.	
	Post Office	Bittinger Post Office		H	M	L		11357 Bittinger Rd.	
	Fire/Rescue	Bittinger Fire Co. 90		H	M	L		176 Brenneman Rd.	
	Police/Corr.	Boys Forestry Camp		H	M	L		234 Recovery Rd.	
	Bridge	Dung Hill Rd.	H	H	M			Casselman River	$1,500,000.00
		Maynardier Ridge Rd.	H	H	M			So. Branch Casselman River	$1,500,000.00
		Frank Brenneman Rd.	H	H	M			So. Branch Casselman River	$1,500,000.00
		Lageer Rd.	H	H	M			No Branch Casselman River	$1,500,000.00
		Rock Lodge Rd.	H	H	M			No Branch Casselman River	$1,500,000.00
	Dam	Cunningham Lake					L	4-H Camp Rd.	
Deer Park	School	Swanton Mennonite		H	M			625 O'Brien Rd.	
*	Town Gov't.	Deer Park Town Hall		H	M			100 Church St.	
	State Gov't.	Pot/Garrett For. Headquarters		H	M			1523 Potomac Camp Rd.	
	Comm. Bldg.	Swanton Community Center	L	H	M	L		3335 Swanton Rd.	
	Post Office	Swanton Post Office		H	M			3320 Swanton Rd.	
	Fire/Rescue	Deer Park Co. 20		H	M			5353 Maryland Hwy.	
	Utility	Deer Park Water Treatment						520 Decost Rd.	
		Swanton Dump Site		H	M			12091 Maryland Hwy.	
		Mount Zion Sub-Station		H				Near Rt. 135 and Backbone Mt.	
	Ind. Park	S. Garrett Ind. & Bus. Park	L	H	M		L	Rt. 135 Near Mt. Lake Park	
	Dam	Bloomington Dam					H	Near Walnut Bottom Rd.	
		SCD Dam #7					H	Little Yough near Deer Park	
	Bridge	Route 495 N. Fk. Crabtree	L	H	M			Near Swanton	
		Fricks Xing Road	H	H	M		H	West of Deer Park	$1,500,000.00
		Calderwood Road	H	H	M		H	East of Deer Park	$1,500,000.00
*		Boiling Springs Rd. at L.Yough	H	H	M		H	Deer Park	$1,500,000.00
		Swanton Road S. Fk. Crabtree	H	H	M			Near Swanton	$1,500,000.00
		Garrett Rd.	H	H	M			Black Run	$1,500,000.00
	RR Xing	Fricks Xing Road	H		L			Near Deer Park	
*		Boiling Spring Road	H		L			Near Deer Park	

*Municipal

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
Bloomington	Park	Big Run State Park	L					Savage River Rd. @ Big Run Rd.	
	School	Bloomington Elementary		H	L	L	H	334 N. Branch Avenue	$1,922,000.00
	Post Office	Bloomington Post Office		H	L	L	H	35 N. Hamill Avenue	$115,000.00
	Fire/Rescue	Bloomington Co. 100		H	L	L	H	77 N. Branch Avenue	$650,000.00
	Police/Corr.	Boys Forestry Camp		H	M	L		124 Camp Four Rd.	
	Utility	Waste Water Treatment Plant	H				H	1227 Bloomington Hill Rd.	$500,000.00
		Water Treatment Plant					H	North Street	$100,000.00
		Water Tank					H	North Street	$250,000.00
	Dam	Savage River Dam					H	Savage River Rd.	
		Piedmont Weir	L				H	Savage River Rd.	
	Bridge	Route 135-CSX RR		H	L		H	Bloomington	$10,000,000.00
		Route 135 at Savage River					H	Bloomington	$5,000,000.00
		Savage River Road	H	H	L		H	Savage River Dam	$1,500,000.00
		Savage River Road	H	H	L		H	Savage River	$1,500,000.00
		Savage River Road	H	H	L			Big Run	$1,500,000.00
		Savage River Road	H	H	L			Dry Run	$1,500,000.00
		Savage River Road	H	H	L			Crabtree Creek	$1,500,000.00
		CSX RR-No. Br. Pot.	L				H	Main CSX Line	$5,000,000.00
		CSX RR-No. Br. Pot.	L				H	Former WMRY	$5,000,000.00
	Tunnel	CSX RR-Hitchcock Tunnel						Near Spring Lick Rd.	
	RR Xing	Bloomington Hill Rd. at CSX RR			L		H	Near Savage River Rd.	

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
New Facilities added during Update									
Deep Creek	County Gov't.	Airport Terminal		H	M	L		771 Airport Road	
		T-Hanger		H	M	L		815 Airport Road	
		T-Hanger		H	M	L		827 Airport Road	
	Fire/Rescue	Northern Garrett Rescue Squad St. 2		H	M	L		26017 Garrett Highway	
	Park	Ag-Trade Center		H	M	L		24086 Garrett Highway	
	College	Aquatic & Fitness Center		H	M	L		695 Mosser Road	
		New Gymnasium		H	M	L		65 Laker Drive	
Deep Creek	Park	Garrett County Fair		H	M	L		24086 Garrett Highway	
		Deep Creek Lake State Park						73 Brant Rd.	
	College	Garrett Community		H	M	L		687 Mosser Rd.	
	Post Office	McHenry Post Office		H	M	L		1914 Deep Creek Drive	
	Fire/Rescue	Deep Creek Co. 30		H	M	L		1906 Deep Creek Drive	
	Police/Corr.	State Police/ MD DNR Police		H	M	L		67 Friendsville Rd.	
		State Fire Marshall		H	M	L		67 Friendsville Rd.	
	Utility	Sithe Energies HP Plant					L	Near Oakland Sang Run Rd.	
		Deep Creek WW Treatment						90 Towne Centre Way	
		Sewage Pump Stations (15)						Near Lake Perimeter	
		McHenry Water Tank				L		McHenry	
		McHenry Dump Site		H	M	L		1367 Bumblebee Rd.	
		Garrett Sub-Station		H				Rt. 219 North	
		Hoyes Sub-Station		H				Rt. 219 Near Rt. 42	
		Thayerville Sub-Station		H				Rt. 219 Near Glendale Rd.	
	Communication	Tower		H	M	L		Near McHenry	
		Tower		H	M	L		Deep Creek Lake State Park	
		Tower		H	M	L		1094 Mountainview Drive	
		Tower		H	M	L		Near Rt. 219 Glendale Rd.	
	Bridge	Route 219-Deep Creek Lake		H	M			Deep Creek Lake	
		Glendale Road-Deep Creek		H	M			Deep Creek Lake	
		Sang Run Road	H	H	M		H	Youghiogheny River	$1,500,000.00
		Oak-Sang Run Road	H	H	M		H	Deep Creek	$1,500,000.00
		Hoyes Run Bridge	H	H	M		H	Hoyes Run	$1,500,000.00
		Rock Lodge Rd.	H	H	M			Cherry Creek	$1,500,000.00

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type					Location	Estimated Value
			Flood	Winter	Fog	Severe Weather	Dam Failure		
	Dam	Deep Creek Dam					H	Near Mayhew Inn Rd.	
		Water Front Green					L	Near Glendale Rd.	
	Transportation	Garrett County Airport		H	H	H		575 Airport Rd.	

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
Eastern Garrett	Park	E. Garrett Rec. Area						Finzel Rd.	
	School	Rt. 40 E.S.		H	M	L		17764 National Pike	
	Fire/Rescue	E. Garrett Co. 80		H	M	L		401 Finzel Rd.	
	Utility	Frostburg Water Pump Station						Piney Run Rd.	
	Transportation	MVA Weigh Station		H	M	L		31120 National Freeway	
		SHA Storage Building		H	M	L		13336 Beall School Rd.	
	Bridge	I-68 -- Green Lantern Rd.		H	M			Near Avilton	
		I-68 -- Old Frostburg Rd.		H	M			Near Long Strech	
		I-68 -- Beall School Rd.		H	M			Near Finzel	
		Rt. 40 -- Beall School Rd.		H	M			Near Finzel	
		Rt. 40 -- Rt. 946		H	M			Near Finzel	
		Avilton Lonaconing Rd.	H	H	M			Savage River	$1,500,000.00
		Piney Run Rd.	H	H	M			Piney Run	$1,500,000.00
		Beall School Rd.	H	H	M			Savage River	$1,500,000.00
		Old Frostburg Rd.	H	H	M			Savage River	$1,500,000.00
		Avilton Lonaconing Rd.	H	H	M			Little Savage River	$1,500,000.00
	Dam	Piney Creek Reservoir					H	Piney Run Rd.	
		Church Run					L	Church Run Rd.	
		Little Savage Reservoir					L	Little Savage River	
		Carlos Reservoir					H	Staub Run	
		Klondike Reservoir					H	Woodland Creek	
	Communication	Finzel Fire Tower		H	M	L		Finzel Rd.	
		WFRB Radio Tower		H	M	L		242 Finzel Rd.	
		FCC Tower		H	M	L		Big Savage Mt.	
		FAA Facility		H	M	L		Pea Ridge Rd.	
		Columbia Gas Tower		H	M	L		Big Savage Mt.	
		CMA Cablevision		H	M	L		Big Savage Mt.	
		CMA Cablevision		H	M	L		Big Savage Mt.	
		American Towers Inc.		H	M	L		Big Savage Mt.	
		Crown Castle Int. Tower		H	M	L		Big Savage Mt.	
		Crown Comm. Tower		H	M	L		Big Savage Mt.	

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
New Facilities added during Update									
Friendsville*	Fire/Rescue	Northern Garrett Rescue Squad St. 3		H	M	L	H	320 Chestnut St.	$750,000 (GC Permits)
*	Park	Friendsville Community Park	H				H	Second Ave/Community Park Dr.	
*	School	Friendsville Elementary	L	H	M	L	H	841 First Avenue	$2,534,000.00
*	Library	Friendsville Library	L	H	M	L	H	315 Chestnut St.	$193,000.00
*	Town Gov't.	Friendsville Town Hall	L	H	M	L	H	313 Chestnut St.	$100,000.00
*	Comm. Bldg.	Friendsville Comm. Bldg.	L	H	M	L	H	947 Second Avenue	$295,000.00
*	Post Office	Friendsville Post Office	L	H	M	L	H	836 First Avenue	$112,000.00
*	Fire/Rescue	Friendsville Co. 110	H	H	M	L	H	122 Walnut St.	$1,433,000.00
	Utility	Friendsville Water Treatment					H	849 First Avenue	$100,000.00
*		Water Pump Station					H	Near Water St.	$100,000.00
*		Waste Water Treatment Plant	H				H	First Avenue	$500,000.00
		Friendsville Dump Site		H	M	L	H	8397 Friendsville Rd.	$50,000.00
	Communication	Tower		H	M	L		Near I-68 East of Friendsville	
		Tower		H	M	L		Near I-68 West of Friendsville	
*	Bridge	I-68-Youghiogheny		H	M		L	Friendsville	
*		Route 42 at Youghiogheny	L	H	M		H	Friendsville	$5,000,000.00
*		Maple Street	H	H	M		H	Friendsville	$1,500,000.00
		Cranesville Rd.	H	H	M			Salt Block Run	$1,500,000.00
		White Rock Rd.	H	H	M			Salt Block Run	$1,500,000.00
		White Rock Rd.	H	H	M			White Rock Glade Run	$1,500,000.00
*		Bear Creek Rd.	H	H	M		H	Bear Creek	$1,500,000.00
		Accident Friendsville Rd.	H	H	M		H	Bear Creek	$1,500,000.00
		Buffalo Run Rd.	H	H	M			Buffalo Run	$1,500,000.00
		Old Morgantown Rd.	H	H	M			Buffalo Run	$1,500,000.00
	Dam	Kemp Farm Dam					L	Near Rt. 42 & PA State Line	

*Municipal

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
New Facilities added during Update									
Grantsville*	Fire/Rescue	Northern Garrett Rescue Squad St. 1		H	M	L		178 Springs Road	
	Park	New Germany State Park	L			L	L	349 Headquarters Lane	
*		Grantsville Comm. Park						Miller St.	
*	Schools	Grantsville E.S.		H	M	L		130 Grant St.	
		The Salem School		H	M	L		605 Salem Dr.	
		Zion School Christ Ed.		H	M	L		326 Zion School Rd.	
*		Grantsville Outreach		H	M	L		28 Hershberger Lane	
*	Library	Grantsville Library		H	M	L		153 Main St.	
*	Town Govt.	Grantsville Town Hall		H	M	L		171 Hill St.	
	State Govt.	New Germany Park HQ.		H	M	L		349 Headquarters Lane	
	Hospital/N.H.	Mennonite N.H.		H	M	L		891 Dorsey Hotel Rd.	
*	Post Office	Grantsville P.O.		H	M	L		159 Main St.	
*	Fire/Rescue	No. Garrett Res. Co. 1		H	M	L		124 Miller St.	
	Utility	Grantsville WWTP	H					Near Atl. Rt. 40 & Casselman R.	$500,000.00
		Water Tank				L		Alt. Rt. 40 near Amish Rd.	
*		Water Tank				L		Alt. Rt. 40 near Amish Rd.	
		Water Tank				L		Near Miller St.	
		Grantsville Dump Site		H	M	L		13168 National Pike	
		Grantsville Sub-Station		H				Near Alt. Route 40	
		Jennings WWTP-Private	H					Near Rt. 495	$500,000.00
		Jennings Sub-Station		H				Near Rt. 495	
		New Germany WWTP						Near McAndrew Hill Rd.	
*	Ind. Park	No. Garrett Ind. Park		H	M	L		Near North Park Rd.	
	Transportation	SHA -- Keysers Ridge		H	M	L		3876 National Pike	
		County Roads Garage		H	M	L		13266 National Pike	
		County Roads Garage		H	M	L		13272 National Pike	
	Communication	Tower		H	M	L		Chestnut Ridge	
		Tower		H	M	L		Near I-68 West of Keysers Ridge	
		Tower		H	M	L		Near I-68 West of Keysers Ridge	
	Bridge	I-68 -- L. N. Germany Road		H	M			Near Red Ridge	
		I-68 -- Route 219 No.		H	M			Near Grantsville	
		I-68 -- N. Germany Road		H	M			Near Grantsville	

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
Grantsville		I-68 -- Route 495		H	M			Near Grantsville	
(cont'd)		I-68 -- Casselman River	L	H	M			Near Grantsville	
		Rt. 40 -- Casselman River	L	H	M			Near Grantsville	
		Rt. 495 -- No. Br. Cass	H	H	M			Near Jennings	$5,000,000.00
		Westernport Rd.	H	H	M			Savage River	$1,500,000.00
		Savage River Rd.	H	H	M			Savage River	$1,500,000.00
		Jennings Rd.	H	H	M			So. Branch Casselman River	$1,500,000.00
		Savage River Rd.	H	H	M			Poplar Lick Run	$1,500,000.00
		Savage River Rd.	H	H	M			Bear Pen Run	$1,500,000.00
		River Road	H	H	M			Casselman River	$1,500,000.00
		Maple Grove Rd.	H	H	M			Casselman River	$1,500,000.00
		Hare Hollow Rd.	H	H	M			So. Branch Casselman River	$1,500,000.00
		Durst Rd.						No. Branch Casselman River	$1,500,000.00
	Dam	New Germany Lake					L	Near McAndrew Hill Rd.	
		Meadow Run					H	Near Chestnut Ridge Rd.	
		Lake Louise					H	Near Spring Valley Farm Lane	

*Municipal

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
New Facilities added during Update									
Kitzmiller *	Town Gov't	Company Store/Visitors Center	L	H	M	L	H	236 West Main St.	$150,000.00
*	School	Kitzmiller Elementary	L	H	M	L	H	288 West Main St.	$1,716,000.00
*	Library	Kitzmiller Library	L	H	M	L	H	288 West Main St.	
*	Town Gov't.	Kitzmiller Municipal Building	L	H	M	L	H	610 Third St.	$100,000.00
*	Comm. Bldg.	Kitzmiller Comm. Bldg.	L	H	M	L	H	104 Centre St.	$150,000.00
*	Post Office	Kitzmiller Post Office	L	H	M	L	H	103 Centre St.	$80,000.00
*	Fire/Rescue	Kitzmiller Co. 70	L	H	M	L	H	249 East Main St.	$908,000.00
	Utility	Kitzmiller WTP	L				H	200 East Main St.	$100,000.00
		Water Tank				L		North American Rd.	
*		Water Tank				L		Near Oak St.	
		Kitzmiller WWTP	H				H	East Main St.	$500,000.00
	Dam	Kitzmiller Reservoir					L	North American Rd.	
	Bridge	CSX RR at No. Br. Pot.	L				H	Lake Jennings Randolph	$5,000,000.00
*		Route 38 at No. Br. Pot.	L	H	M		H	Kitzmiller	$5,000,000.00
Gorman	Comm. Bldg.	White Ch. Community Bldg.		H	M	L		3420 White Church Sreyer Rd.	
	Fire/Rescue	Gorman Co. 120	L	H	M	L		270 Gorman Rd.	
	Communication	Tri-State Cell Tower		H	M	L		Near Rt. 50 & Table Rock Rd.	
	Utility	Mettiki Sub-Station		H				Near Table Rock Rd.	
		Gorman Sub-Station		H				Near Rt. 50 & Gorman Rd.	
	Bridge	Route 50 at No. Br. Pot.	L	H	M			Gorman	
		Kempton Road	H	H	M			Laurel Run	$1,500,000.00
		Laurel Run Rd.	H	H	M			Laurel Run	$1,500,000.00
		Wilson Corona Rd.	H	H	M			Shields Run	$1,500,000.00
		CSX RR at No. Br. Pot.	L				H	Near Alt House Hill Rd.	$5,000,000.00
		CSX RR at No. Br. Pot.	L					Near Wallman Rd.	
		CSX RR at No. Br. Pot.	L					Near Kempton Rd.	

*Municipal

Critical Facilities and Hazard Data
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type					Location	Estimated Value
			Flood	Winter	Fog	Severe Weather	Dam Failure		
Lonaconing	Police/Corr	Boys Forestry Camp		H	M	L		272 Freedom Lane	
	Dam	Koontz Run Reservoir					H	Near Beechwood Rd.	
Barton	Dam	Barton Reservoir					H	Near Bartlett Run Rd.	
Westernport	Transportation	Moran Air Strip		H	M	L		Near Westernport Rd.	
	Utility	Westernport Landfill		H	M			Near Westernport Rd.	
	Communication	High Rock Fire Tower		H	M	L		Near Swamp rd.	
		U.S. Cellular Tower		H	M	L		Near Westernport Rd.	

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Hazard Type: Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
New Facilities added during Update									
Oakland	Hospital/N.H.	Laurel Mountain Medical Center		H	M	L		1027 Memorial Drive	
MLP	Fire/Rescue	Southern Garrett Rescue Squad		H	M	L	H	200 Baltimore Ave.	$1,200,000(GC Permits)
	Park	Swallow Falls State Park	L					Swallow Falls Rd.	
		Herrington Manor						222 Herrington Lane, Oakland	
		Crellin Comm. Park	H					Crellin Underwood Rd.	
		Broadford Rec. Area						Broadford Rd.	
	School	Southern H.S.		H	M	L		345 Oakland Dr., Mt. Lake Pk.	
MLP		Southern M.S.		H	M	L		605 Harvey Winters Rd., Mt. Lake Pk.	
MLP		Broadford E.S.		H	M	L		607 Harvey Winters Rd., Mt. Lake Pk.	
		Dennett Rd. E.S.		H	M	L		770 Dennett Rd., Mt. Lake Park	
		Yough Glades E.S.	L	H	M	L		70 Wolf Acres Dr., Oakland	
		Swan Meadow E.S.		H	M	L	L	6709 Garrett Highway, Oakland	
		Crellin E.S.	H	H	M	L		115 Kendall Dr., Oakland	$912,000.00
		Gortner Amish School		H	M	L		Mansfield Rd.	
		Mt. Top Sev. Day Advent		H	M	L		Rt. 219, near Foster Rd.	
		Pleasant Valley Chr.		H	M	L		2392 Mason School Rd., Oakland	
		Ferndale Christian School		H	M	L		Mt. Nebo Rd. @ Rt. 219	
OK	Library	Ruth Enlow Library		H	M	L		315 Chesnut St., Oakland	
OK	Town Govt.	Oakland T own Hall	H	H	M	L	H	15 S. Third St., Oakland	$902,000.00
MLP		Mt. Lake Pk. Town Hall		H	M	L	H	1007 Alleghany Dr., Mt. Lake Park	$121,000.00
LLH		Loch Lynn Town Hall		H	M	L		20011 Bonnie Blvd., Mt. Lake Park	
OK	County Govt.	Garrett Co. Court House		H	M	L		203 S. Fourth St., Oakland	
OK		Garrett Co. Health Dept		H	M	L		1025 Memorial Dr., Oakland	
OK		Garrett Co. Animal Shelter		H	M	L		152 Oakland-Sang Run Rd., Oakland	
		C&W Plaza		H	M	L		2008 Md Highway, Mt.Lake Park	
		Dept. of Public Utilities		H	M	L		14689 Garrett Highway, Oakland	
	State Govt.	Dept. of Natural Resources		H	M	L		Rt. 219 near Merrill Lane	
		Motor Vehicle Admin.		H	M	L		400 Weber Rd., Oakland	
OK		Dept. Ag. Animal Health		H	M	L		152 Oakland Sang Run Rd.	
OK		Dept. of Social Services		H	M	L		12594 Garrett Highway, Oakland	
OK		MD Employment Office		H	M	L		216 S. Third St., Oakland	
OK		Community Action Agency		H	M	L		104 East Center Street, Oakland	

Critical and Public Facilities
Garrett County
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Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
			Hazard Type						
	Federal Govt.	NRCS and SCD		H	M	L		1916 Maryland Hwy.	
	Community Bldg	Pleasant Valley Comm.		H	M	L		975 Joni Miller Rd., Oakland	
OK	Transportation	SHA -- Oakland		H	M	L		95 SHA Drive, Oakland	
OK		Garrett Co. Roads		H	M	L	H	12778 Garrett Highway, Oakland	$400,000.00
		Gortner Airport		H	M	L		4166 Mason School Rd., Oakland	
		Mason Airport		H	M	L		216 Chloma Lane, Oakland	
OK		CSX RR Station	H	H	M	L	H	West Liberty Street, Oakland	
OK	Post Office	Oakland P.O.	H	H	M	L	H	22 S. Second Street, Oakland	$296,000.00
MLP		Mt. Lake Pk. P.O.	H	H	M	L	H	1325 Md Highway, Mt. Lake Park	$154,000.00
OK	Fire/Rescue	Southern Garrett Co. 40		H	M	L	H	23 S. Third St., Oakland	$930,000.00
MLP		Southern Garrett Co. 20		H	M	L		Md Highway, Mt. Lake Park	
OK	Utility	Oakland WWTP	H				H	27 Oakland-Rosedale Rd., Oakland	$1,000,000.00
		Mountain Lake WWTP	H				H	Near Powells Dr.	$1,000,000.00
		Crellin WWTP	H					Near Hutton Rd.	$500,000.00
OK		Oakland WTP						Water Plant Rd., Oakland	
OK		Water Tank #1				L		Near Pennington St.	
OK		Water Tank #2				L		Near Pennington St.	
MLP		Water Tank #3				L		Near Pittsburgh Ave.	
OK		Water Pump Station	H				H	Near West Liberty St.	$100,000.00
		Crellin Water Tank				L		Near Hutton Rd.	
		Crellin WTP	H					Near Crellin Rd.	$100,000.00
		Oakland Dump Site		H	M	L		10810 Garrett Highway, Oakland	
		Kings Run Dump Site		H	M	L		1631 Kings Run Rd., Oakland	
		Garrett Co. Landfill		H	M	L		3118 Oakland Sang-Run Rd., Oakland	
MLP		Broadford Sub-Station		H				Near Rt. 135	
OK		Oak Park Sub-Station		H				Near West Liberty St.	
OK		Oakland Sub-Station		H				Near Rt. 135	
OK	Hospital/ N.H.	Garrett Co. Memorial		H	M	L		251 S. Fourth St., Oakland	
OK		Cuppett/Weeks N.H.		H	M	L		706 East Alder St., Oakland	
MLP		Dennett Road N.H.		H	M	L		113 Mary Dr., Mt. Lake Park	
OK	Military	National Guard Armory		H	M	L		High St., Oakland	
OK	Police/Corr	Sheriff/Jail		H	M	L		203 S. Fourth Street, Oakland	
OK	Communication	Tower		H	M	L		17070 Garrett Hwy., Oakland	

Critical and Public Facilities
Garrett County
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Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
		Tower		H	M	L	H	17 East Oak Street, Oakland	$150,000.00
MLP	Dam	Broadford Dam SCD #6					H	Near Broadford St.	
OK		SCD Dam #1					H	Fourth St. & Memorial Dr.	
OK		SCD Dam #2					H	Rt. 219 near Merrill Lane	
OK		SCD Dam #3					H	Memorial Dr. & Eighth St.	
		SCD Dam #5					H	Near Smouse Rd.	
MLP		Mt. Lake					L	Near Oakland Ave.	
		Herrington Lake					L	Herrington Manor State Park	
		Lake Koshare					L	Herrington Manor State Park	
		Browning Dam					L	Muddy Creek	
	Bridge	Rt. 39 in Crellin	L	H	M			Youghiogheny River	
		Rt. 219 South	L	H	M		L	Little Yough. River	
OK		Rt. 39 -- CSX RR		H	M			Downtown Oakland	
OK		Rt. 39 in Oakland	L	H	M			Little Yough. River	
		Rt. 135 in Mt. Lake Park			M		H	Little Yough. River	$5,000,000.00
		Rt. 135 in Mt. Lake Park			M		H	Little Yough. River	$5,000,000.00
OK		CSX RR -- Youghiogheny R.	L					West of Oakland	
OK		Liberty Street in Oakland	H	H	M		H	Youghiogheny River	$1,500,000.00
		Underwood Rd. -- CSX RR		H	M			Oakland	
		Mansfield Rd. near Redhouse	H	H	M			Youghiogheny River	$1,500,000.00
		Swallow Falls Rd.	H	H	M			Youghiogheny River	$1,500,000.00
		Silver Knob Rd.	H	H	M			Youghiogheny River	$1,500,000.00
		Underwood Rd.	H	H	M			Youghiogheny River	$1,500,000.00
		Oakland Rosedale Rd.	H	H	M			Little Yough. River	$1,500,000.00
		Pleasant Valley Rd	H	H	M		H	Trib. to Little Yough.	$1,500,000.00
		Cranesville Road	H	H	M			Muddy Creek	$1,500,000.00
		Jasper Riley Rd.	H	H	M			Trout Run	$1,500,000.00
		Pleasant Valley Rd	H	H	M			Trout Run	$1,500,000.00
		Mason School Rd.	H	H	M			Cherry Creek	$1,500,000.00
		Blue Ribbon Rd.	H	H	M			Clark Run	$1,500,000.00
		Mansfield Rd.	H	H	M			Cherry Creek	$1,500,000.00
		Underwood Rd.	H	H	M			Cherry Creek	$1,500,000.00
		Crellin Mine Rd.	H	H	M			Snowy Creek	$1,500,000.00

Critical and Public Facilities
Garrett County
Hazard Data

Table 36: Vulnerability Assessment

Fire District	Facility Type	Facility Name	Flood	Winter	Fog	Severe Weather	Dam Failure	Location	Estimated Value
		Oakland Sang Run Rd.	H	H	M			Miller Run	$1,500,000.00
		Herrington Manor Rd.	H	H	M			Herrington Run	$1,500,000.00
		Kings Run Rd.	H	H	M			Broadford Run	$1,500,000.00
		Broadford Run Rd.	H	H	M			Broadford Run	$1,500,000.00
OK	RR Xing	Oak-Rosedale Rd. -- CSX			M			Oakland	
OK		2nd Street -- CSX			M			Downtown Oakland	
MLP		Rt. 560 -- CSX			M			Near Loch Lynn Heights	
		Fingerboard Rd. -- CSX			M			Hutton	

OK - Oakland MLP - Mt. Lake Park LLH - Loch Lynn Heights

Table 37: Critical and Public Facilities by Fire District Garrett County

Type of Facility	Accident	Bitt inger	Bloom ington	Barton	Deer Park	Deep Creek	Eastern Garrett	Friends ville	Grants ville	Gorman	Kitz miller	Lona coning	Oakland	Western port	Total
Park	2	1	1			3	1	1	2				4		15
School	4	1	1		1		1	1	4		1		11		25
College						3									3
Library	1							1	1		1		1		5
County Govt.						3							5		8
State Govt.					1				1				6		8
Federal Govt.													1		1
Town Govt.	1				1			1	1		2		3		9
Community Bldg					1			1		1	1		1		5
Hosp./N. Home									1				4		5
Post Office	1	1	1		1	1		1	1		1		2		10
Fire/Rescue	1	1	1		1	2	1	2	2	1	1		3		16
Transportation	1					1	2		3				5	1	13
Police/Corr.		1	1			2						1	1		6
Military													1		1
Utility	5		3		3	22	1	4	9	2	4		16	1	70
Communication	3					4	10	2	3	1			2	2	27
Ind. Park	1				1				1						3
Major Bridge	6	5	9		6	6	10	10	16	7	2		27		104
RR Xing			1		2								4		7
Dam		1	2	1	2	2	*5	1	3		1	1	9		28
Tunnel			1												1
Total	26	11	21	1	20	49	31	25	48	12	14	2	106	4	370

Sources: Maryland Property View Tax Maps, Garrett Co. Addressing System, ADT Map of Garrett Co.
**Includes two dams in the Shaft Fire District served from Allegany County Fire Districts*

Table 38: Damage Estimates by Fire District Garrett County Critical Facilities and Residential Property Flooding and Dam Failure

	Accident	Bitt inger	Bloom ington	Barton	Deer park	Deep Creek	Eastern Garrett	Friends ville	Grants ville	Gorman	Kitz miller	Lona coning	Oakland	Western port	Total
Flood															
School													.912		0.912
Post Office													.450		0.45
Fire/Rescue								1.433							1.433
Utility	.700		.500					.500	1.000		.500		2.700		5.9
Town Govt'													.902		0.902
Bridge	7.500	7.500	7.500		7.500	6.000	7.500	12.000	17.000	4.500			28.500		105.5
Total Critical	8.200	7.500	8.000		7.500	6.000	7.500	13.933	18.000	4.500	.500		33.464		115.097
Residential	1.155		1.848		1.733			9.818	4.620	2.887	2.310		10.395		34.766
Grand Total	**9.355**	**7.500**	**9.848**		**9.233**	**6.000**	**7.500**	**23.751**	**22.620**	**7.387**	**2.810**		**43.859**		**149.863**
Dam Failure															
School			1.922					2.534			1.716				6.172
Post Office			.115					.112			.080		.450		0.757
Fire/Rescue			.650					2.183			.908		2.13		5.871
Utility			.850					.750			.500		2.100		4.2
Town Govt'								.100			.250		1.023		1.373
Comm. Bldg.								.295			.150				0.445
Library								.193							0.193
Transportation													.400		0.4
Communication													.150		0.15
Bridge			28.000		4.500	4.500		9.500		5.000	10.000		13.000		74.5
Total Critical			31.537		4.500	4.500		15.667		5.000	13.604		19.253		94.061
Residential			10.626		3.696	1.155		29.222			22.523		19.750		86.972
Grand Total			**42.163**		**8.196**	**5.655**		**44.889**		**5.000**	**36.127**		**39.003**		**181.033**

Note: Damage Estimates in Millions of Dollars

Estimates for buildings based on FEMA Criteria: Residential - $77/sq. ft. @ 1500 sq ft. avg
School - $91/sq. ft.
Fire/Rescue - $130/sq. ft.
General - $87/sq. ft.

Estimates for utilities: WWTP- $.5M
WTP - $.1M
GARB - $.05M
Pump Station-$.1M
Water Tank - $.25M
Communication Tower - $.15M

Estimates for bridges: County - $1.5M
State - $5-10M depending on size
RR - $5M

Table 39: Damage Estimates for Garrett County Critical Facilities and Residential Structures

	Stream Flooding			Dam Failure	
Type of Facility	Number of Structures	Value in Dollars		Number of Structures	Value in Dollars
School	1	$912,000		3	$6,172,000
Post Office	2	450,000		5	757,000
Fire/Rescue	1	1,433,000		6	5,871,000
Utility	13	5,900,000		12	4,200,000
Town Govt'	1	902,000		4	1,373,000
Commun. Bldg.				2	445,000
Library				1	193,000
Transportation				1	400,000
Communication				1	150,000
Bridge	68	105,500,000		23	74,500,000
Total Critical	87	116,597,000		58	94,061,000
Residential	301	34,766,000		753	86,972,000
Grand Total	387	$151,363,000		811	$179,033,000

Note: Estimates for buildings based on FEMA Criteria: Residential - $77/sq. ft. @ 1500 sq ft. avg
School - $91/sq. ft.
Fire/Rescue - $130/sq. ft.
General - $87/sq. ft.

Estimates for utilities: WWTP- $.5M **Pump Station-$.1M**
WTP - $.1M **Water Tank - $.25M**
GARB - $.05M **Communication Tower - $.15M**

Estimates for bridges: County - $1.5M
State - $5-10M depending on size
RR - $5M

19.5 CRITICAL AND PUBLIC FACILTY - MAPPING

The Critical and Public Facilities are shown on a series of maps running from Figures 26 through 37 and include the following: County wide facilities-Figure 26; Parks-Figure 27; Community Buildings-Figure 28; Schools and Libraries-Figure 29; Government Buildings-Figure 30; Hospitals and Nursing Homes-Figure 31; Public Works-Figure 32; Fire and Rescue Facilities-Figure 33; Police and Corrections-Figure 34; Transportation Facilities-Figure 35; Communication Towers-Figure 36; and Utility Lines and Substations-Figure 37. Fire District boundaries are also shown on Figure 33. Facilities within Municipalities are shown on Figure 38 through 45 and include the following: Accident-Figure 38; Deer Park-Figure 39; Friendsville-Figure 40; Grantsville-Figure 41; Kitzmiller-Figure 42; Loch Lynn Heights-Figure 43; Mountain Lake Park-Figure 44; and Oakland-Figure 45. New facilities added during the Update are shown on Figure 24.

19. 6 RESIDENTIAL STRUCTURES - FLOODING AND DAM FAILURE

Garrett County has also chosen to identify residential and commercial structures at risk for flooding and dam failure by Fire District. These structures are undifferentiated except in the Oakland, Mountain Lake Park, Friendsville and Kitzmiller communities which are susceptible to flooding and possibly dam failure. As shown on Table 39, more than 300 residential structures have been identified as at-risk for flooding, and more than 750 residential structures have been identified as at-risk for inundation in the event of dam failure. Those communities at risk for dam failure include: Friendsville, downstream of Deep Creek Lake; Kitzmiller and Shallmar, downstream of Stony River Dam and Mt. Storm Lake; Bloomington, downstream of both Bloomington Dam and Savage River Dam; Oakland, which is affected by Soil conservation District Dams #1, 2 and 3 in the downtown area; and Oakland, Mountain Lake Park, Loch Lynn Heights and Deer Park which are affected by Soil Conservation District Dams #5, 6, and 7 which are located in the Little Youghiogheny Basin.

The Soil Conservation District has prepared Emergency Action Plans for Dams #1, 2, and 3 in Oakland and has identified more than 130 residential structures and nearly 20 commercial structures in the inundation area of these three dams. The SCD has also prepared a preliminary inundation map for Dam #7 which is located above Deer Park. Failure of this dam could affect more than 70 residences and 6 businesses in Deer Park, Loch Lynn Heights and Mountain Lake Park. One of the county's proposed mitigation actions is to complete the Dam 7 study and prepare Emergency Action Plans for Dams 5, 6, and 7.

A listing of the number of residential and commercial structures subject to inundation by dam failure is shown on Figures 46 through 53. This includes the inundation areas of Deep Creek Lake-Figure 46, Savage River Dam- Figure 47, Bloomington Dam- Figure 48, Stoney River Dam and Mt. Storm Lake-Figure 49, SCD Dams #1, 2, and 3- Figure 50, and SCD Dam #5-Figure 51. Maps showing Dam Inundation areas include: Deer Park, Loch Lynn Heights, Mountain Lake Park - Figure 51; and Figures 52 and 53 show detail for SCD Dams 1, 2, and 3 in downtown Oakland.

Garrett County has not identified residential structures at risk for other hazards, but certainly recognizes that most structures are vulnerable to winter storms, tornado activity, wildfire and hazardous material events. Once again, because of the nature of these events it would be difficult to quantify the risk for residential and commercial structures. However, there are a significant number of residential structures inside the perimeter of the Savage River State Forest and a significant number of structures within close proximity to the private forest land encircling Deep Creek Lake that are vulnerable to wildfire.

Table 41 depicts the updated building permit information over the 2004 to 2010 Update period. Residential development has decreased by -69% from 410 permits in 2004 to 126 permits in 2010, of which an average of 44% of this residential development has been built in the Deep Creek area during this time period. According to Jim Torrington, (Garrett County Department of Planning and land Development - Division of Permits and Inspections) Garrett County only issued one floodplain permit during the 2004 to 2010 time period. This home is located on Bear Creek Road and the permit was issued based on a FEMA Letter of Map Revision for fill placement within the 100 year floodplain and was approved in October of 2009. The declared value of the new home was $245,000. There were no other permits for new development in the 100 year floodplain in Garrett County during that time frame.

Table 40: Approved Building Permits

County	2004	2005	2006	2007	2008	2009	2010	Total
Total Permits	750	714	681	654	525	468	499	**4291**
Est. Value	$107,192,808	$107,749,626	$123,376,735	$127,738,526	$75,624,213	$57,855,466	$208,123,963	**$807,661,337**
Residential	410	386	369	294	200	176	126	**1961**
Single Family	310	284	254	210	169	118	107	**1452**
Est. Value SF	$68,369,657	$63,920,950	$66,453,071	$57,479,763	$43,908,079	$30,250,052	$27,322,162	**$357,703,734**
Comm./Inst.	46	62	61	72	84	36	97	**458**
Est. Value C/I	$14,316,700	$20,102,569	$29,063,349	$45,757,837	$20,505,286	$13,598,200	$172,947,368	**$316,291,309**
Deep Creek Watershed								
Total Permits	298	267	260	250	209	145	163	**1592**
Residential	209	188	184	104	88	51	45	**869**
Single Family	151	128	111	96	73	48	44	**651**
SF % of Co.	49%	45%	44%	46%	44%	41%	41%	**44%**

Source: Garrett County Department of Planning and Land Development

MUNICIPAL SYNOPSIS

20. 1 MUNICIPAL SYNOPSIS:

2012 Status Update: This new Chapter provides a summary of Garrett County's municipal characteristics.

Garrett County has seven municipalities, with a combined population of 30,097 people according to the Census of 2010. This municipal population included 1,311 residents aged 65+, and 46 residents of Hispanic origin. The municipalities had a combined total of 3,366 housing units in 2010. In terms of percentages, the municipal population represented 23% of the total county population, while the elderly population in municipalities represented 25% of the county total for residents over age 65. The Hispanic population in municipalities represented 21% of the county total for Hispanics. The municipal housing units represented 28% of the total for Garrett County.

As noted on the municipal synopsis maps, the municipalities face many of the same risks as the county. These sheets show in synoptic form basic population and housing data for each municipality in Garrett County as well as the flooding hazard faced by those municipalities. Maps showing various hazards for each municipality follow. For details on each hazard, a listing of Critical and Public Facilities, and detailed mitigation measures, the reader should refer to Chapter 19 of the Plan.

Note: Expansive soils were included on these municipal maps due to their very slow infiltration rate (high runoff potential) when wet. These soils consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission, creating runoff. Homes built on expansive soils have the possibility of being structurally damaged due to the shrink-swell properties of this soil type. Best Management Practices (BMPs) for building on expansive soils include: monitoring for extreme changes in soil moisture content and planting trees 15 to 30 feet away from foundations.

ACCIDENT SYNOPSIS:

2010 Municipal Population:

- 325 Total (1% of the county)

At-Risk Population:

- Age 65 & Over - 51

Vulnerable Population:

- Non-English Speaking (Hispanic) - 2

2000 Housing:

- 162 Units

2010 Housing:

- 173 Units

2000 - 2010 % Change in Housing Units:

- +6.8% Housing Units

Hazards:

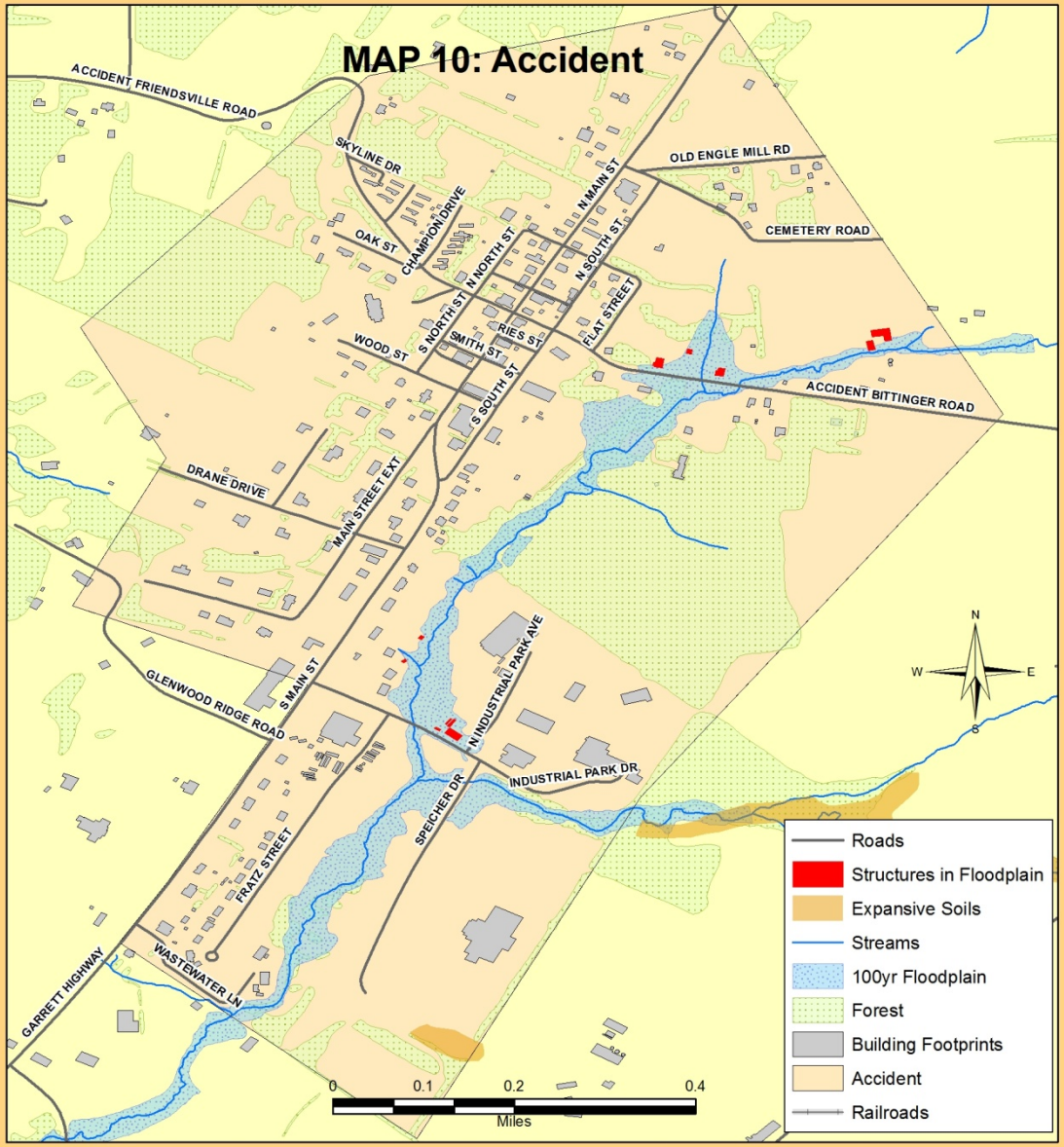
Floodplain: Unnamed Tributaries
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: None
HazMat: Rt. 219

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on building footprints):

- 11



DEER PARK SYNOPSIS:

2010 Municipal Population:

- 399 Total (1% of the county)

At-Risk Population:

- Age 65 & Over - 51

Vulnerable Population:

- Non-English Speaking (Hispanic) - 1

2000 Housing:

- 181 Units

2010 Housing:

- 175 Units

2000 - 2010 % Change in Housing Units:

- -3.3% Housing Units

Hazards:

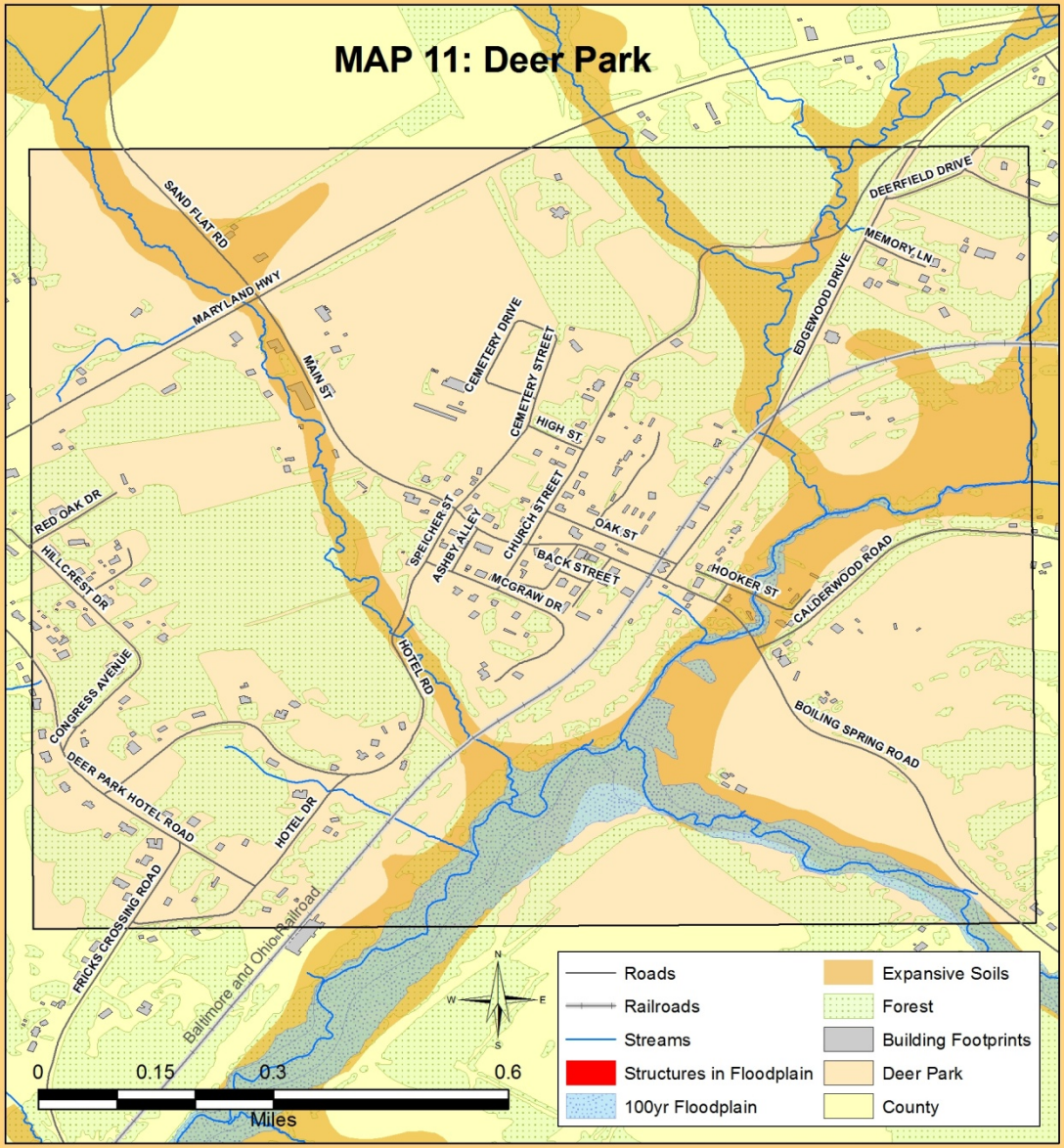
Floodplain: Block Run; Little Youghiogheny River
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Rt. 135

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on building footprints):

- None



FRIENDSVILLE SYNOPSIS:

2010 Municipal Population:

- 491 Total (2% of the county)

At-Risk Population:

- Age 65 & Over - 81

Vulnerable Population:

- Non-English Speaking (Hispanic) - 3

2000 Housing:

- 266 Units

2010 Housing:

- 272 Units

2000 - 2010 % Change in Housing Units:

- +2.3% Housing Units

Hazards:

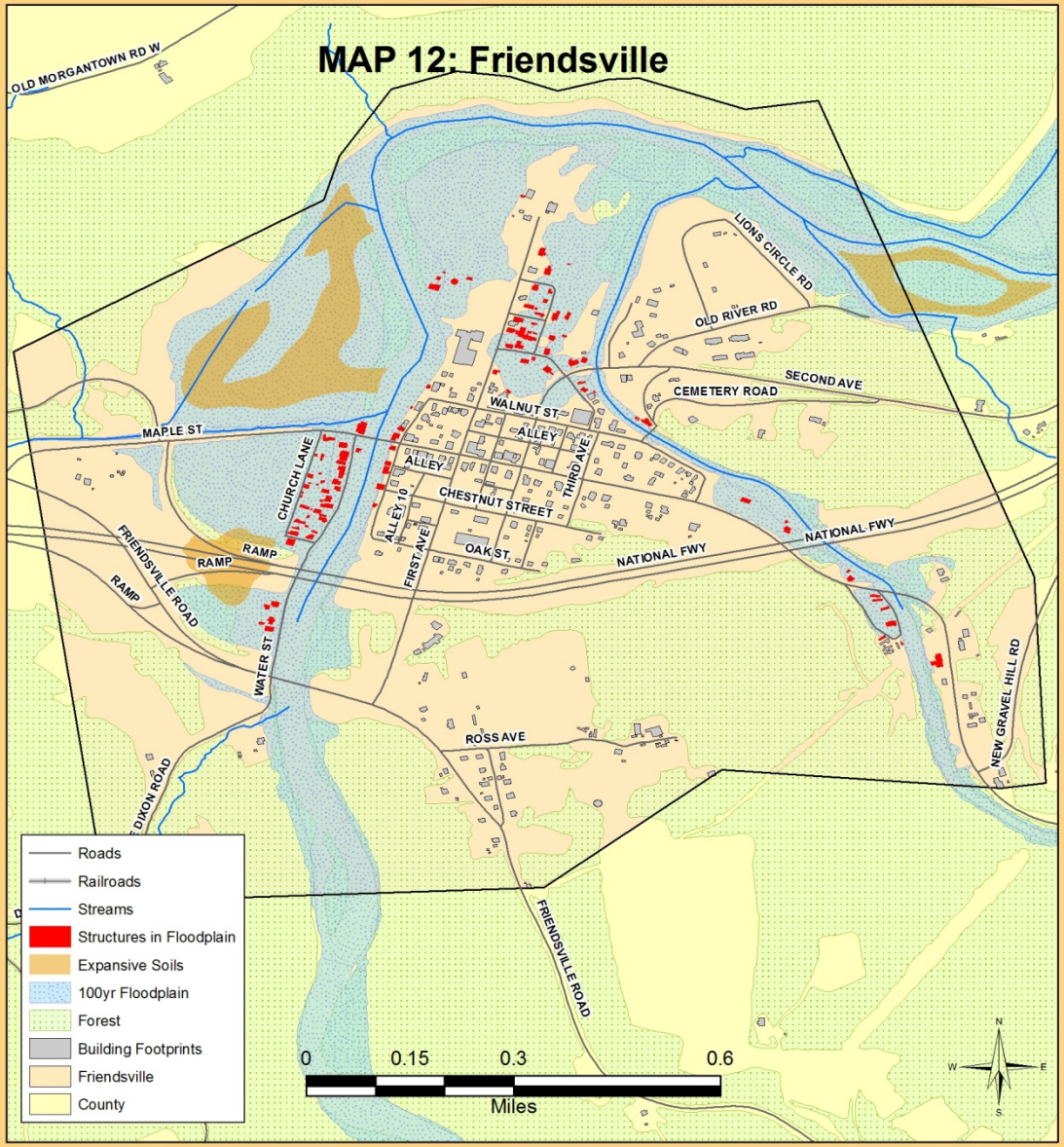
Floodplain: Bear Creek; Youghiogheny River
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Interstate 68; Rt. 42

Facilities in Floodplain (based on Building footprint):

- Freiendsville Water Treatment

Structures in Floodplain (based on building footprints):

- 105



GRANTSVILLE SYNOPSIS:

2010 Municipal Population:

- 766 Total (3% of the county)

At-Risk Population:

- Age 65 & Over - 152

Vulnerable Population:

- Non-English Speaking (Hispanic) - 12

2000 Housing:

- 298 Units

2010 Housing:

- 397 Units

2000 - 2010 % Change in Housing Units:

- +33.2% Housing Units

Hazards:

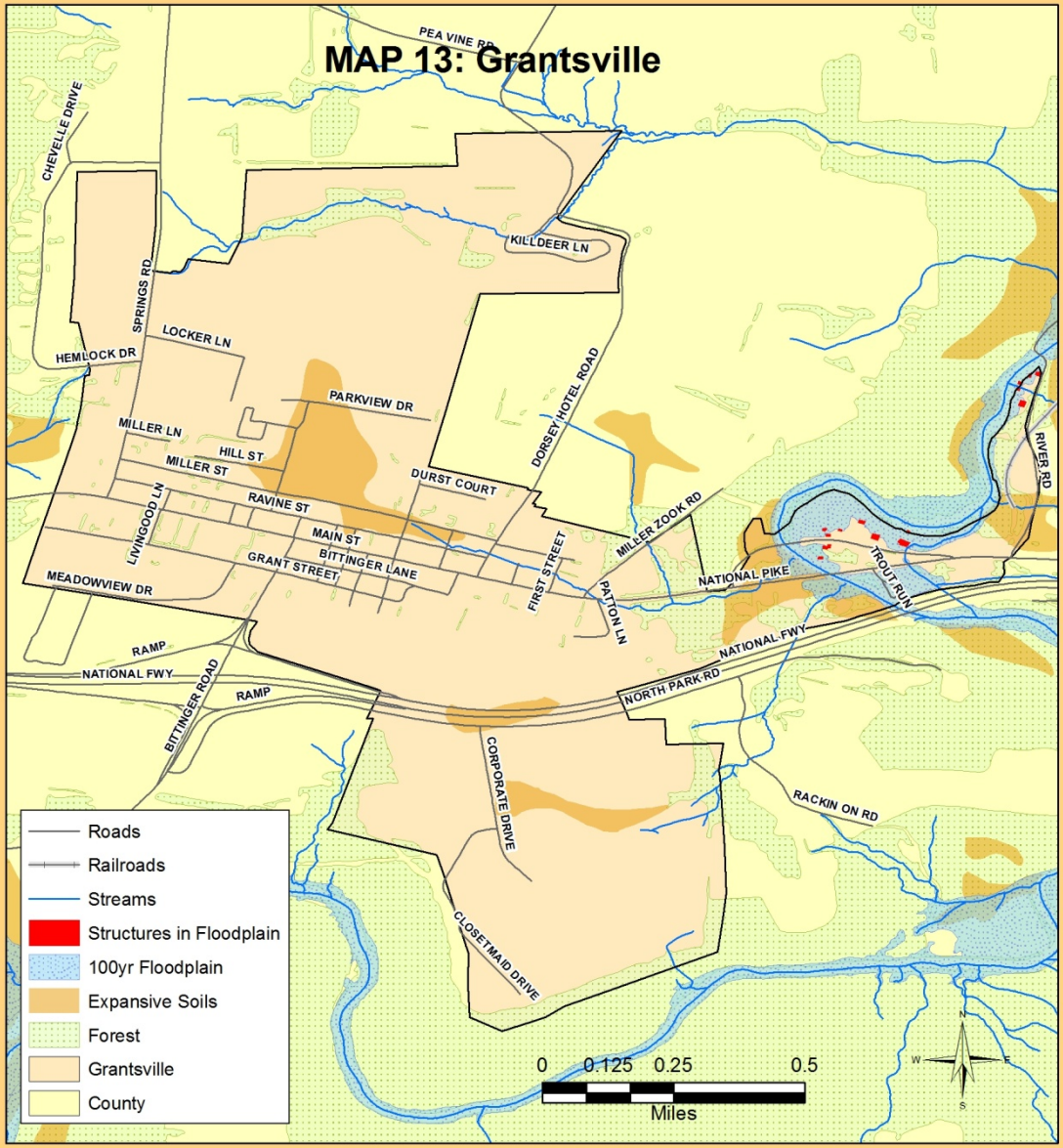
Floodplain: None
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Interstate 68; Rt. 40; Rt. 495

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on building footprints):

- 15



KITZMILLER SYNOPSIS:

2010 Municipal Population:

- 321 Total (1% of the county)

At-Risk Population:

- Age 65 & Over - 56

Vulnerable Population:

- Non-English Speaking (Hispanic) - 1

2000 Housing:

- 155 Units

2010 Housing:

- 158 Units

2000 - 2010 % Change in Housing Units:

- +1.9% Housing Units

Hazards:

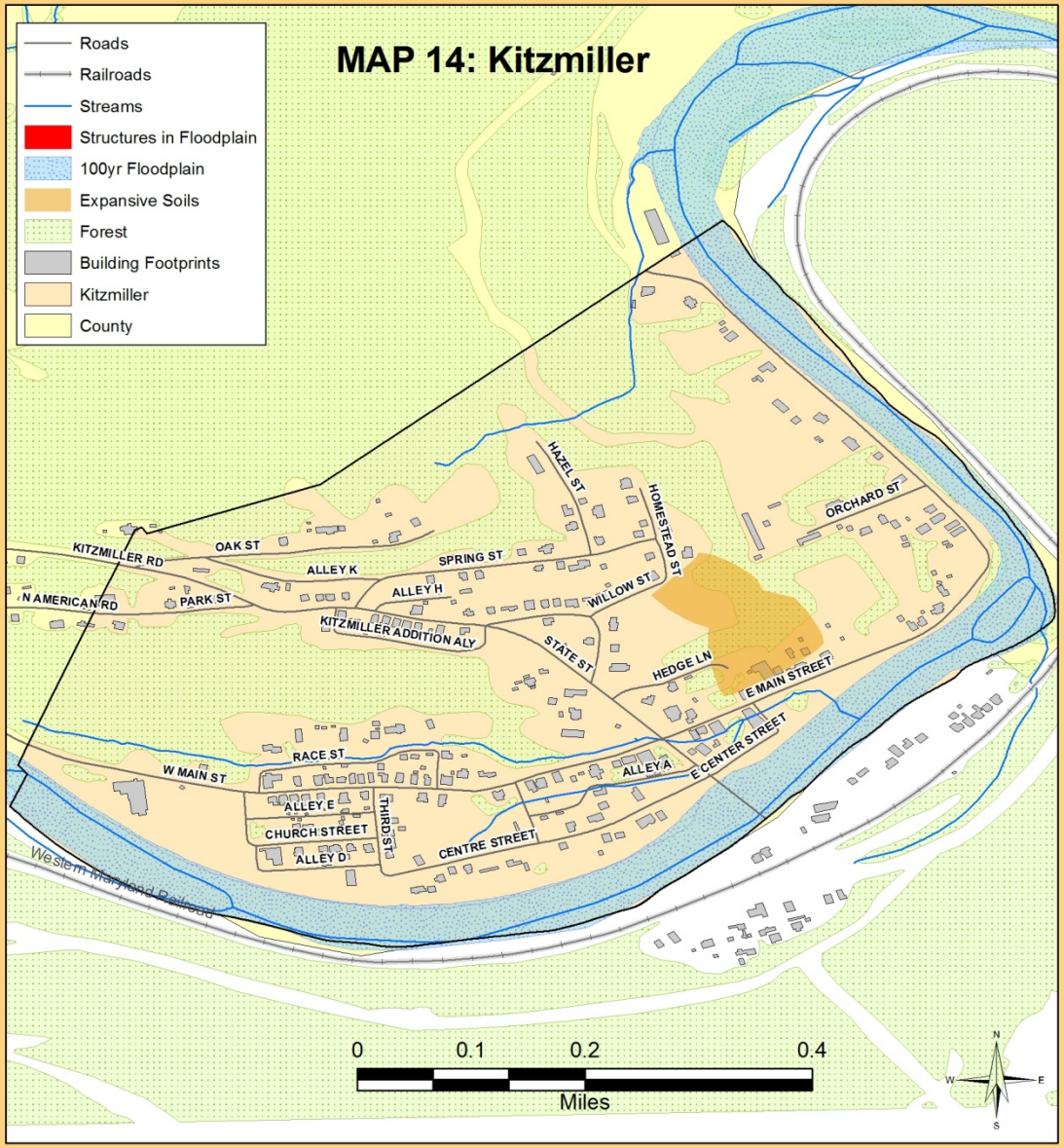
Floodplain: North Branch Potomac River
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Rt. 38

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on building footprints):

- None



MT. LAKE PARK SYNOPSIS:

2010 Municipal Population:

- 2,092 Total (7% of the county)

At-Risk Population:

- Age 65 & Over - 420

Vulnerable Population:

- Non-English Speaking (Hispanic) - 12

2000 Housing:

- 948 Units

2010 Housing:

- 954 Units

2000 - 2010 % Change in Housing Units:

- +0.6% Housing Units

Hazards:

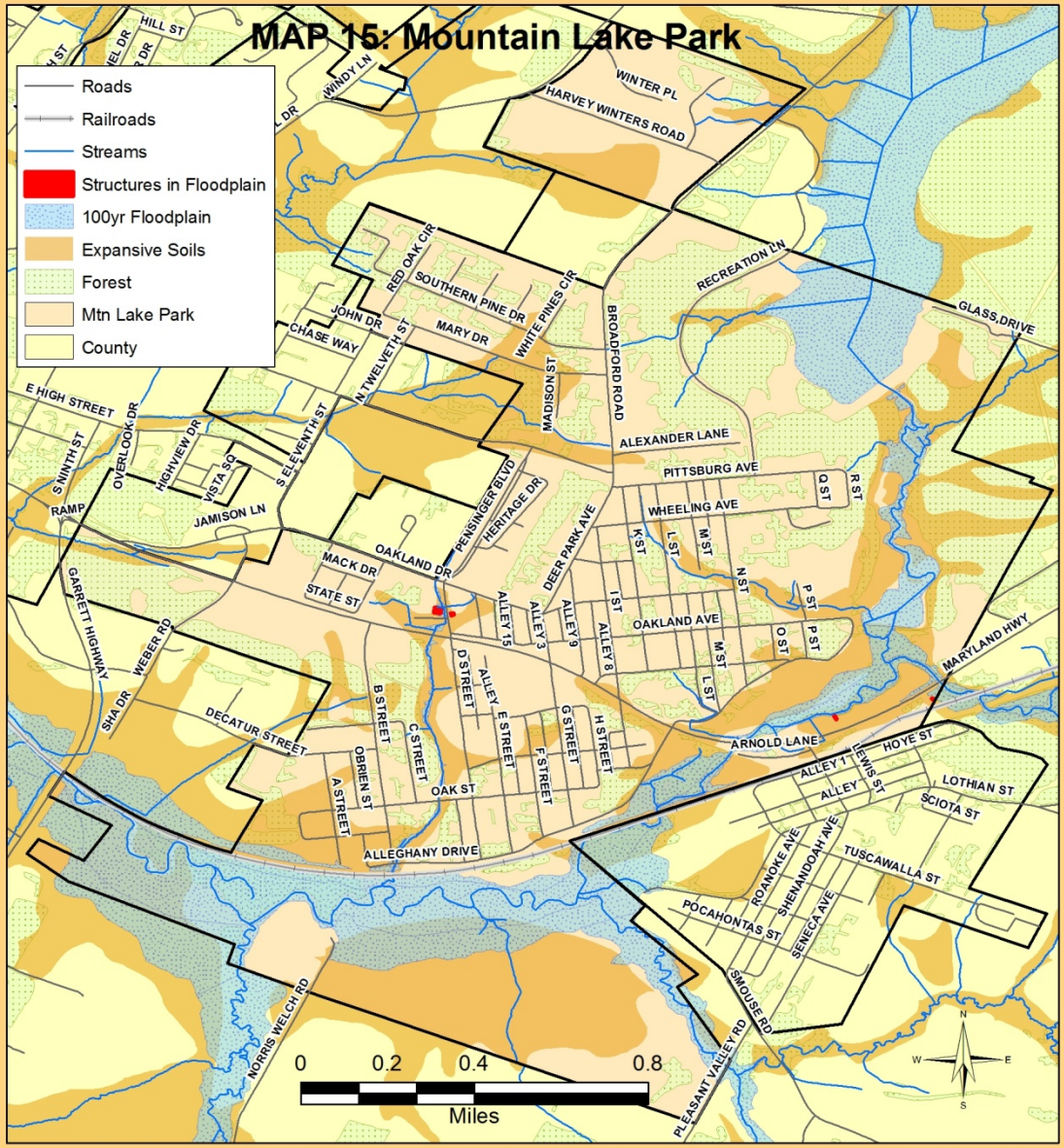
Floodplain: Little Youghiogheny River
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Rt. 135

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on Building footprints):

- 4



OAKLAND SYNOPSIS:

2010 Municipal Population:

- 1,925 Total (6% of the county)

At-Risk Population:

- Age 65 & Over - 434

Vulnerable Population:

- Non-English Speaking (Hispanic) - 13

2000 Housing:

- 918 Units

2010 Housing:

- 1,009 Units

2000 - 2010 % Change in Housing Units:

- +9.9% Housing Units

Hazards:

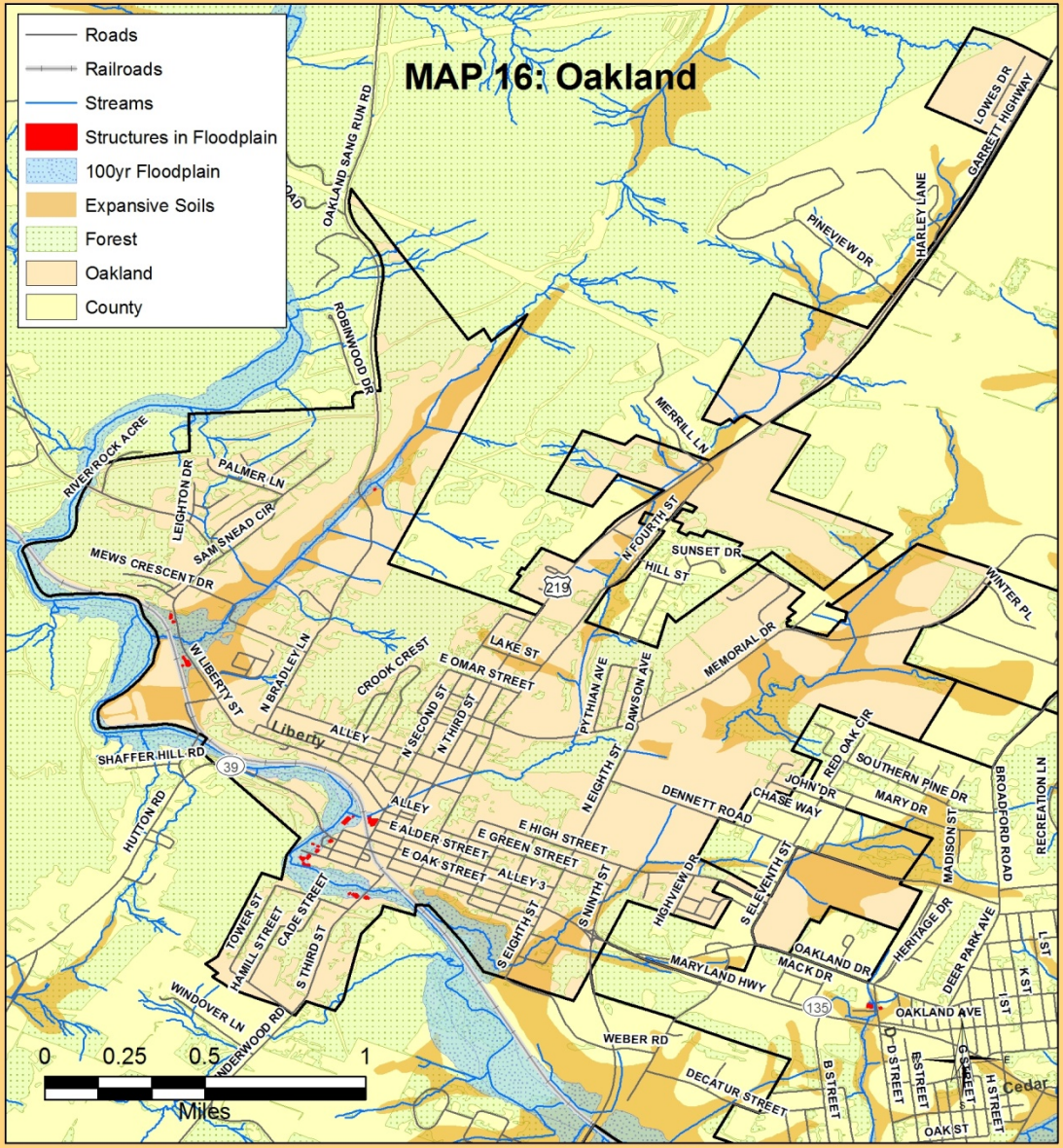
Floodplain: Little Youghiogheny River; Bradley Run; Youghiogheny River; Wilson Run
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Rt. 135; Rt. 219

Facilities in Floodplain (based on building footprints):

- 202 Town Park Lane - Farmers Market

Structures in Floodplain (based on building footprints):

- 23



LOCH LYNN HEIGHTS SYNOPSIS:

2010 Municipal Population:

- 552 Total (2% of the county)

At-Risk Population:

- Age 65 & Over - 66

Vulnerable Population:

- Non-English Speaking (Hispanic) - 2

2000 Housing:

- 202 Units

2010 Housing:

- 228 Units

2000 - 2010 % Change in Housing Units:

- +12.9% Housing Units

Hazards:

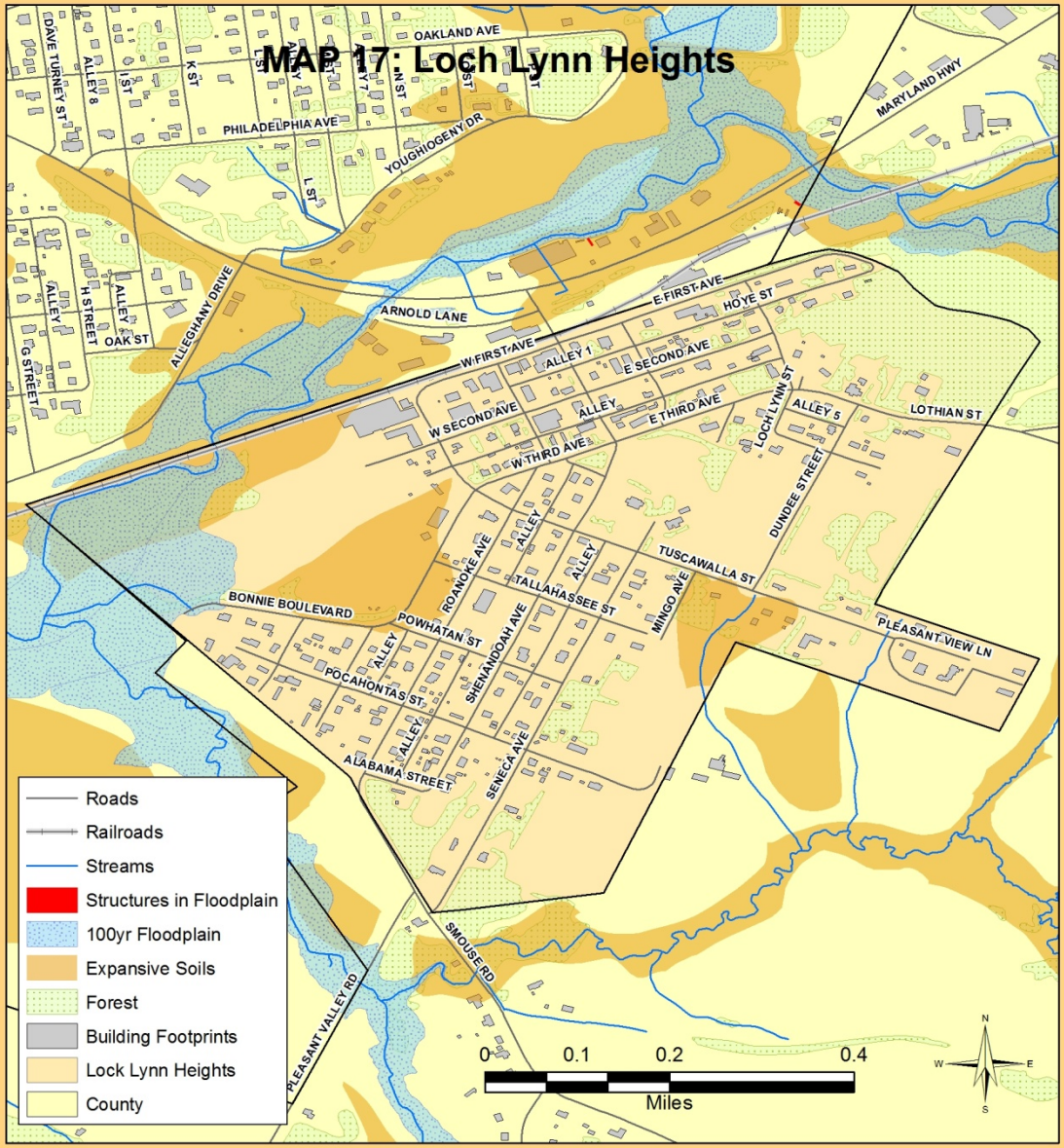
Floodplain: Little Youghiogheny River;
Winter Storms: Entire municipality
Tornado/High Wind: Random occurrence
Expandable Soils: Some
HazMat: Rt. 560

Facilities in Floodplain (based on building footprints):

- None

Structures in Floodplain (based on building footprints):

- None



MITIGATION STRATEGIES

21. 1 GOALS AND OBJECTIVES

2012 Status Update: Additions to this Chapter will be denoted in red.

Following the completion of the vulnerability analysis, the Garrett County Hazard Mitigation Planning Committee developed a mitigation strategy that includes a set of goals and objectives which serves as the basis for implementing a number of mitigation action items for mitigating the hazards described in Section III of the plan. The eight goals and accompanying objectives are listed in this section.

Upon completion of the goals and objectives, the Planning Committee developed six broad categories of mitigation action items. These actions include Prevention, Property Protection, Public Education and Awareness, Natural Resource Protection, Emergency Services and Structural Projects. The Planning Committee has identified and prioritized nearly forty separate mitigation action items that address one or more of the plan goals.

The mitigation action items relate back to the high risk hazards described and prioritized in Section III of the plan. Of these items, thirteen relate to flooding, five relate to dam failure, five relate to hazardous materials, four relate to tornado, hurricane or high winds, and six relate to winter weather and fog conditions. Finally, a number of the action items pertaining to Public Education and Awareness, and Emergency Services, relate to all of the identified hazards.

Goals as identified in this plan are broad-based and long-term in nature. The following goals identify what the community expects to accomplish through mitigation actions during the next five years. Objectives as identified in this plan are more specific and narrow in scope than goals. They expand upon the goals and provide more details on how to accomplish them.

These goals, objectives, and mitigation action items apply to municipal participants as well as the unincorporated part of the county.

GOAL 1 **Maintain and enhance Garrett County's Department of Communications and Emergency Service's capacity to continuously make Garrett County less vulnerable to hazards.**

Objective 1.1 Institutionalize hazard mitigation.
Objective 1.2 Improve organizational efficiency.
Objective 1.3 Maximize utilization of best technology.
Objective 1.4 Maximize utilization of GIS software and applications.

GOAL 2 **Build and support municipal capacity and commitment to become continuously less vulnerable to hazards.**

Objective 2.1 Increase awareness and knowledge of hazard mitigation principles and practice among local and municipal public officials.

Objective 2.2 Provide assistance to municipal officials and help municipalities obtain funding for mitigation planning and project activities.
Objective 2.3 Prepare technical reports for critical facilities as necessary

GOAL 3 Improve coordination and communication with other relevant organizations.
Objective 3.1 Establish and maintain lasting partnerships.
Objective 3.2 Streamline policies to eliminate conflicts and duplication of effort.
Objective 3.3 Incorporate hazard mitigation into activities of other organizations.

GOAL 4 Increase public understanding, support, and demand for hazard mitigation.
Objective 4.1 Identify hazard specific issues and needs.
Objective 4.2 Heighten public awareness of natural hazards.
Objective 4.3 Publicize and encourage the adoption of appropriate hazard mitigation actions.
Objective 4.4 Within 2 years, increase the number of business that have developed a business risk reduction plan.
Objective 4.5 Within 3 years, increase by 25% the proportion of businesses and residences that have flood insurance.

GOAL 5 Protect existing and future properties (residential, commercial, public, and critical facilities).
Objective 5.1 Utilize the most effective approaches to protect buildings from flooding, including acquisition and elevation.
Objective 5.2 Enact and enforce regulatory measures to ensure that new development will not increase hazard threats from flooding, steep slope failure and the threat of wildfire at the urban/forest interface.
Objective 5.3 Within 2 years, reduce by 20% the number of houses in the floodplain that are subject to repetitive losses from flooding.
Objective 5.4 Within 5 years, increase by 25% the number of critical facilities that have carried out mitigation measures to ensure their functionality in a 100 year flood event, winter storm or high wind event.
Objective 5.5 Review and update Building Codes to ensure that manufactured housing, including mobile homes, are constructed and installed in a manner to minimize wind damage.
Objective 5.6 Ensure existing high risk residential structures are utilizing retrofitting techniques to mitigate repetitive flooding.

GOAL 6 Ensure that public funds are used in the most efficient manner.
Objective 6.1 Prioritize new mitigation projects, starting with sites facing the greatest threat to life, health, and property.
Objective 6.2 Use public funding to protect public services and critical facilities.
Objective 6.3 Use public funding on private property where benefits exceed costs.
Objective 6.4 Maximize the use of outside funding sources.
Objective 6.5 Encourage property-owner self-protection measures.

GOAL 7 Promote sustainable development to improve the quality of life.

Objective 7.1 Establish open space parks and recreational areas in flood hazard areas.

Objective 7.2 Provide for the conservation and preservation of natural resources.

Objective 7.3 Limit additional housing (especially elderly and high density) in areas of high hazard risk.

GOAL 8 Prevent destruction of forests and structures in the Urban Wildland Interface.

Objective 8.1 Improve communications capability between municipal and county emergency management and law enforcement personnel.

Objective 8.2 Identify specific high hazard areas in the Urban Wildland Interface and notify residents of measures to protect their property from wildfire damage.

Objective 8.3 Develop evacuation procedures to enable residents near forested areas to evacuate safely.

GOAL9 Protect public infrastructure

Objective 9.1 Upgrade or replace public roads and stormwater management features to include mitigation into the project design and construction.

Objective 9.2 Improve routes utilized in flood hazard events to mitigate life-threatening road conditions and road closures.

Objective 9.3 Mitigate problem road sections within the County and municipalities.

21. 2 MITIGATION ACTIONS

Mitigation Actions address the goals and objectives developed by the Hazard Mitigation Planning Committee and the Local Emergency Planning Committee. These actions form the core of the Garrett County Hazard Mitigation Plan. The Mitigation Actions are grouped into the following six broad categories:

1. **Prevention.** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
2. **Property Protection**. Actions that involve the modification of existing Critical Facilities and other buildings or structures to protect them from hazards. Examples include acquisition, elevation, relocation, structural retrofits, and storm shutters.
3. **Public Education and Awareness**. Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
4. **Natural Resource Protection**. Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration preservation.

5. **Emergency Services**. Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems and emergency response services.
6. **Structural Projects**. Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

21. 3 MITIGATION ACTION RATINGS

The following table lists Mitigation Action Items for Garrett County and denotes which Goals and Objectives are met by each item. The table also includes the time frame for completion and Rating established for each item by the HMPC. The rankings were prioritized based on mitigation projects that would have the most benefit and likelihood of being completed within the next five years. The mitigation action table shows a composite of the committee's rankings. Only new actions or actions that were not completed from the 2004 Plan were rated during the 2012 Plan Update process.

Overall, 4 action items were rated as high and 12 action items were rated as medium, while 2 action items were rated as low. The 4 action items rated as high are shown in bold text on the following table. Regarding the action items rated as high, one was categorized as Prevention, one as Natural Resource Protection, one as Emergency Services and one as Structural Projects.

21. 4 POTENTIAL MITIGATION PROJECTS

The last page of the Table shows a list of potential Mitigation Projects that address the highest rated Mitigation Actions. These projects include analyzing funding in order to obtain an independent generator for 9-1-1; create an E-911 back-up facility and EOC for the County; work with MDE to monitor natural gas development activities; and mitigate and upgrade flood prone roadways when funding is available. Most of these projects can be accomplished at minimum expense to the County but do require some staff time. The Office of Emergency Management will coordinate these activities.

Mitigation action items identified and ranked in the 2004 Plan were discussed at the 2011 HMPC Midpoint Meeting; the status of all completed items is provided in Appendix B.

During the development of the 2012 Hazard Mitigation Plan update, new mitigation action items were identified. In addition, mitigation action items from the 2004 Plan that were identified as incomplete were carried over into the new mitigation action items below. Both the new and incomplete action items were ranked by the 2011 HMPC as low, medium or high. Those mitigation items that have been carried over from the 2004 Plan are denoted in gray. Also, those actions that do not refer to a specific location, apply to the entire County. In addition, those items associated with flooding that may be undertaken and documented for the National Flood Insurance Program (NFIP) –Community Rating System (CRS) are denoted with the following: *CRS.

2012 ACTION ITEMS AND 2004 UNCOMPLETED RANKED ACTION ITEMS						
NUMBER	**ACTION**	**GOALS**	**OBJECTIVES**	**TIMEFRAME**	**HAZARD**	**PRIORITY**
	Prevention					
1	The current Sensitive Areas Ordinance allows for development on slopes up to 30%. Reduce this to 20 or 25%.	3 4 5 6 7	3.3 4.1; 4.2; 4.3 5.2 6.3 7.3	Short-term	Flood, Soil Movement	Medium
2	Adopt recommendation on page 4-26 of Comp Plan for building on 15 to 30% slopes, specifically in Deep Creek Watershed.	3 4 5 6 7	3.3 4.1; 4.2; 4.3 5.2 6.3 7.3	Short-term	Flood, Soil Movement	Medium

2012 ACTION ITEMS AND 2004 UNCOMPLETED RANKED ACTION ITEMS						
NUMBER	ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	PRIORITY
3	Both the 2004 Watershed Study and the 2008 Comp Plan recommend that in the Deep Creek Watershed: • Limit the enlargement or extension of existing nonconforming structures under Section 801 of the Zoning ordinance. This recommendation particularly addresses the development of new large houses (or the major expansion of existing houses) on relatively small lots. Please see Recommendation 4iii.d in the Watershed Study Recommendations document in the Plan Appendix for more detail. • Add additional construction standards (such as building material, roof styles, or similar standards) in the Zoning Ordinance for commercial buildings (see Recommendation 7 in the Watershed Study Recommendations document in the Plan Appendix).	4 5 7	4.1; 4.3 5.2 7.3	Short-term	Flood, Soil Movement, High Wind	Medium
4	Update to the 2012 International Building Codes for the County and all municipalities.	2 5 7	2.3 5.2; 5.3; 5.5 7.3	Short-term	All	Medium
5	*CRS Consider placing development restrictions on land use for vacant parcels within hazard areas.	2 4 5 6	2.1 4.1; 4.3 5.1; 5.2; 5.6 6.1	Long-term	All	Medium

2012 ACTION ITEMS AND 2004 UNCOMPLETED RANKED ACTION ITEMS						
NUMBER	**ACTION**	**GOALS**	**OBJECTIVES**	**TIMEFRAME**	**HAZARD**	**PRIORITY**
6	*CRS Work with MDE to prepare the county to be eligible for CRS (Community Rating System) to reduce the cost of flood insurance within the County.	1 2 4 6	1.1 2.1 4.1; 4.3 6.5	Short-term	Flood	Medium
7	Analyze funding options for the Garrett 9-1-1 to obtain an independent generator from the courthouse building. The current generator is over 30 years old and is not capable of running the entire 9-1-1 for the County.	1 4 5 6	1.2 4.1 5.1 6.1, 6.2, 6.4	Short-term	All	**HIGH**
	Property Protection					
8	Target all Water Street properties in Friendsville for the Flood Acquisition Program.	1 2 5 6	1.1; 1.3 2.1; 2.2; 2.3 5.1; 5.3 6.2; 6.3; 6.4; 6.5	Long-term	Flood	Medium
9	For the critical facilities listed as having a high vulnerability in the risk assessment and identified by the planning committee as a high priority, a technical report should be completed to provide information on first floor elevation and the base flood elevation. Mitigation alternatives and a detailed benefit/cost analysis should be completed. **Status:** Not completed.	2 5 6	2.3 5.4 6.2; 6.4	Long-term	All	Medium
10	Identify structures that would be candidates for retrofit projects. **Status:** Not completed.	2 5	2.2 5.1; 5.3; 5.4 6.2; 6.3; 6.4	Long-term	All	Low

2012 ACTION ITEMS AND 2004 UNCOMPLETED RANKED ACTION ITEMS						
NUMBER	**ACTION**	**GOALS**	**OBJECTIVES**	**TIMEFRAME**	**HAZARD**	**PRIORITY**
	Public Education and Awareness					
11	*CRS Target residence for public outreach campaign preparedness in high hazard areas such as the 100-year floodplain.	4 6 7	4.2; 4.3 6.3; 6.5 7.3	Short-term	Flood	Medium
12	Distribute annual mitigation informational brochure or newsletter to residents and business owners. **Status:** Not completed.	4 6	4.2; 4.4 6.5	Ongoing	All	Medium
13	Work with the County Visitors/Tourism Bureau, MD DNR to alert tourists to potential hazard areas and what to do in the event that a man-made or natural hazard event occurs. This would include brochures to be left at hotels, visitor centers, and attractions to inform visitors about evacuation routes, and sheltering info. **Status:** Not completed.	4 8	4.2 8.1; 8.3	Short-term	All	Medium
14	Develop a one-page handout on flood insurance and distribute to local insurance companies. **Status:** Not completed.	4	4.1; 4.2	Long-term	Flood	Low
	Natural Resource Protection					
15	Work with MDE to monitor natural gas development activities to ensure the safety of the ground and surface water supplies.	3 4 5	3.3 4.1 5.2	Long-term	HazMat	**HIGH**
	Emergency Services					
16	Create an E-911 back-up facility and EOC in the County.	1 2 6	1.2 2.2 6.1; 6.2; 6.4	Long-term	All	**HIGH**

2012 ACTION ITEMS AND 2004 UNCOMPLETED RANKED ACTION ITEMS						
NUMBER	**ACTION**	**GOALS**	**OBJECTIVES**	**TIMEFRAME**	**HAZARD**	**PRIORITY**
17	Use MDE's Maryland Online Tier Two Reporting System (MOTTRS). A certified Tier Two Report to MDE using MOTTRS fulfills the reporting obligation to State Emergency Response Commission (SERC). There is no need to mail a signed paper copy of the completed report to MDE.	1	1.2; 1.3	Ongoing	HazMat	Medium
	Structural Projects					
18	*CRS Mitigate and upgrade flood prone roadways when funding is available. Specifically, roads that were identified as "High" by the HMPC in Table 19 in *Chapter 6: Riverine Flooding*.	9	9.1; 9.2; 9.3	Ongoing	Flood	**HIGH**

2012 MITIGATION PROJECTS

During the fourth meeting of the HMPC, mitigation actions were rated. Four action items were rated as "High". These action items are a priority and potential mitigation projects where applicable have been created based on the mitigation actions.

PROJECT A: Installing a New Generator

Action Item #7 directly relates to obtaining funding for an independent generator at the 9-1-1 Center and may be implemented separately or concurrently as discussed in the following project.

Project A: Related Actions
Action #7: Analyze funding options for the Garrett 9-1-1 to obtain an independent generator from the courthouse building. The current generator is over 30 years old and is not capable of running the entire 9-1-1 for the County.

DISCUSSION: The availability of backup power sources for the 9-1-1 Center is crucial for efficient function of a community during a disaster. The Garrett County 9-1-1 Center operation is within the courthouse building and the current generator installed for the overall building is old and not capable of running the 9-1-1 Center's operations adequately. An alternate source of power is necessary to ensure the 9-1-1 Center is operational during the entire course of a hazard event. Therefore, installation of a new, separate generator (including the necessary wiring) will allow an alternate source of power to be utilized, ensuring proper operation of the Center.

Responsible Organizations: Department of Public Safety and Emergency Management

Estimated Costs: $30,000 - $50,000

Possible Funding Sources: FEMA Hazard Mitigation Grant Program, FEMA Pre Disaster Mitigation Grant Program, Emergency Operations Center (EOC) Grant Program.

Timeline for Implementation: 1 - 2 years

PROJECT: Utilize electrical engineering services to determine necessary specifications for a new generator to be installed. Once specifications are determined, obtain available grant funding to implement the construction phase.

PROJECT B: Water Quality Monitoring

Action Item #15 directly relates to water quality monitoring and may be implemented separately or concurrently as discussed in the following project.

Project B: Related Actions
Action #15: Work with MDE to monitor natural gas development activities to ensure the safety of the ground and surface water supplies.

DISCUSSION: To date, no drilling has occurred in Garrett County; however the natural gas industry is interested in hydraulic fracturing (hydrofracking) within the county. This technique allows for natural gas to be released and captured from the Marcellus Shale, which can be found throughout the county. Properly regulated hydrofracking has its benefits, however there is concern that ground water contamination could occur if the fluids used during the fracking process are not regulated and disposed of properly. Contamination of ground or surface water could lead to the contamination of drinking water, especially in areas where well-water is used as a drinking source. Due to this risk, it is important to continuously monitor the quality of ground water, particularly in locations near a hydrofracking pad site.

Source: water.usgs.gov

PROJECT: In June 2011, Governor O'Malley issued an executive order which halted fracking in Maryland. The goal of the order is to provide time for a detailed study of the potential environmental and health impacts this type of drilling could have on the state. The ban is intended to end by 2014.

Once the ban is lifted, it will be important to begin monitoring water quality at drilling sites that have already received a permit. The first step of this project will be to determine baseline water quality prior to drilling at these sites. Then, it will be necessary to construct water quality monitoring stations to periodically test ground and surface water to determine if the drilling has had a negative effect. Consider requiring additional monitoring within the permit, which would be the responsibility of the permit applicant.

Responsible Organizations: Department of Public Utilities, Permit Applicants – Private Industry

Estimated Costs: Depends on number of monitoring stations which affects sampling costs (personnel), and analysis costs.

Possible Funding Sources: Maryland Water Quality Financing Administration (MDE)

Timeline for Implementation: Dependent on funding.

PROJECT C: Emergency Infrastructure Planning

Action item #16 directly relates to emergency infrastructure planning and may be implemented separately or concurrently as discussed in the following project.

Project C: Related Actions
Action #16: Create an E-911 back-up facility and EOC in the County.

DISCUSSION: Similarly to a generator**,** an E-911 back-up facility would provide a necessary fall back plan in the event of a partial or complete failure to the main E-911 Center. Additionally, having a permanent Emergency Operations Center (EOC) within the county is important as it would provide a location for strategic oversight and planning during a disaster. Currently, Garrett County is the only jurisdiction within Maryland that does not have an approved EOC, yet it has had more documented hazard events than any other jurisdiction. At this time, a small training room utilized by the Sheriff's Office functions as an interim EOC until such a time an established EOC and E-911 backup center are constructed.

PROJECT: Determine potential suitable locations for a back-up E-911 facility as well as an EOC. In order to reduce the scope and cost of the project, consider current county owned and operated existing structures with the appropriate infrastructure which could accommodate these functions. Once suitable sites have been determined, use available grant funding sources to implement the construction and/or renovation phase of the project.

Responsible Organizations: Department of Public Safety, Department of Planning and Land Development, Department of Engineering.

Estimated Costs: $200,000 (Dependent on size, location, whether new construction or repurposed.)

Possible Funding Sources: Emergency Operations Center (EOC) Grant Program.

Timeline for Implementation:
2 - 3 years

PROJECT D: Mitigating Roadway Flooding

Action item #18 directly relates to roadway flooding and may be implemented separately or concurrently as discussed in the following project.

Project D: Related Actions
Action #18: Mitigate and upgrade flood prone roadways when funding is available. Specifically, roads that were identified as "High" by the HMPC in Table 19 in *Chapter 6: Riverine Flooding*.

DISCUSSION: Twenty-six roadways in Garrett County which experience repetitive flood related issues were ranked based on their mitigation importance. Of these roadways, six ranked as high priority for mitigation by the HMPC. The roads ranked as high include: West Liberty Street, Blue Ribbon Road, Althouse Hill Road, North Hill Road, Shallmar Road, and Underwood Road. The flood issues experienced by these roads are considered to be caused by storm water and low elevation.

Road	Maintained By	Municipality	Ranking
West Liberty Street (at Bradley Run)	Municipal	Oakland	High
Blue Ribbon Road (at Clark Creek)	County	N/A	High
Althouse Hill Road (along N. Branch Potomac River)	County	N/A	High
North Hill Road (at Wolfden Run Creek)	County	N/A	High
Shallmar Road (along N. Branch Potomac River)	County	N/A	High
Underwood Road (at Youghiogheny River)	County	N/A	High

PROJECT: Conduct engineering studies for West Liberty Street, Blue Ribbon Road, Althouse Hill Road, North Hill Road, Shallmar Road, and Underwood Road to determine the most effective mitigation measures to ensure the prevention of future flooding to these roadways. After the study is complete, use available grant funding sources to implement the construction phase.

Responsible Organizations: Garrett County Roads Department, Private Engineering Firm

Estimated Costs: To be determined during the conceptual design phase process.

Possible Funding Sources: FEMA Hazard Mitigation Grant Program, FEMA Pre Disaster Mitigation Grant Program, Emergency Advance Measures for Flood Prevention

Timeline for Implementation: 2 - 5 years

PLAN MAINTENANCE AND IMPLEMENTATION

22. 1 PLAN ADOPTION

The Disaster Mitigation Act of 2000 requires that local Hazard Mitigation Plans and any updates be formally adopted by the County Commissioners following review by the Maryland Emergency Management Agency and FEMA. The Plan and any updates will be subject to a public hearing prior to adoption by the Commissioners.

22. 2 PLANNING PROCESS

The Disaster Mitigation Act of 2000 requires local Hazard Mitigation Plans to be monitored, evaluated, and updated during a five-year cycle. The County's Planning Committee, which was instrumental in developing the Hazard Mitigation Plan, will continue to meet on a regular basis during the five-year cycle to monitor and evaluate mitigation projects and to keep the plan current. Annual status reports will be submitted to the County Commission to update that group on the progress of various mitigation activities. Copies of these reports will be made available to the general public.

The annual status report will detail mitigation activities undertaken over the course of the year and will highlight completed activities. The report will also address the following points:

- Evaluate the goals and objectives to ensure they address current and expected conditions.
- Determine if the nature or magnitude of risk has changed.
- Evaluate whether current resources are adequate for implementing the plan.
- Document any technical, legal or coordination issues.
- Document agency and partner participation along with public involvement.

Copies of the annual status report will be made available to Planning Committee members, local governments, participating agencies and partners and citizens.

The Hazard Mitigation Plan is to be updated and readopted at the end of each five-year cycle. In the event of a significant disaster of any substantial changes in land use or regulations that impact mitigation efforts, more frequent updates may be required. The Planning Committee and the Emergency Management Agency will be responsible for overseeing the update to the Hazard Mitigation Plan. The process used to update the plan would follow the procedure used to prepare the original plan. This would include participation by the Planning Committee and would also include municipal and citizen involvement.

22. 3 IMPLEMENTATION

The Disaster Mitigation Act of 2000 also requires that the County implement the Plan through existing programs. This can be accomplished through inclusion of mitigation measures in the Comprehensive Plan, the Land Use and Building Codes, the Floodplain Ordinance and through Federal grant programs which are identified in the previous Section. As these documents are

updated, reference to the mitigation measures included in the Hazard Mitigation Plan can be amended into various plans and regulations.

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Dam Inundation Area-Deep Creek **Figure 46**

Dam Inundation Area-Savage River **Figure 47**

Dam Inundation Area-Bloomington **Figure 48**

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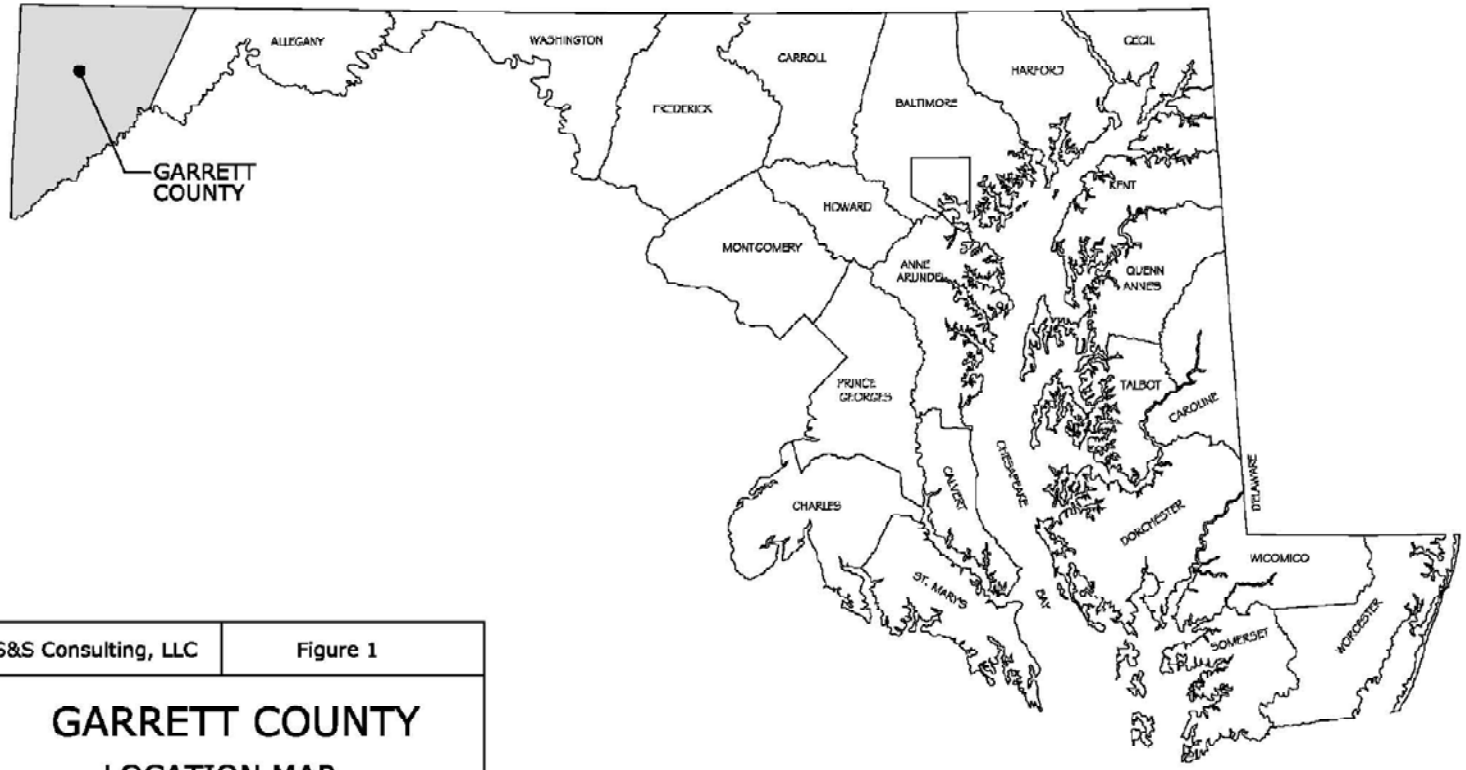
Dam Inundation Area-SCD Sites #1, #2, & #3 **Figure 50**

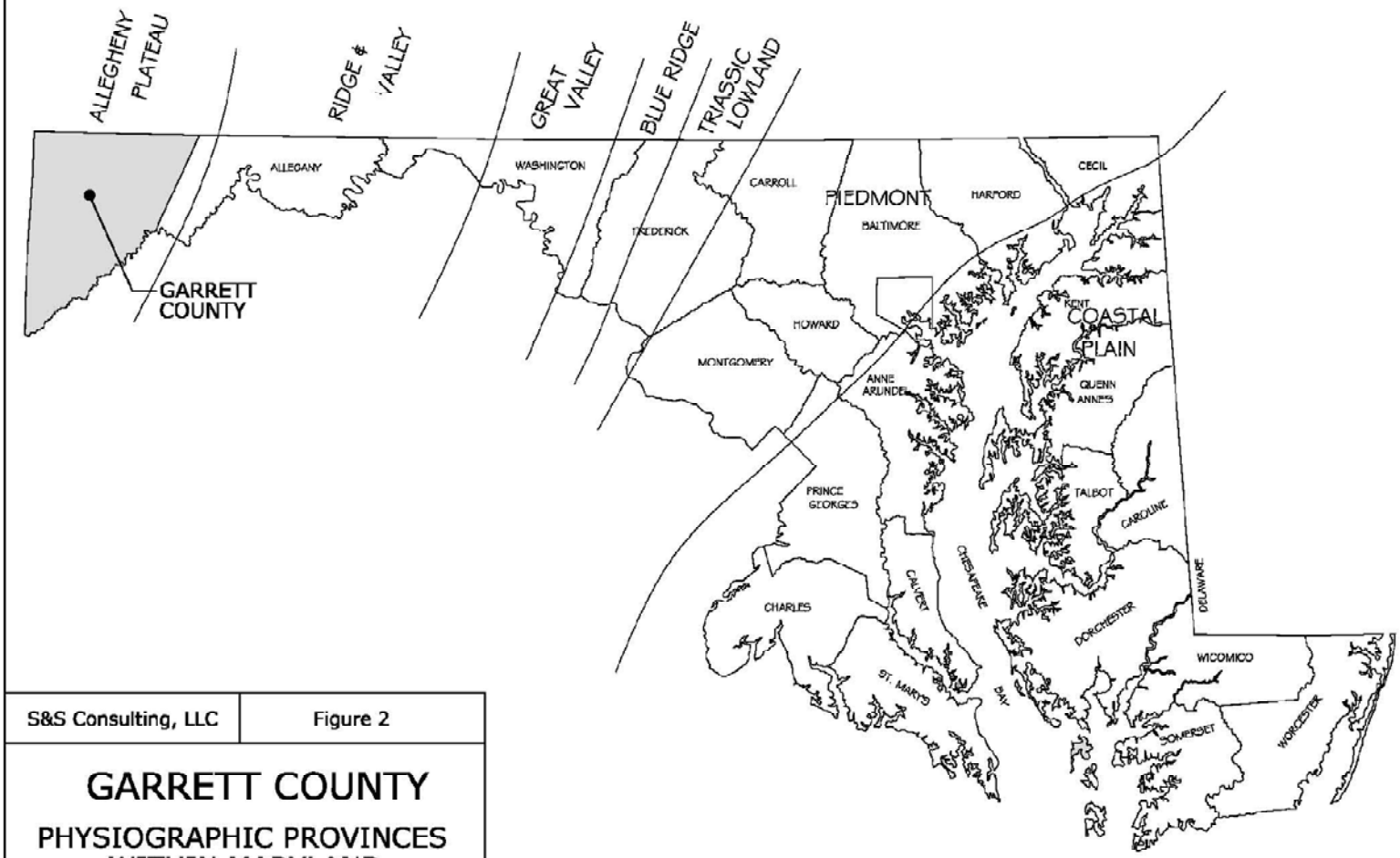
Dam Inundation Area-SCD Site #5 **Figure 51**

Dam Inundation Map-Oakland-Rt. 219 N. **Figure 52**

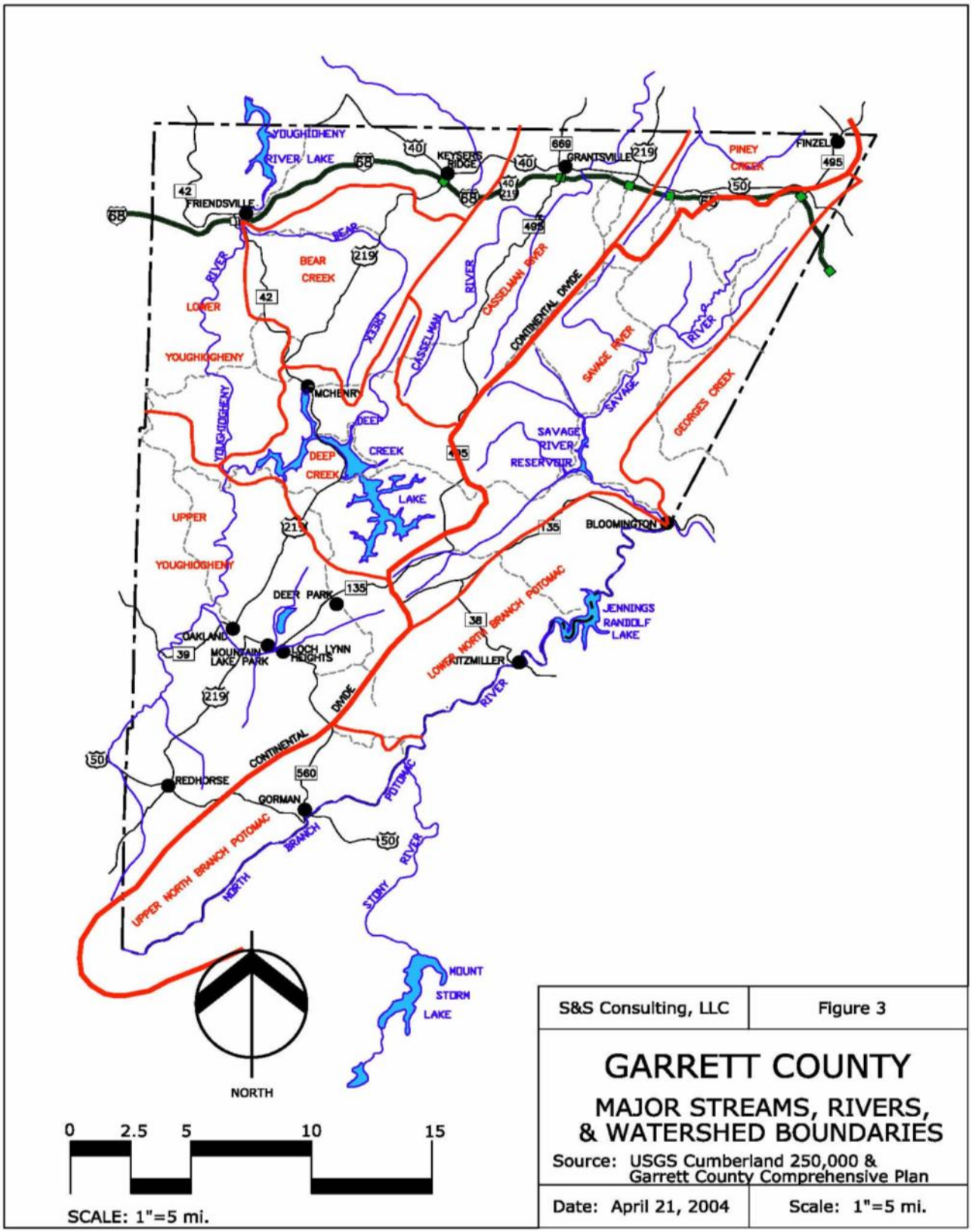
Dam Inundation Map Downtown Oakland **Figure 53**

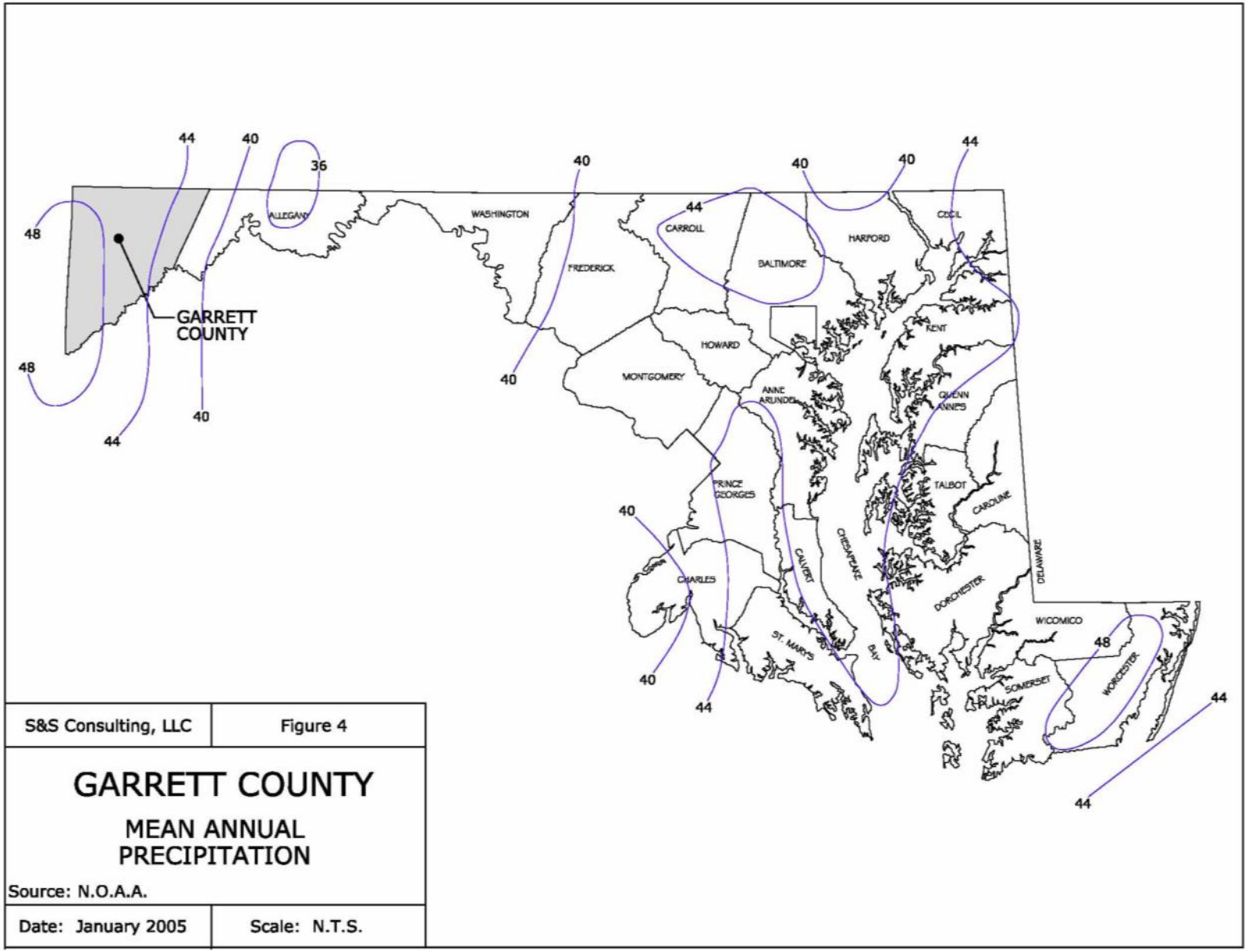


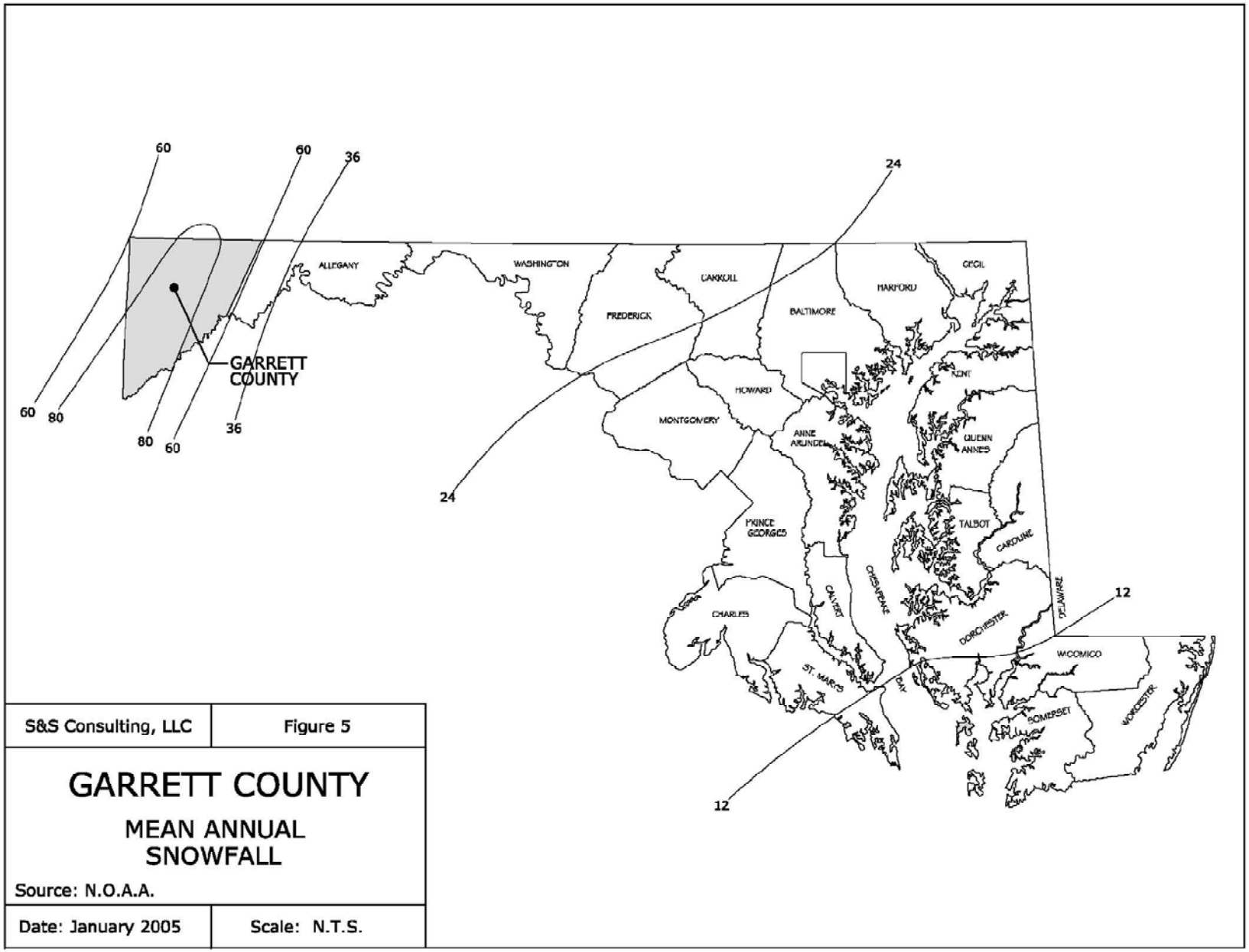
S&S Consulting, LLC	Figure 1
GARRETT COUNTY LOCATION MAP WITHIN MARYLAND Source: Maryland Geological Survey	
Date: January 2005	Scale: N.T.S.



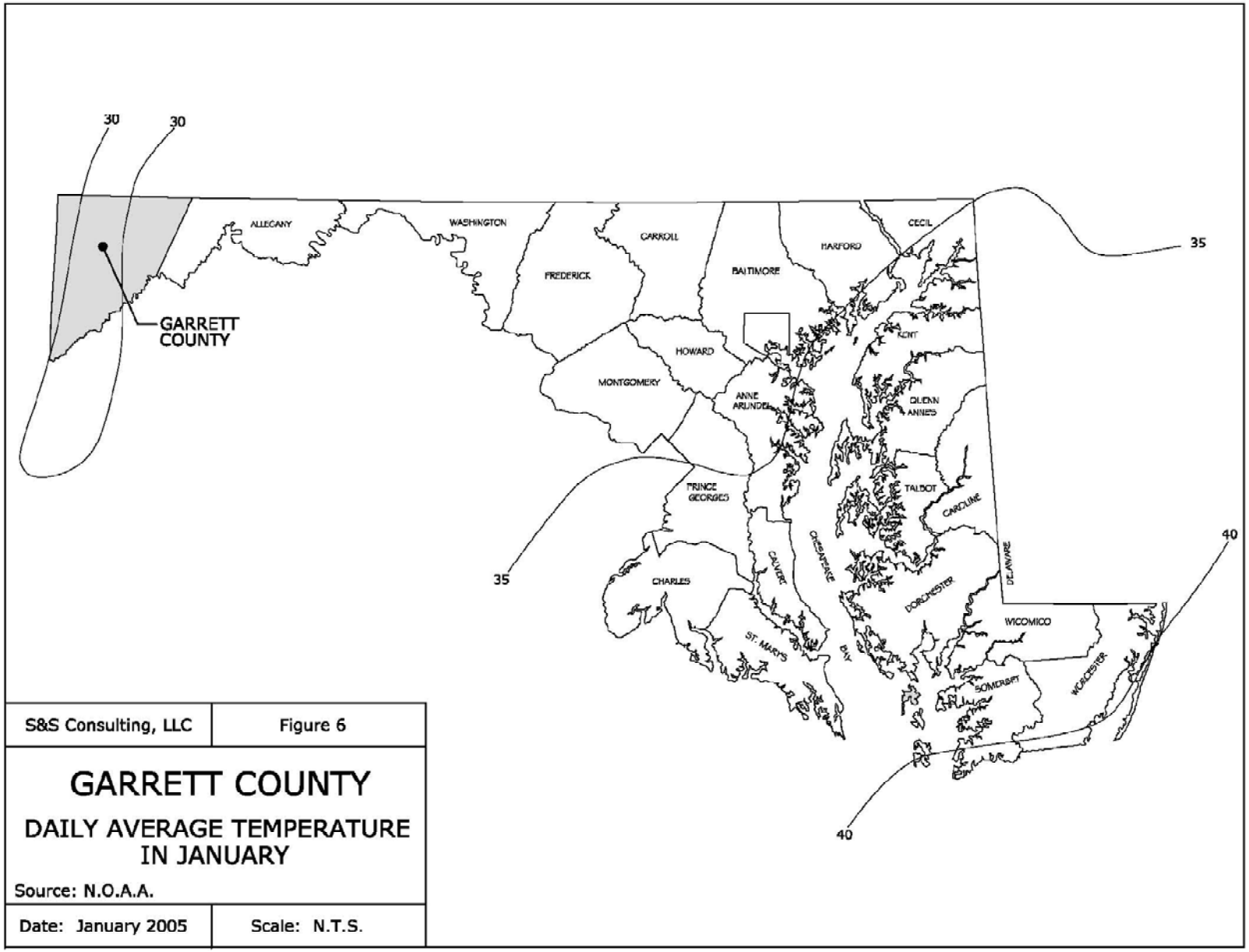
S&S Consulting, LLC	Figure 2
GARRETT COUNTY PHYSIOGRAPHIC PROVINCES WITHIN MARYLAND Source: Powell-Physiographic Provinces of the U.S	
Date: January 2005	Scale: N.T.S.


YOUGHIOGHENY
RIVER LAKE
KEYSERS RIDGE
GRANTSVILLE
FINZEL
PINEY CREEK
FRIENDSVILLE
BEAR CREEK
LOWER YOUGHIOGHENY
RIVER
BEAR
CASSELMAN
CASSELMAN RIVER
CONTINENTAL DIVIDE
SAVAGE RIVER
SAVAGE
GEORGES CREEK
MCHENRY
DEEP CREEK
DEEP CREEK LAKE
SAVAGE RIVER RESERVOIR
BLOOMINGTON
UPPER YOUGHIOGHENY
DEER PARK
OAKLAND
MOUNTAIN LAKE PARK
LOCH LYNN HEIGHTS
LOWER NORTH BRANCH POTOMAC
JENNINGS RANDOLF LAKE
FITZMILLER
RIVER
CONTINENTAL DIVIDE
REDHORSE
GORMAN
POTOMAC
UPPER NORTH BRANCH POTOMAC
NORTH BRANCH
STONY RIVER
MOUNT STORM LAKE
NORTH
0 2.5 5 10 15
SCALE: 1"=5 mi.
S&S Consulting, LLC
Figure 3
GARRETT COUNTY
MAJOR STREAMS, RIVERS, & WATERSHED BOUNDARIES
Source: USGS Cumberland 250,000 & Garrett County Comprehensive Plan
Date: April 21, 2004
Scale: 1"=5 mi.

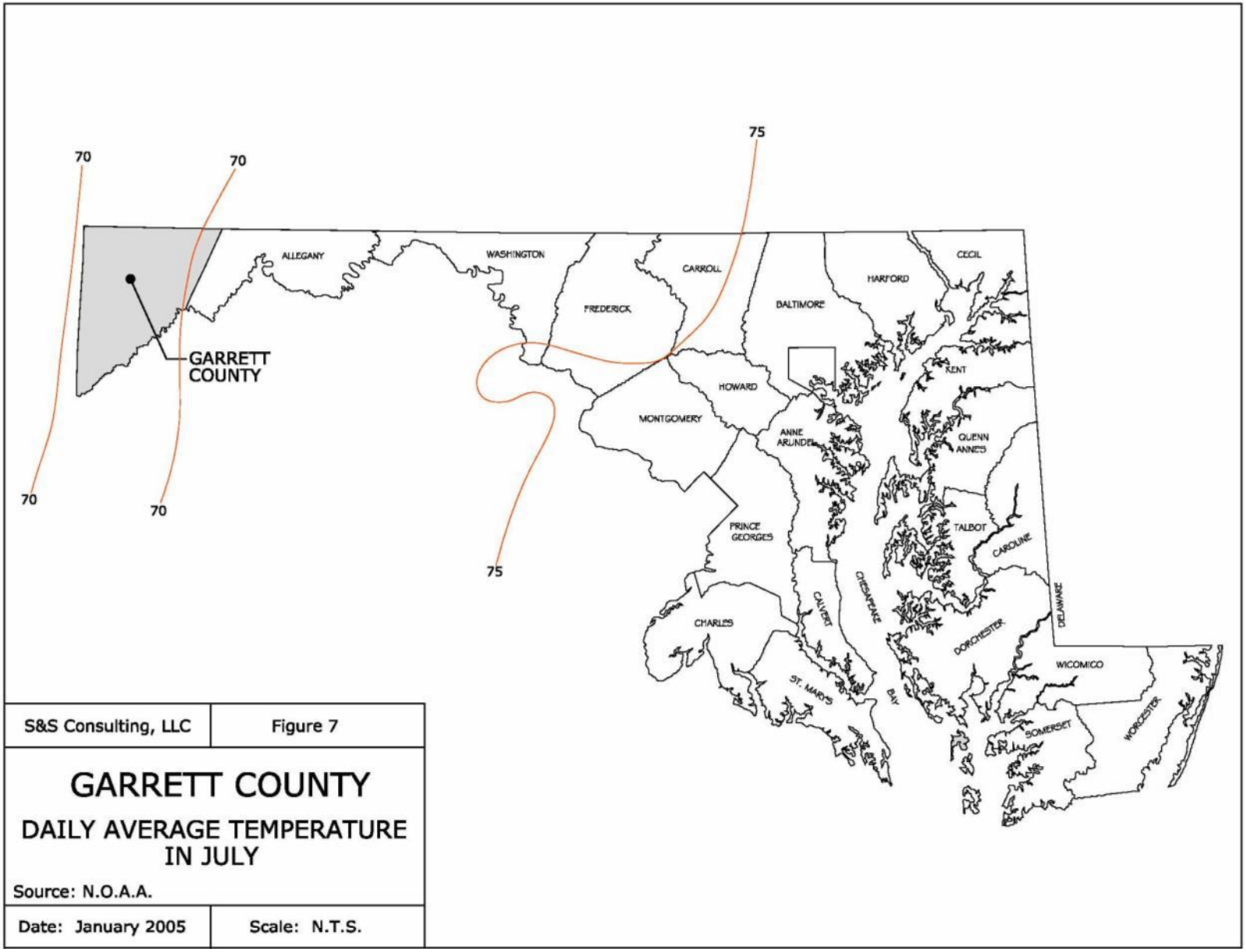

GARRETT COUNTY
ALLEGANY
WASHINGTON
FREDERICK
CARROLL
BALTIMORE
HARFORD
CECIL
KENT
QUEEN ANNE'S
TALBOT
CAROLINE
DORCHESTER
WICOMICO
SOMERSET
WORCESTER
DELAWARE
HOWARD
MONTGOMERY
ANNE ARUNDEL
PRINCE GEORGES
CHARLES
CALVERT
ST. MARY'S
CHESAPEAKE
BAY
44
40
36
48
S&S Consulting, LLC
Figure 4
GARRETT COUNTY
MEAN ANNUAL PRECIPITATION
Source: N.O.A.A.
Date: January 2005
Scale: N.T.S.

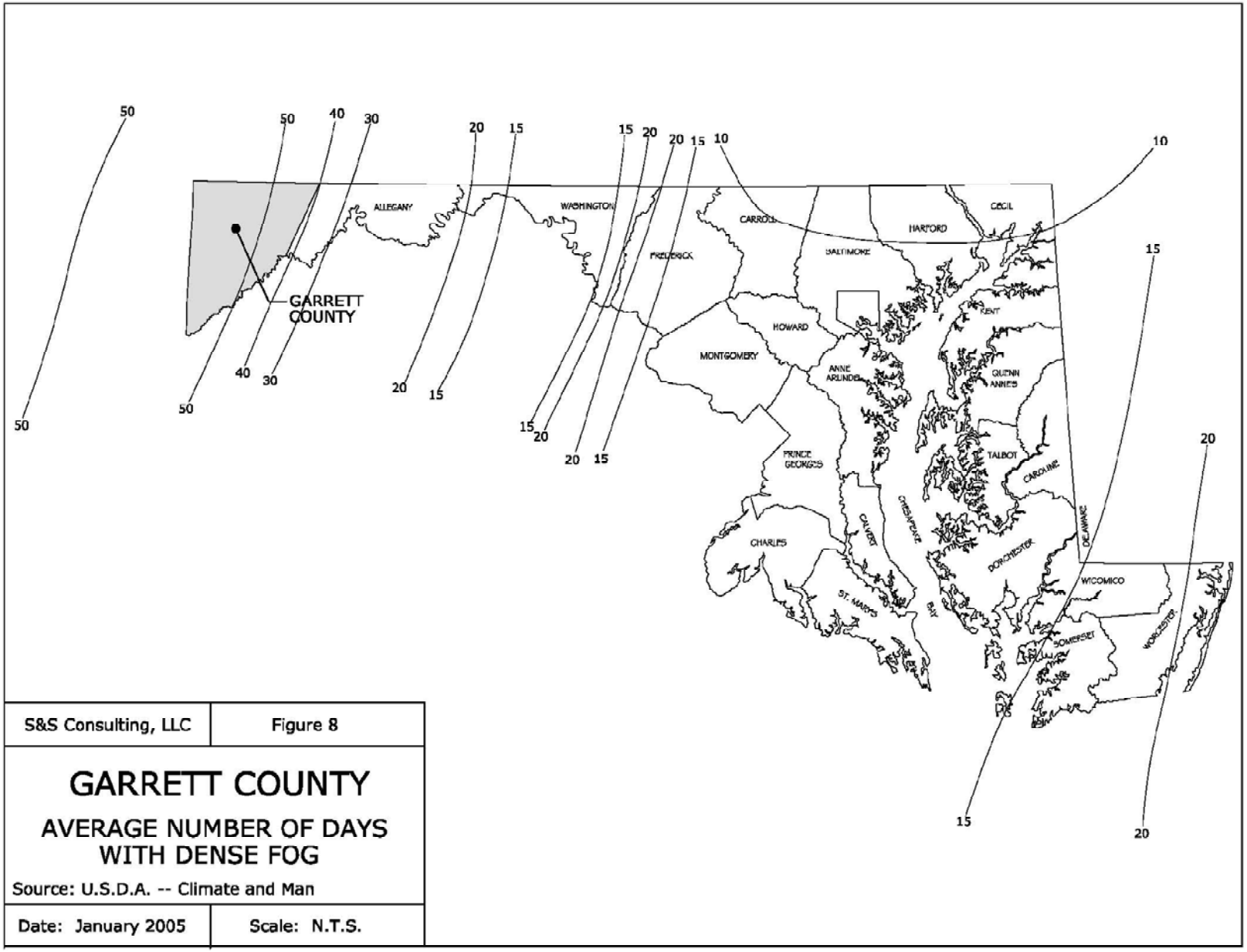


S&S Consulting, LLC	Figure 5
GARRETT COUNTY MEAN ANNUAL SNOWFALL Source: N.O.A.A.	
Date: January 2005	Scale: N.T.S.



S&S Consulting, LLC	Figure 6
GARRETT COUNTY DAILY AVERAGE TEMPERATURE IN JANUARY Source: N.O.A.A.	
Date: January 2005	Scale: N.T.S.


70
70
75
70
70
75
GARRETT COUNTY
ALLEGANY
WASHINGTON
FREDERICK
CARROLL
BALTIMORE
HARFORD
CECIL
KENT
HOWARD
MONTGOMERY
ANNE ARUNDEL
QUENN ANNE'S
PRINCE GEORGES
TALBOT
CAROLINE
CHARLES
CALVERT
CHESAPEAKE
BAY
ST. MARY'S
DORCHESTER
DELAWARE
WICOMICO
SOMERSET
WORCESTER
S&S Consulting, LLC
Figure 7
GARRETT COUNTY
DAILY AVERAGE TEMPERATURE IN JULY
Source: N.O.A.A.
Date: January 2005
Scale: N.T.S.



S&S Consulting, LLC	Figure 8
GARRETT COUNTY AVERAGE NUMBER OF DAYS WITH DENSE FOG Source: U.S.D.A. -- Climate and Man	
Date: January 2005	Scale: N.T.S.

Weather & Climate Data

OAKLAND, MD

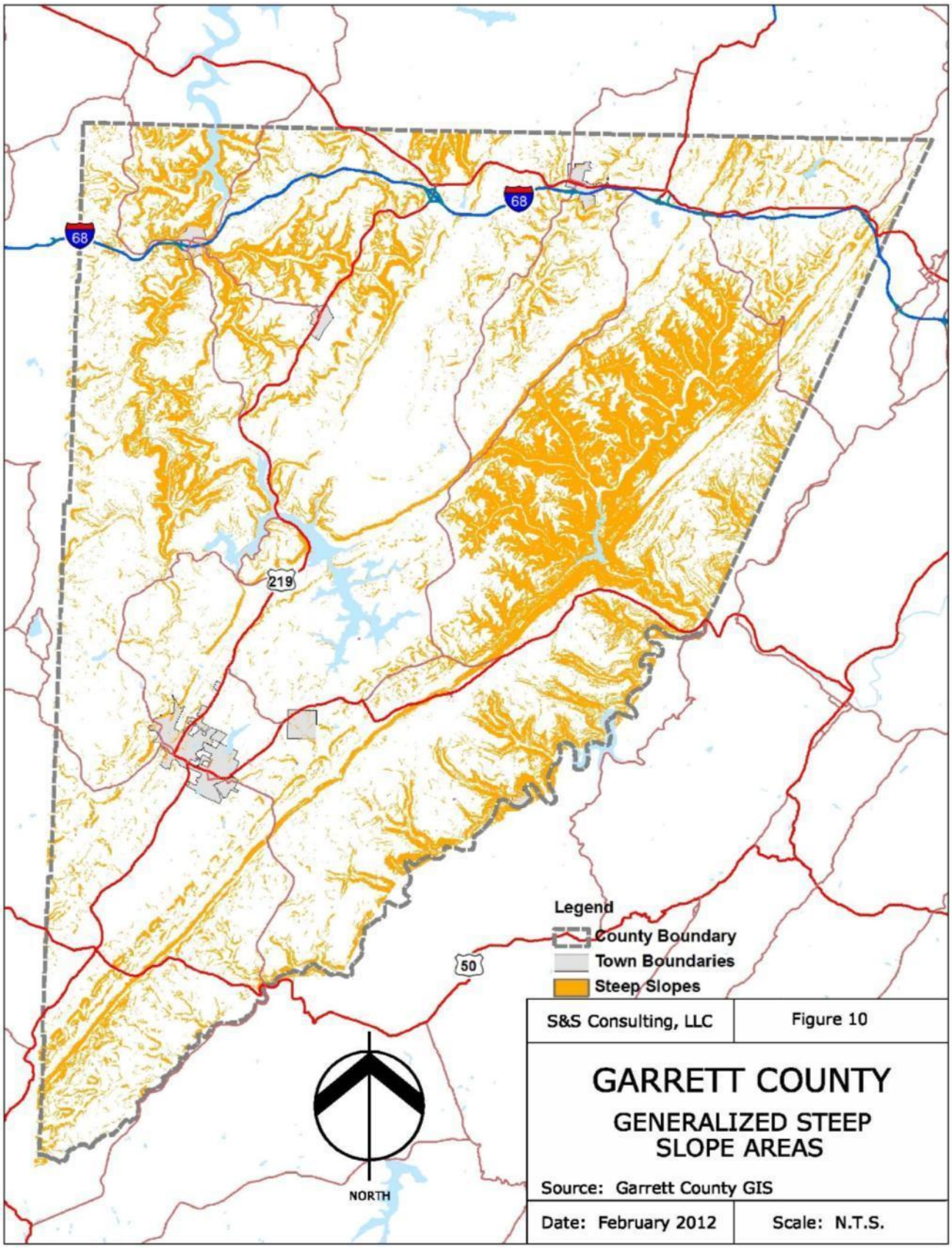
Average Annual Precipitation	**48”**
Average Annual Snowfall	**82”**
Average Summer Temperature	**67°**
Average Winter Temperature	**28°**
Frost Free Days	**122**

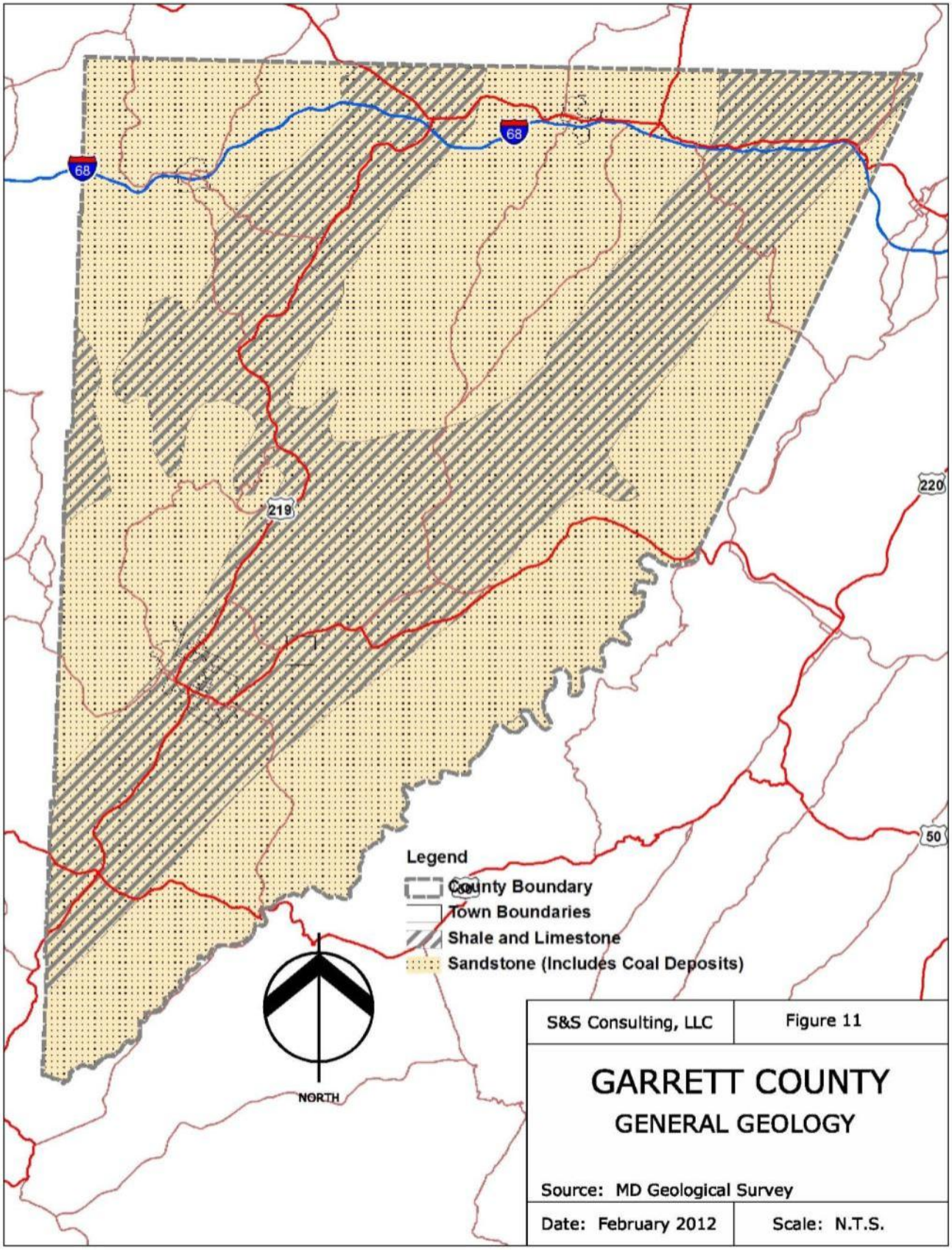
Low Temperatures		High Temperatures	
Jan 91	**-12°**	**Aug 91**	**+90°**
Feb 93	**-12°**	**July 95**	**+94°**
Jan 94	**-25°**	**July 99**	**+91°**
Jan 94	**-23°**	**July 99**	**+92°**
Jan 99	**-12°**		
Jan 00	**-10°**		

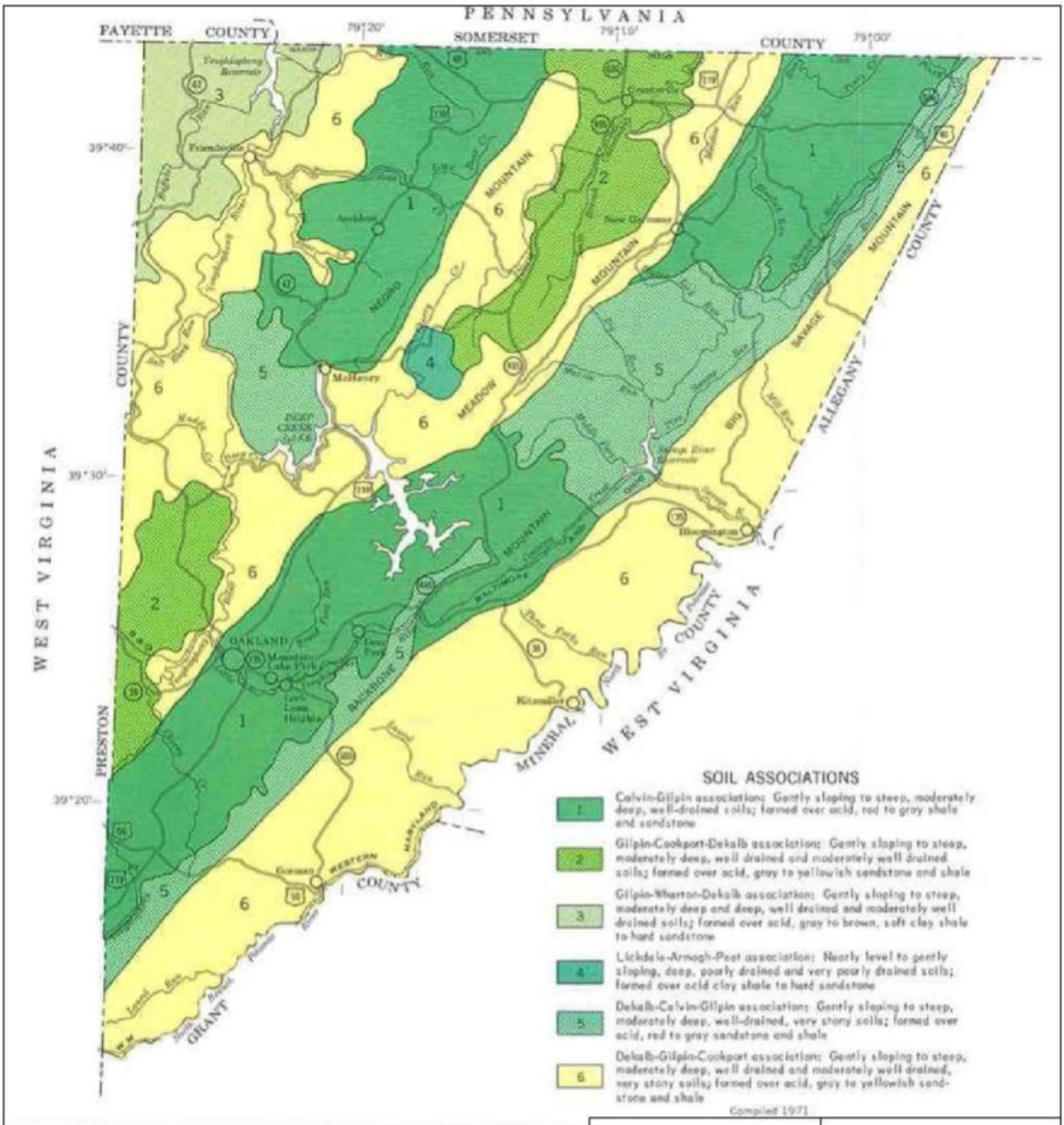
Snowfall by Season		Major Snowfalls	
1990-91	**65”**	**Feb 92**	**14”**
1991-92	**110”**	**Dec 92**	**18”**
1992-93	**149”**	**Feb 93**	**50” over 2 weeks**
1993-94	**147”**	**Feb 94**	**12”**
1994-95	**61”**	**Mar 94**	**12”**
1995-96	**208”**	**Dec 95**	**30” on ground**
1996-97	**75”**	**Jan 96**	**30”**
1997-98	**97”**	**Dec 97**	**16”**
1998-99	**112”**	**Mar 99**	**15”**
1999-00	**87”**	**Feb 03**	**25”**
2000-01	**117”**		
2001-02	**55”**		
2002-03	**155”**		

Source: Oakland Md. Weather Station

Figure 9


68
68
219
50
Legend
County Boundary
Town Boundaries
Steep Slopes
NORTH
S&S Consulting, LLC
Figure 10
GARRETT COUNTY
GENERALIZED STEEP SLOPE AREAS
Source: Garrett County GIS
Date: February 2012
Scale: N.T.S.


68
68
219
220
50
Legend
County Boundary
Town Boundaries
Shale and Limestone
Sandstone (Includes Coal Deposits)
NORTH
S&S Consulting, LLC
Figure 11
GARRETT COUNTY
GENERAL GEOLOGY
Source: MD Geological Survey
Date: February 2012
Scale: N.T.S.



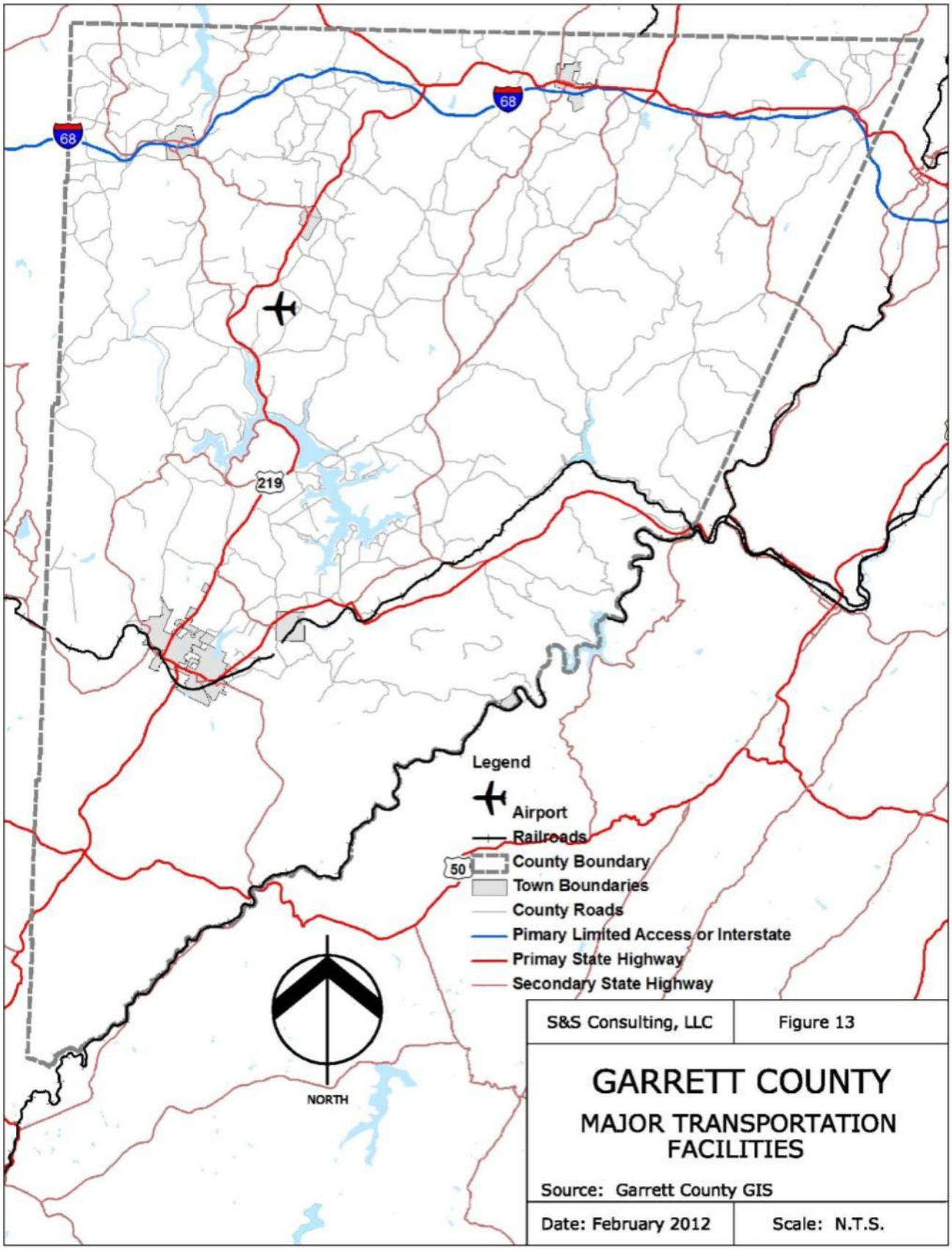
NORTH

S&S Consulting, LLC	Figure 12

GARRETT COUNTY
GENERAL SOIL MAP

Source: USDA, Soil Conservation Service 1971

Date: April 19, 2004	Scale: N.T.S.

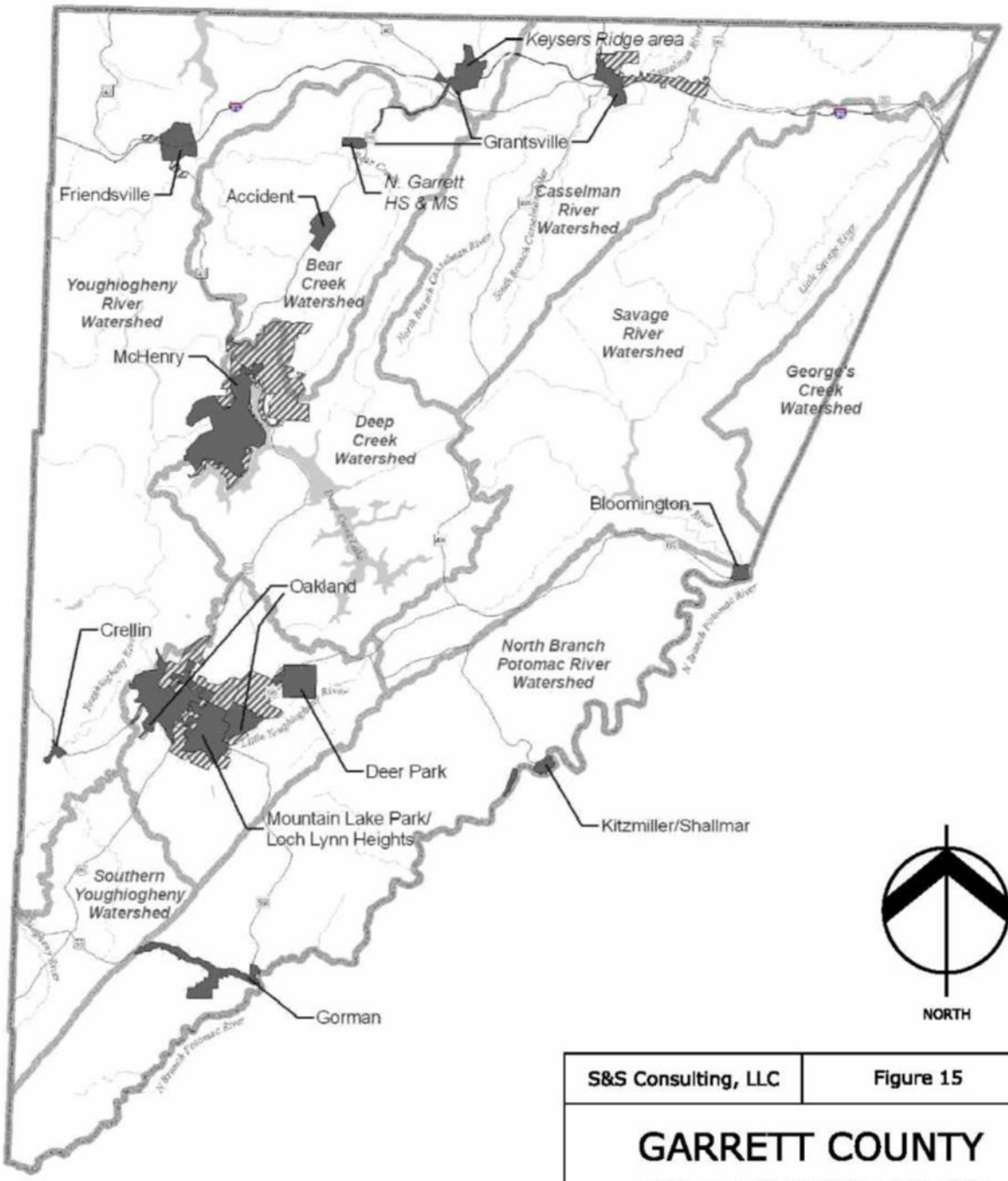

68
68
219
50
Legend
Airport
Railroads
County Boundary
Town Boundaries
County Roads
Pimary Limited Access or Interstate
Primay State Highway
Secondary State Highway
NORTH
S&S Consulting, LLC
Figure 13
GARRETT COUNTY
MAJOR TRANSPORTATION FACILITIES
Source: Garrett County GIS
Date: February 2012
Scale: N.T.S.

APPROVED BUILDING PERMITS (Updated 2004 - 2010)

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Permits	664	696	737	742	750	714	681	654	525	468	499
Est. Value	$58,528,000	$76,867,000	$85,097,000	$96,631,000	$107,192,808	$107,749,626	$123,376,735	$127,738,526	$75,624,213	$57,855,466	$208,123,963
Residential	429	453	491	515	410	386	369	294	200	176	126
Single Family	255	240	293	316	310	284	254	210	169	118	107
Est. Value SF	$39,075,000	$46,993,000	$59,796,000	$63,579,000	$68,369,657	$63,920,950	$66,453,071	$57,479,763	$43,908,079	$30,250,052	$27,322,162
Comm./Inst.	38	56	27	47	46	62	61	72	84	36	97
Est. Value C/I	$10,402,000	$11,806,000	$8,302,000	$17,112,000	$14,316,700	$20,102,569	$29,063,349	$45,757,837	$20,505,286	$13,598,200	$172,947,368
Deep Creek Watershed											
Total Permits	308	314	364	379	298	267	260	250	209	145	163
Single Family	149	149	180	172	151	128	111	96	73	48	44
SF % of Co.	57%	59%	58%	54%	49%	45%	44%	46%	44%	41%	41%

Source: Garrett County Department of Planning and Land Development

Figure 14

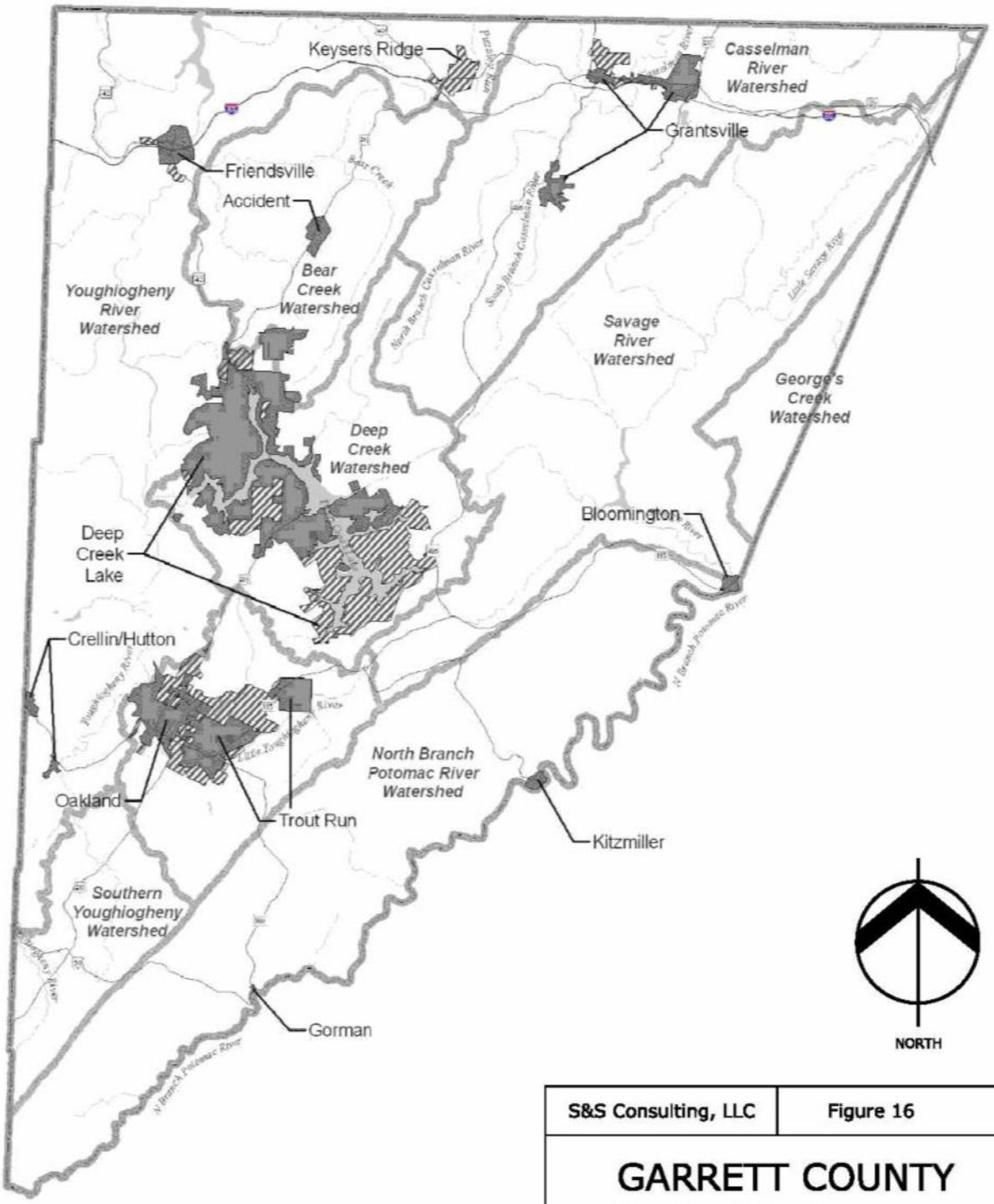


S&S Consulting, LLC	Figure 15

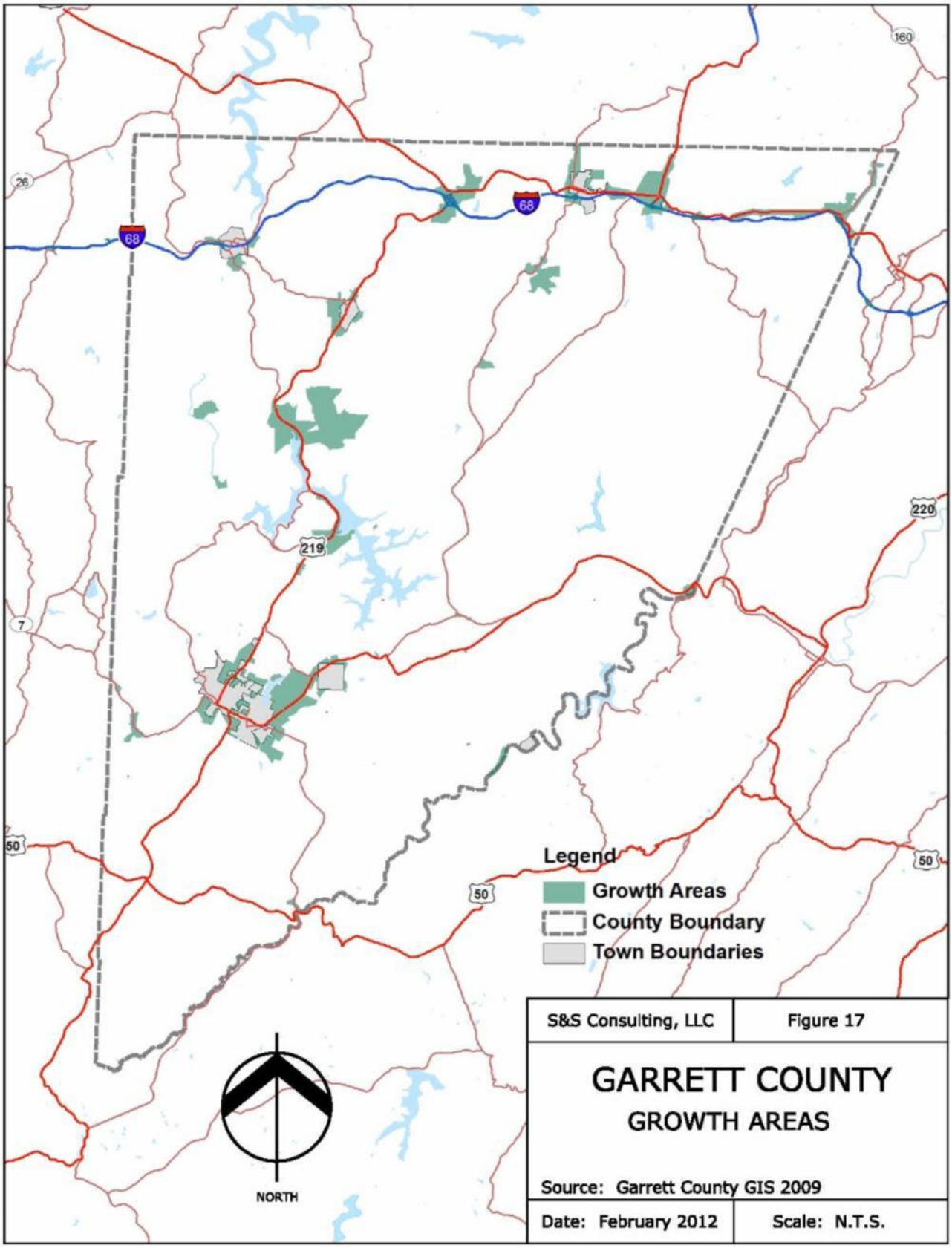
GARRETT COUNTY
WATER SERVICE AREAS

Source: Garrett Co. Comprehensive Plan 2008

Date: February 2012	Scale: N.T.S.



S&S Consulting, LLC	Figure 16
GARRETT COUNTY SEWER SERVICE AREAS	
Source: Garrett Co. Comprehensive Plan 2008	
Date: February 2012	Scale: N.T.S.


160
26
68
68
219
220
7
50
50
50
Legend
Growth Areas
County Boundary
Town Boundaries
NORTH
S&S Consulting, LLC
Figure 17
GARRETT COUNTY
GROWTH AREAS
Source: Garrett County GIS 2009
Date: February 2012
Scale: N.T.S.

GARRETT COUNTY

		REPETITIVE LOSS PROPERTIES	
Comm. Number	Insured	Street Location	Flood Zone
240035	YES	MAPLE ST	B
240034	YES	BITTINGER RD	A05
240034	YES	BITTINGER RD	B
240034	NO	CRELLIN UNDERWOOD RD	B
240034	NO	CRELLIN MINE RD	A08
240034	NO	CRELLIN MINE RD	A08
240034	NO	GORMAN RD	A
240034	NO	KENDALL DR	C
240034	NO	OAKLAND DR	EMG
240034	YES	OAKLAND SAND RUN RD	A
240034	NO	PRESTON LANE	A08
240034	NO	MD 560	A05
240034	NO	STANLEY LN	A
240034	SDF	STANLEY LN	A08
240034	NO	STEYER RD	A
240034	YES	STEYER GORMAN RD	AE

Source: National Flood Insurance Program (as of November 2011)

Figure 18

BUILDING CODE REQUIREMENTS
GARRETT COUNTY

New Construction

Wind Load	90 mph
Snow Load	40 lbs/sq ft
Depth of Frost Line	36”
Mobile Home Tie Down	Yes
Winter Temperature	-10 degrees F

Floodplain Requirements

First Floor	1 ft above **B**ase **F**lood **E**levation
Utilities	3 ft above **B**ase **F**lood **E**levation
Setback	25 ft from edge of stream bank

Source: Garrett County Department of Planning and Land Development

Note: All jurisdictions in Garrett County have adopted the Maryland Building Performances Standards including the 2009 Industrial Building Code and the 2009 International Residential Code.

Figure 19

Stream Peaks
Garrett County – Potomac Basin

Stream	Gauge Location	Floodstage CFS	Year	Event CFS – Approx.
Potomac	Steyer	8,290 – 100 yr	1955	11,200
			1985	9,900
			1985	11,500
			1996	9,200
		6,000 – 10-25 yr	1963	6,200
			1979	7,000
			1994	7,400
			2002	6,500
Potomac	Kitzmiller	40,300 – 100 yr	1985	50,000
		30,000 – 50 yr	1953	33,400
Crabtree Creek	Swanton	3,780 – 100 yr	None	
		2,000 – 25-50 yr	1949	3,260
			1955	2,300
Savage River	10 mi. above mouth	8,140 – 100 yr	None	
		4,000 – 25-50 yr	1954	7,510
			1985	4,300
			1996	6,700
Savage River	Below Dam	6,500 – 25-50 yr	1954	6,530
			1985	8,600
			1996	9,100

Source: U. S. Geological Survey, Water Resources Division

Figure 20

Stream Peaks
Garrett County – Youghiogheny Basin

Stream	Gauge Location	Floodstage CFS	Year	Event CFS – Approx.
Youghiogheny	Near Oakland	14,200 – 100 yr	None	
		10,700 – 25 yr	1954	11,800
			1985	11,800
			1996	14,100
Youghiogheny	Near Friendsville	15,000 – 100 yr	1924	15,600
			1996	16,000
		13,000 – 25-50 yr	1954	13,000
			1985	13,000
			2000	13,000
Casselman	Near Grantsville	9850 – 100 yr	None	
		6,000 – 25-50 yr	1954	8,400
			1996	6,400
Big Piney Run	Near PA Stateline	7,250 – 100 yr	None	
		5,000 – 50 yr	1954	6,850

Source: U. S. Geological Survey, Water Resources Division

Figure 21

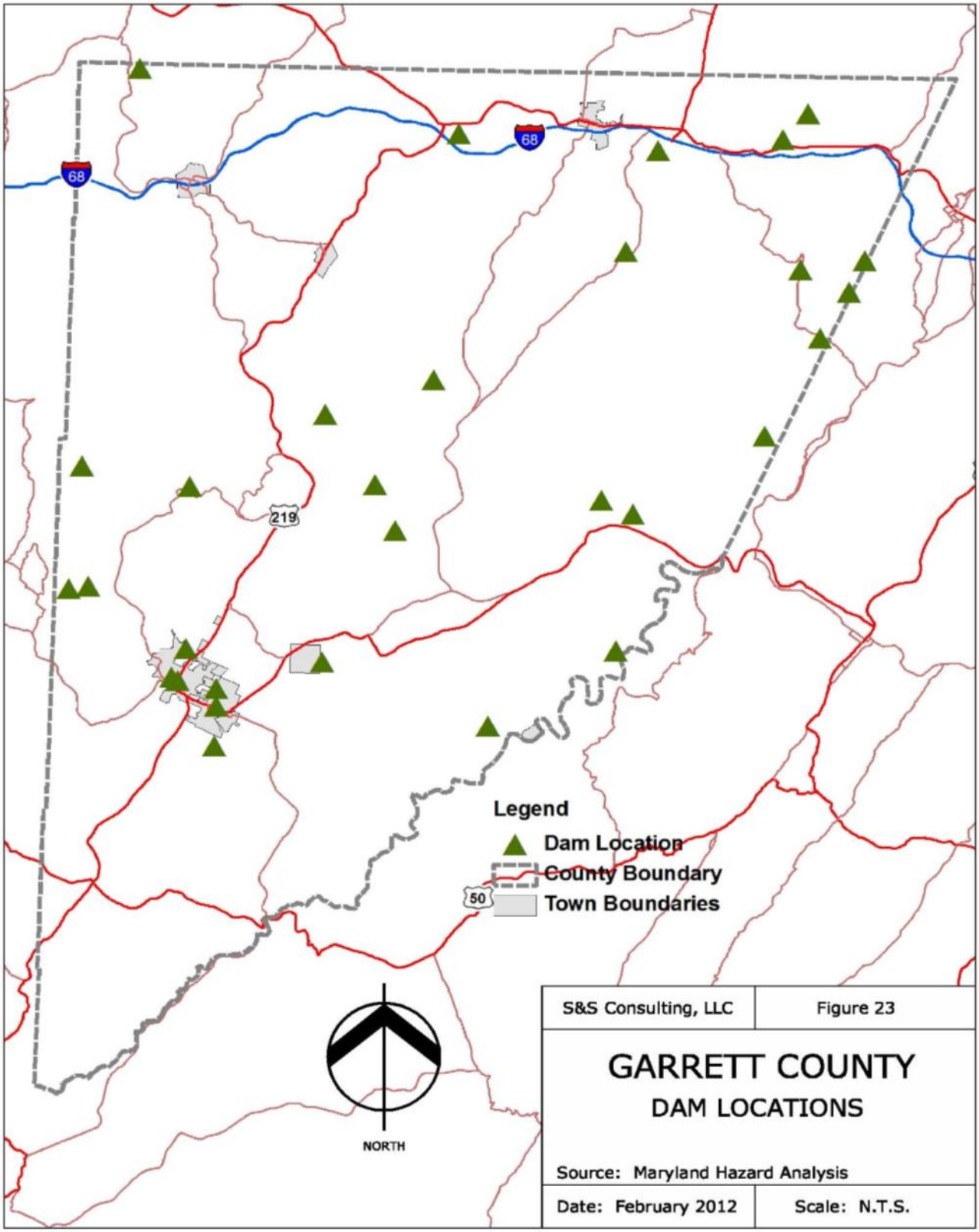
DAMS IN GARRETT COUNTY (Updated)

Dam Name	Hazard Class	Year Built	Modified	EAP Date	EAP Status	Condition	Max Dis. CFS	Max Stor. Acre/ft	Dam Type	Purpose
Koontz Run	High	1930E	1990,2010	3/9/2010	2010-01 EAP prepared by Dam Safety	Fair	340	5	Earth, Masonry	Wtr supply
Frostburg Reservoir	High	1990	1990,HS	3/1/2011	revised Plan being prepared by CME	Fair	22188	3276	Earth	Wtr supply
Deep Creek Dam	High	1925	1993,O	8/1/2009	Old format EAP with contact information updated annualy	Good	65570	145000	Hydraulic fill	Hydroelectric, recreation
Savage River Dam	High	1952	2010,S (replacement of 4 gates)	2/15/2011	Plan--prepared by Hazen and Sawyer	Acceptable	97200	31800	Earth, Rockfill	Flood ctrl, wtr supply, recreation
Little Youghiogheny Site 7	High	1960	1960	7/30/2007	EAP revised by NRCS	Good	7560	1155	Earth	Flood ctrl
Little Youghiogheny Site 2	High	1962	1962	7/30/2007	Draft EAP revised by NRCS in 2007	Good	2720	222	Earth	Flood ctrl
Little Youghiogheny Site 6 (Broadford)	High	1971	1971	7/30/2007	Draft EAP revised by NRCS in 2007	Good	17000	5000	Earth	Wtr supply, recreation, flood ctrl
Little Youghiogheny Site 1	High	1964	1988,O	7/30/2007	Draft EAP revised by NRCS in 2007	Fair	5450	346	Earth	Flood ctrl
Little Youghiogheny Site 3	High	1965	1965	7/30/2007	Draft EAP revised by NRCS in 2007	Fair	4020	374	Earth	Flood ctrl
Little Youghiogheny Site 5	High	1968	1968	7/30/2007	EAP revised by NRCS in 2007	Good	13500	1500	Earth	Flood ctrl
Meadow Run Dam	High	1969	1969	11/22/2006	2006 EAP updated by BWH 1994-BWH upgraded to hazard class to High	Fair	800	750	Earth	Recreation
Jennings Randolph	High	1981	1981	6/1/2005	2005 Excellent plan prepared by Corps of Engineers	Unsafe (inadequate spillway)	193000	130900	Rockfill	Wtr supply, recreation, flood ctrl, other

Bittinger Farm Pond	Low	1968	1993,S			Good	121	91	Earth	Recreation
Lake Minnetoska Dam	Low	1924	1924			Breached	800	52	Earth	Recreation
Kemp Farm Pond	Low	1971	1971			Good	186	33	Earth	Recreation, wildlife, fire/stock
Western Maryland 4-H Center	Low	1937	1937			Fair	1034	270	Earth	Recreation
Herrington Manor	Low	1938	1998,S			Fair	3235	722	Earth	Recreation, other
New Germany State Park Dam	Low	1930	2008,S			Acceptable	380	79	Earth	Recreation
Mountain Lake Park	Low	1920	1996,O			Breached	477	150	Earth	Recreation
Kitzmiller	Low	1985	1996,O			Fair	13	1	Rockfill	Wtr supply
Piedmont Water Supply Intake Dam	Low	1911	1998,S			Very poor	0	60	Gravity	Wtr supply
Platter Farm Pond	Low	1968	1968			Good	133	8	Earth	Recreation
Browning Dam	Low	1930	1930			Breached	0	0	Gravity	Other
Waterfront Greens Community Pond	Low	1986	1986		Low Hazard-No plan required.	Good	35	40	Earth	Recreation
Rock Lodge Dam	Low	1920	2007			Fair	1289	2	Concrete	Recreation
Lake Louise	Significant	1930E	2001,SH	6/1/1998	EAP drafted and approved in June 1998, Updated 2007	Good	532	389	Rockfill	Recreation
Klondike Reservoir No. 2(Upper)	Significant	1930E	1988,O			Fair	4535	9	Earth	Wtr supply
Borden Shaft-Carlos Reservoir	Significant	1960	1960			Very poor	300	20	Earth	Wtr supply
Thousand Acres Dam	Significant	2007	2008	7/1/2008	Draft EAP Prepared July 08	Good	200	36	Earth	Irrigation
Barton Reservoir	N/A	1968	1977,HS			Breached	2660	15	Earth	Wtr supply

Source: 2011 Maryland State Hazard Mitigation Plan Update

Figure 22


68
68
219
50
Legend
Dam Location
County Boundary
Town Boundaries
NORTH
S&S Consulting, LLC
Figure 23
GARRETT COUNTY
DAM LOCATIONS
Source: Maryland Hazard Analysis
Date: February 2012
Scale: N.T.S.

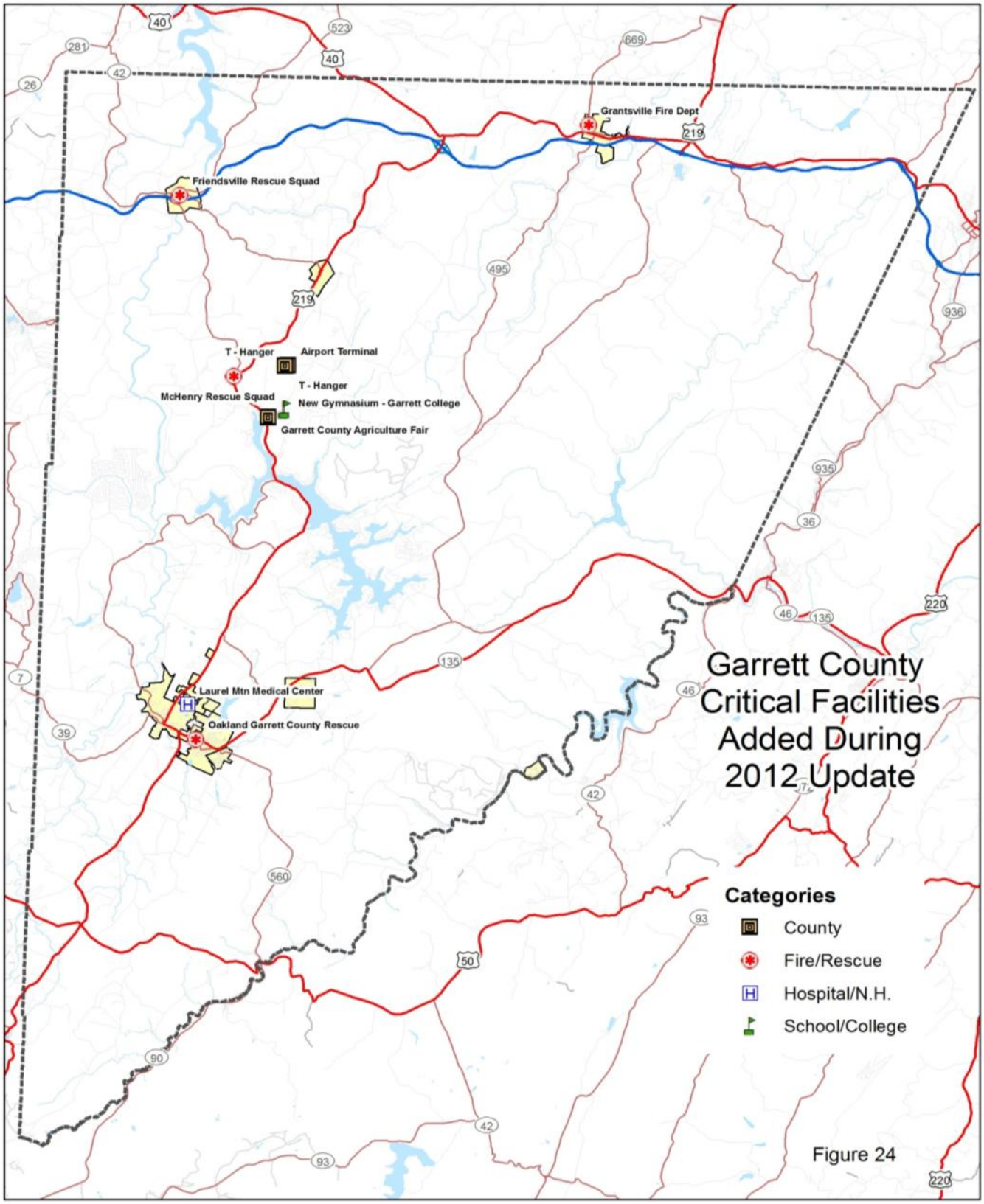

Grantsville Fire Dept
Friendsville Rescue Squad
T - Hanger
Airport Terminal
T - Hanger
McHenry Rescue Squad
New Gymnasium - Garrett College
Garrett County Agriculture Fair
Laurel Mtn Medical Center
Oakland Garrett County Rescue
Garrett County
Critical Facilities
Added During
2012 Update
Categories
County
Fire/Rescue
Hospital/N.H.
School/College

Figure 24

FEMA REPLACEMENT VALUES

BUILDING REPLACEMENT VALUE/SQUARE FOOT	
Occupancy Class	**Total Value per Square Foot**
Single Family Dwelling	$77
Mobile Home	52
Multi-Family Dwelling	98
Dormitory	98
Nursing home	89
Retail Trade	67
Wholesale Trade	53
Repair Services	92
Prof/Technical Services	87
Banks	151
Hospitals	145
Medical Office/Clinic	112
Entertainment	131
Theatres	98
Industrial	69
Construction	69
Agriculture	26
Church/Non-Profit	113
General Government	88
Emergency Response	130
Schools	91
College	115

CONTENTS VALUE	
Occupancy Class	**Contents as Percent of Building Value**
Residential(all types)	50%
Commercial	100%
Hospital/Clinic/Medical Office	150%
Industrial	150%
Construction	100%
Agriculture	100%
Church/Non-Profit	100%
General Government	100%
Emergency Response	150%
Schools	100%
Colleges	150%

Source: FEMA State and Local Mitigation Planning Guide

Figure 25

Figure 26

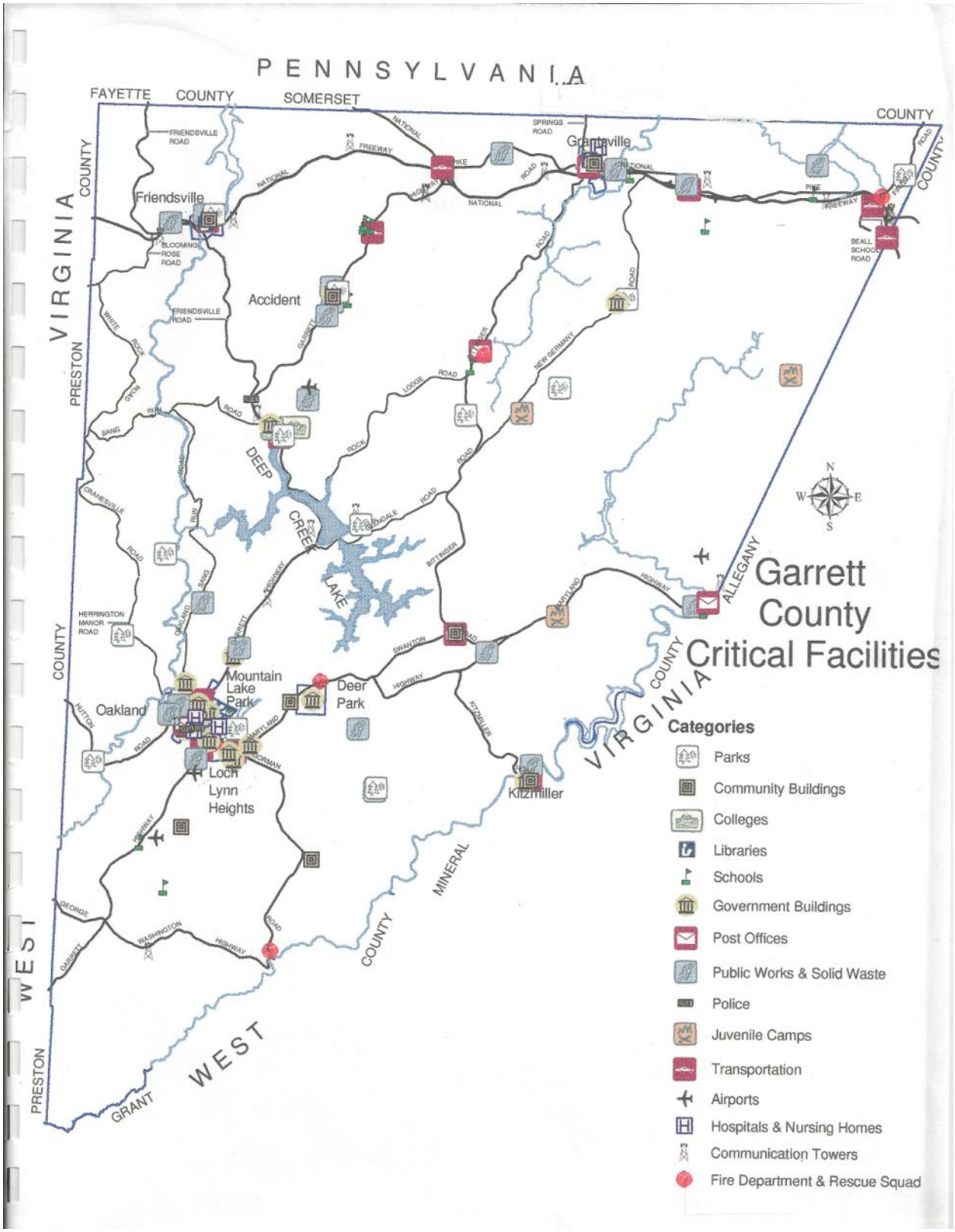
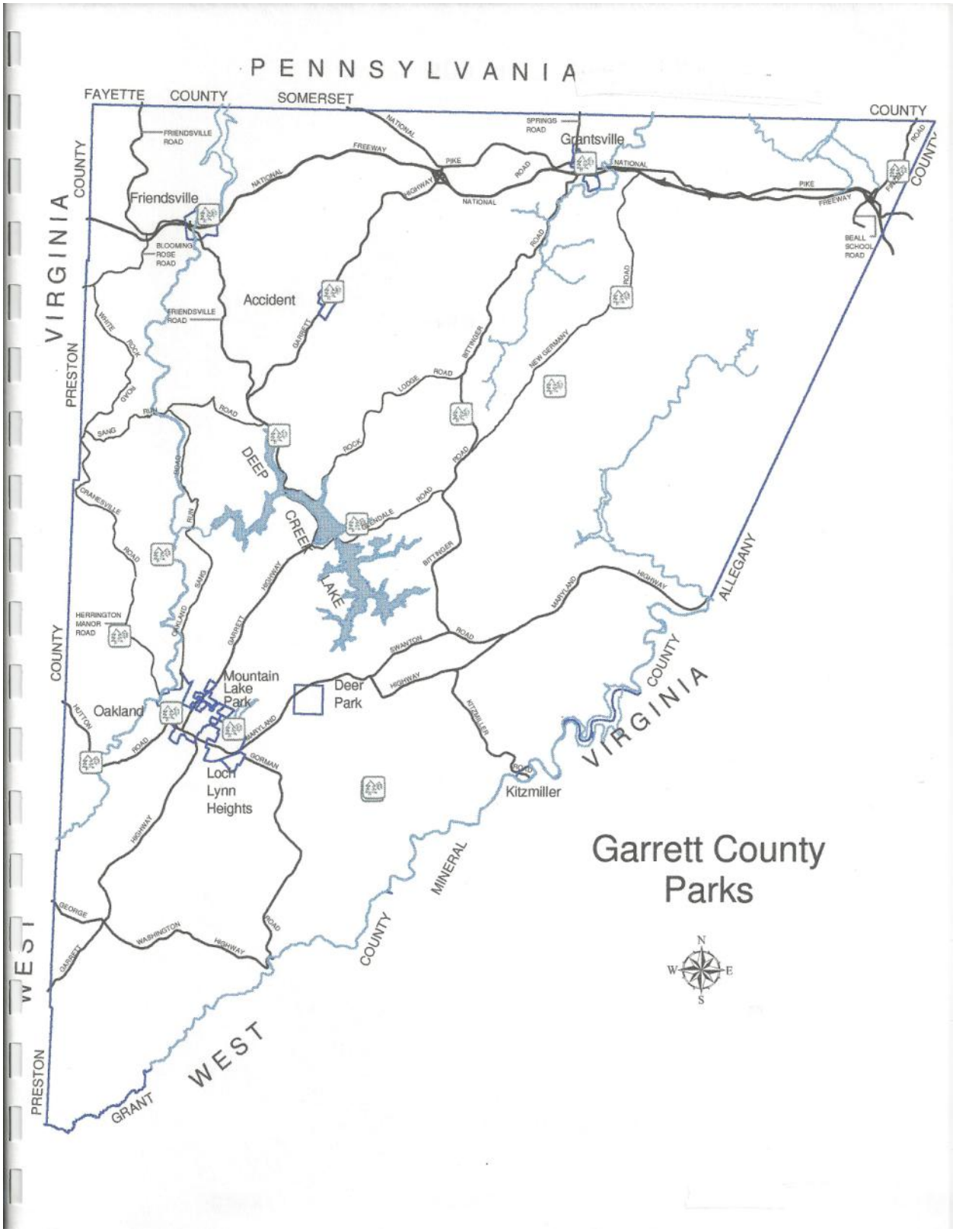

PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
PRESTON COUNTY
WEST VIRGINIA
MINERAL COUNTY
ALLEGANY COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communication Towers
Fire Department & Rescue Squad

Figure 27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ALLEGANY COUNTY
MINERAL COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County Parks
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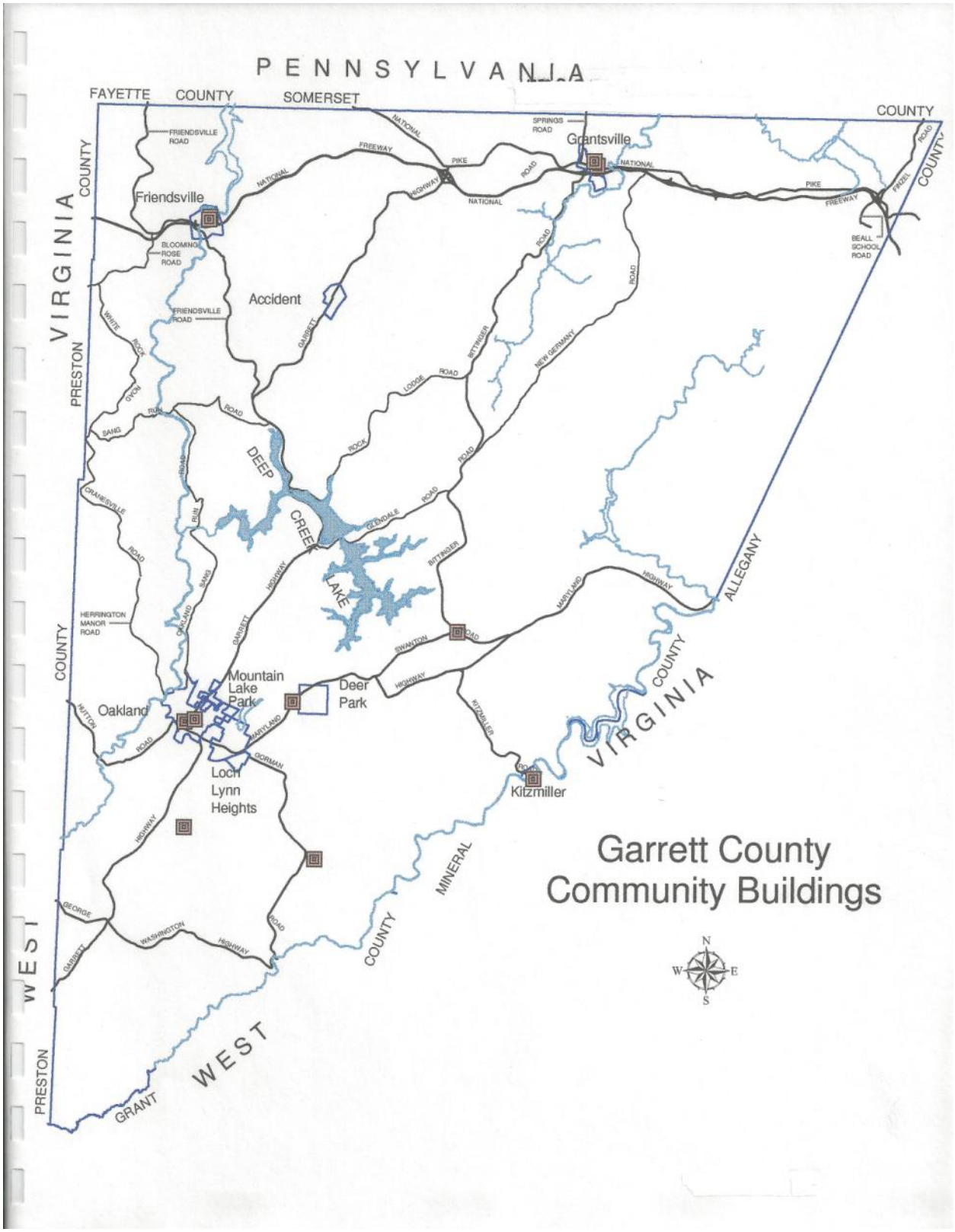
Figure 28


PENNSYLVANIA
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PRESTON COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County
Community Buildings
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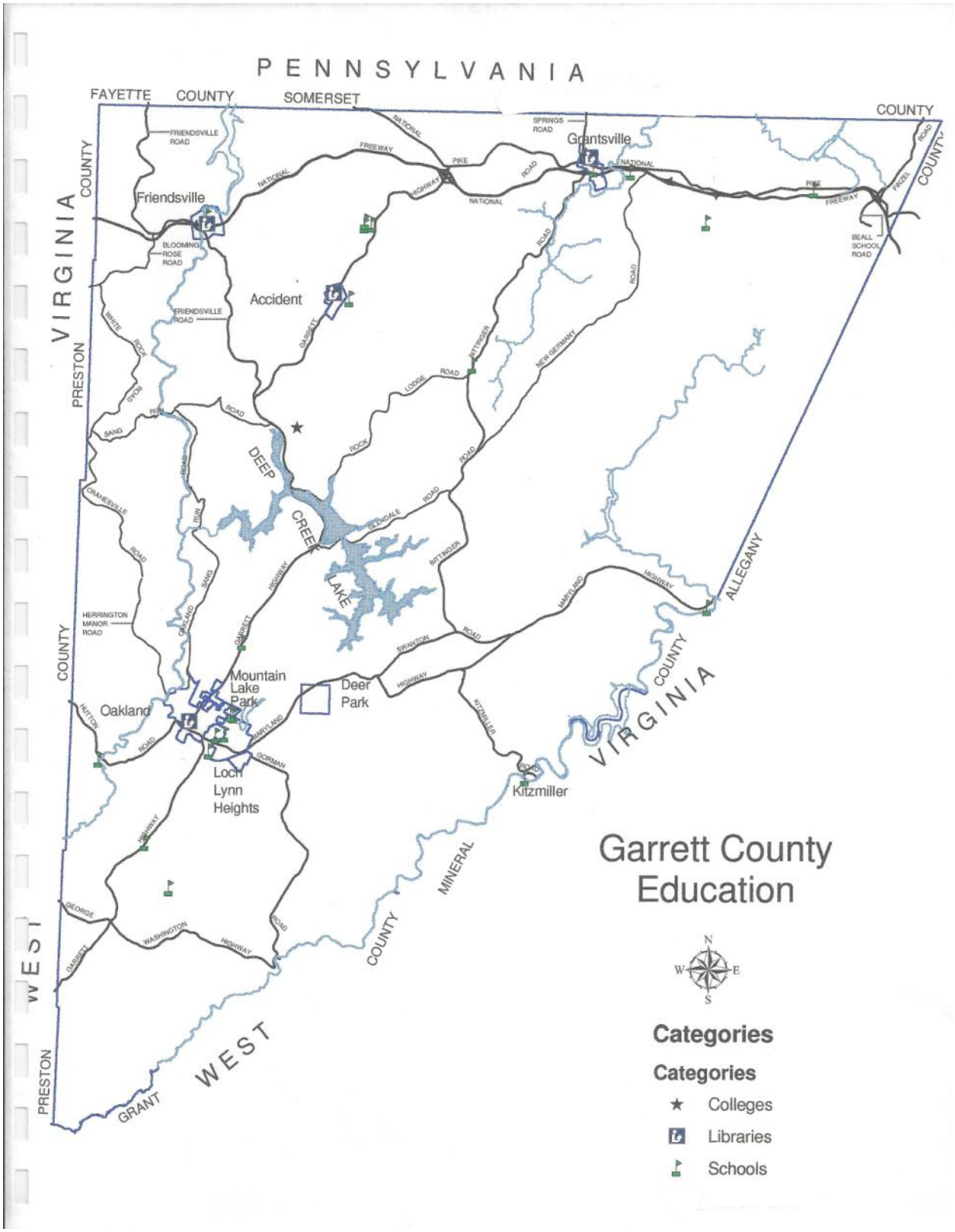
Figure 29


PENNSYLVANIA
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MINERAL COUNTY
ALLEGANY COUNTY
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County Education
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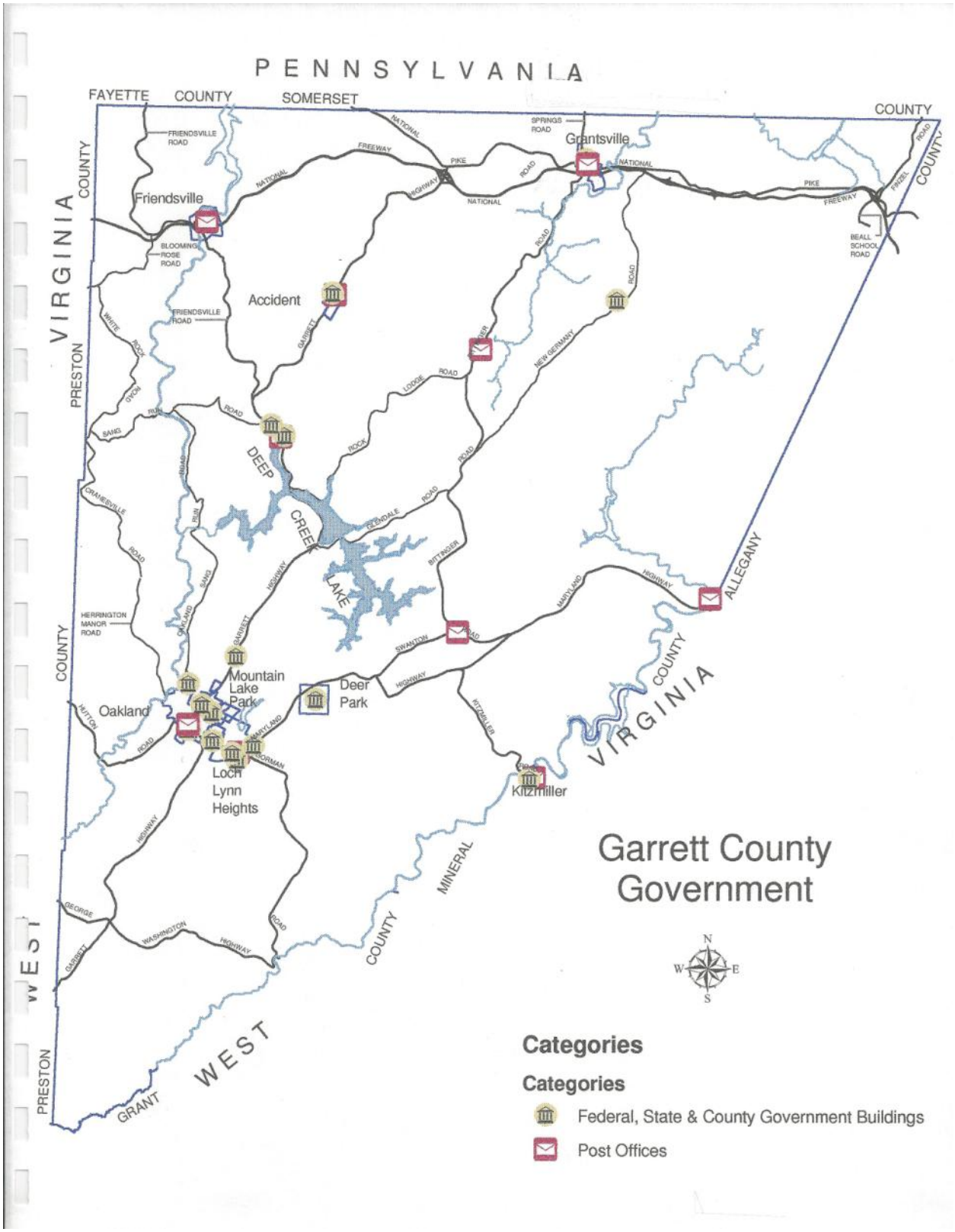
Categories
Categories
Colleges
Libraries
Schools

Figure 30


PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
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MINERAL COUNTY
ALLEGANY COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County Government
Categories
Categories
Federal, State & County Government Buildings
Post Offices

Figure 31

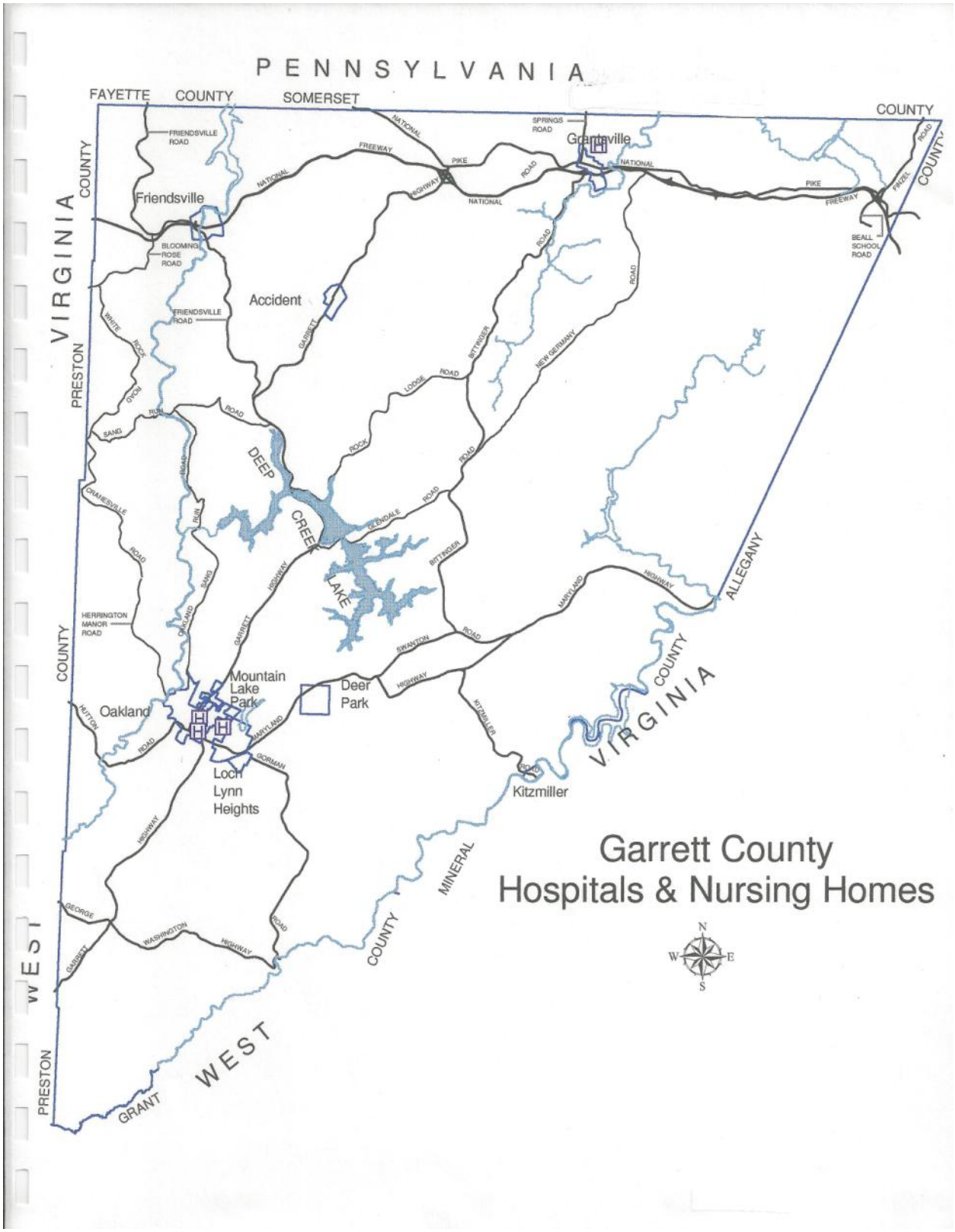
PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
PRESTON COUNTY
ALLEGANY COUNTY
MINERAL COUNTY
WEST VIRGINIA
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County
Hospitals & Nursing Homes
N
S
E
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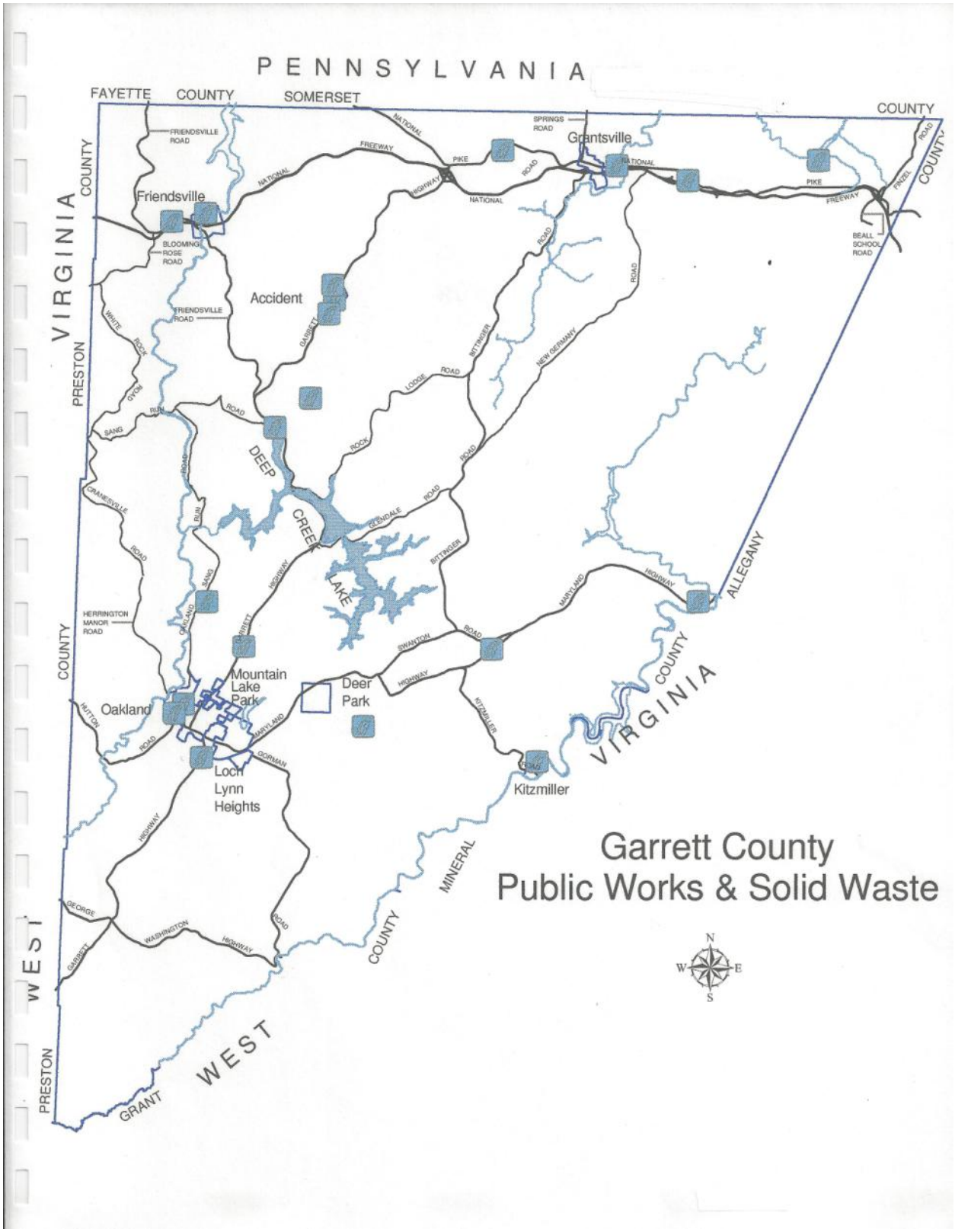
Figure 32


PENNSYLVANIA
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WEST VIRGINIA
PRESTON COUNTY
GRANT
MINERAL COUNTY
ALLEGANY COUNTY
Friendsville
Grantsville
Accident
Deer Park
Mountain Lake Park
Oakland
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County
Public Works & Solid Waste
N
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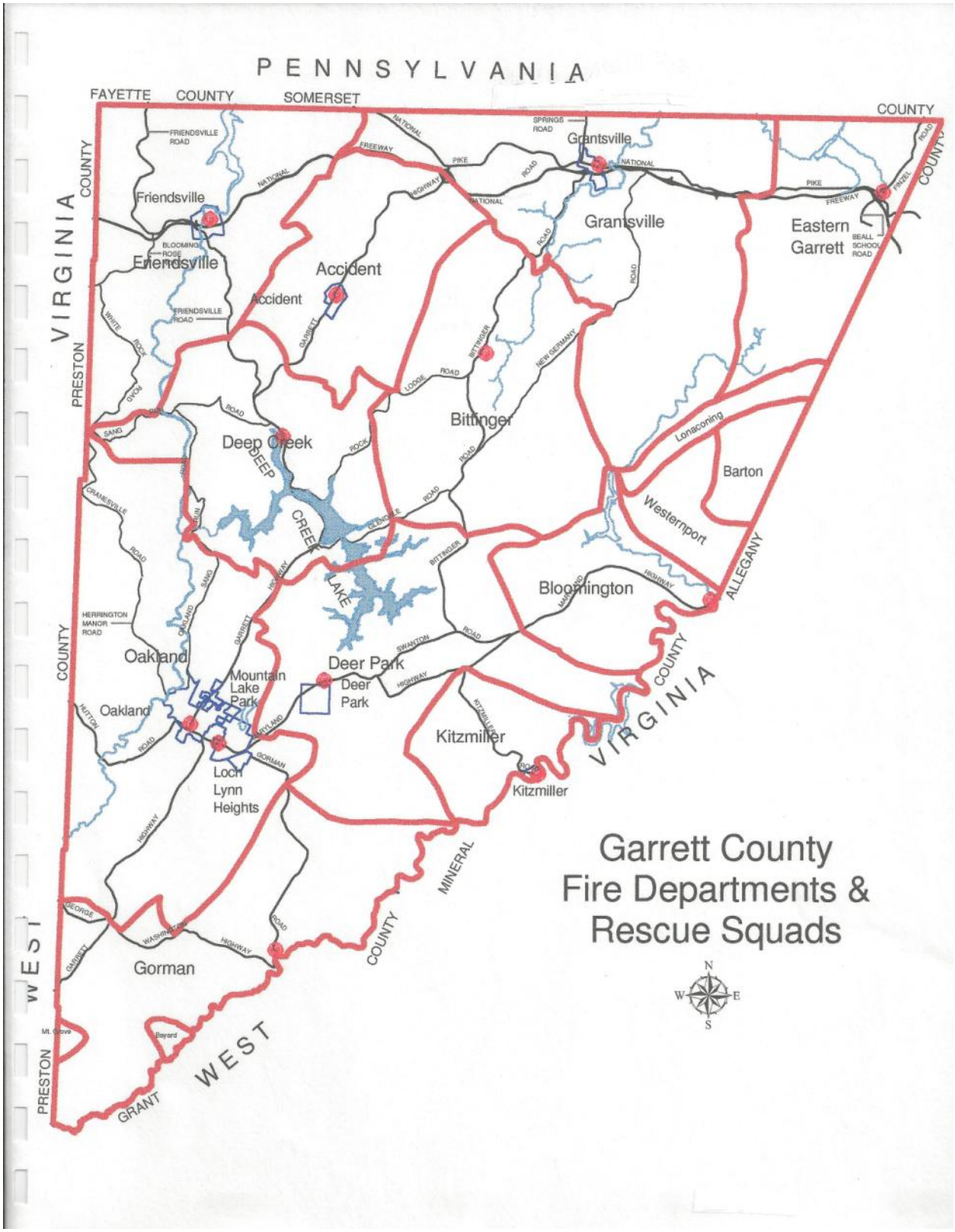
Figure 33


PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
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PRESTON COUNTY
ALLEGANY COUNTY
MINERAL COUNTY
GRANT
WEST VIRGINIA
Friendsville
Grantsville
Eastern Garrett
Accident
Deep Creek
Bittinger
Barton
Westernport
Bloomington
Oakland
Mountain Lake Park
Deer Park
Kitzmiller
Loch Lynn Heights
Gorman
Garrett County
Fire Departments &
Rescue Squads
N
W
E
S

Figure 34

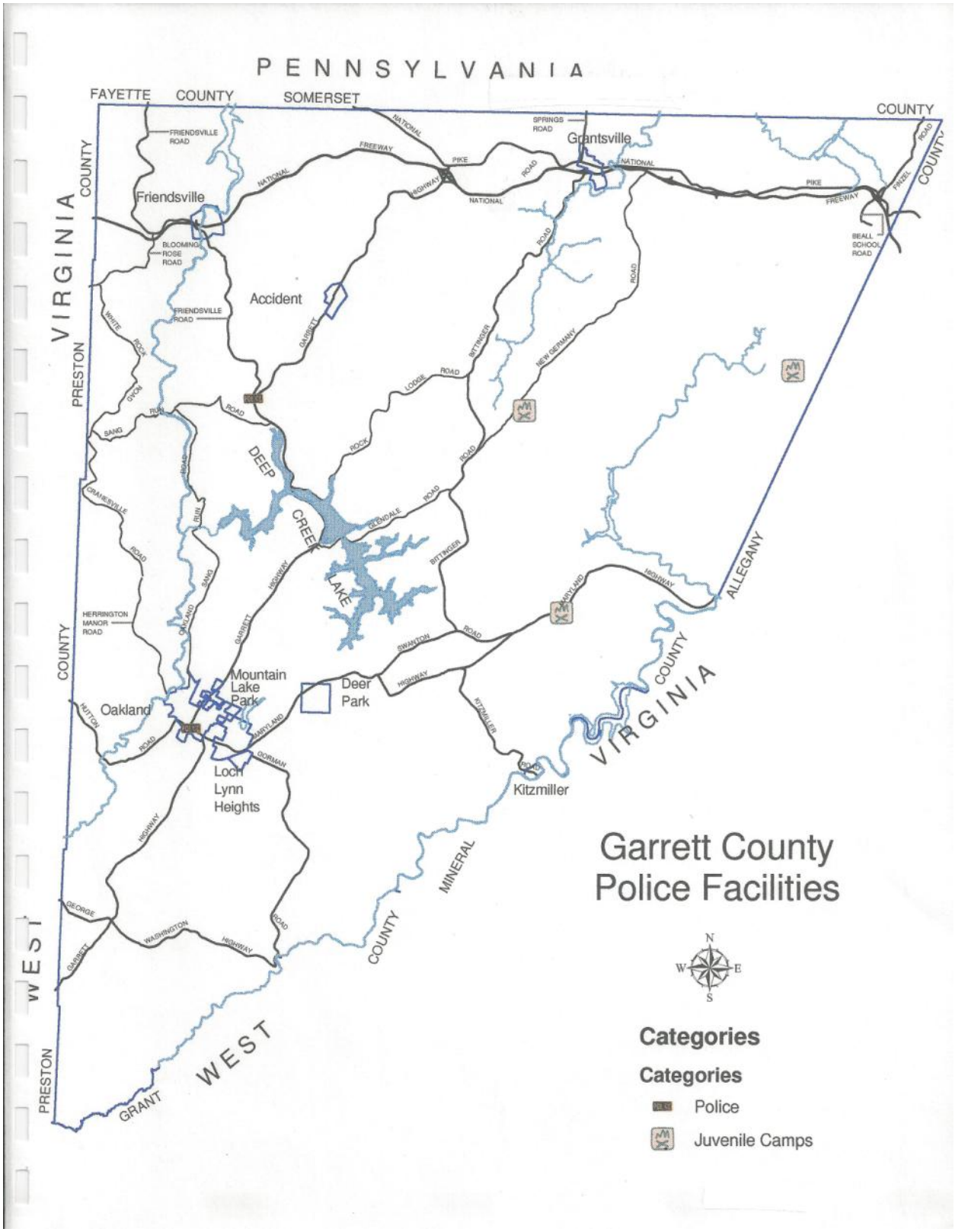

PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
PRESTON COUNTY
WEST VIRGINIA
MINERAL COUNTY
ALLEGANY COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County
Police Facilities
N
S
E
W
Categories
Categories
Police
Juvenile Camps

Figure 35

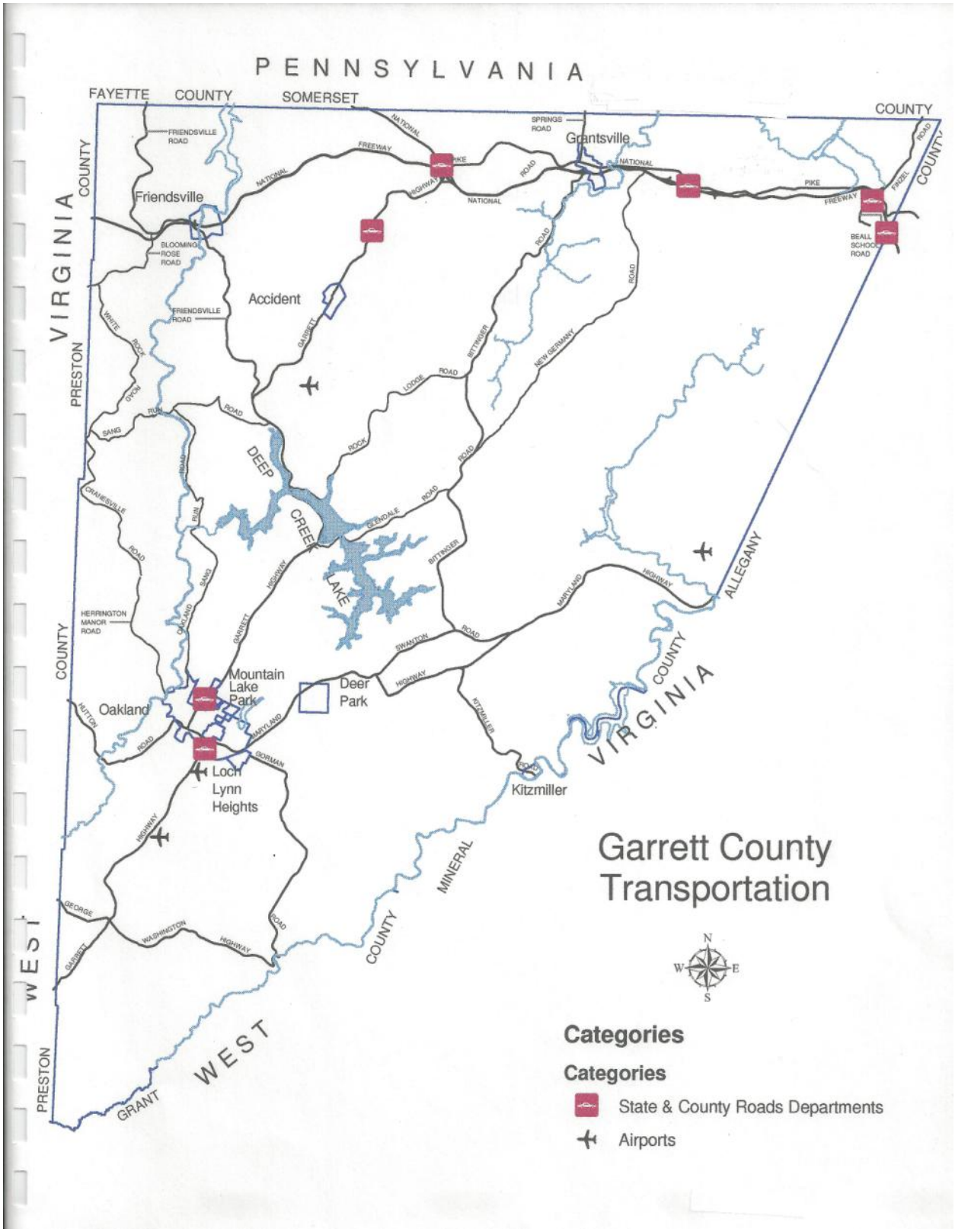

PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
PRESTON COUNTY
WEST VIRGINIA
MINERAL COUNTY
ALLEGANY COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County Transportation
Categories
Categories
State & County Roads Departments
Airports

Figure 36

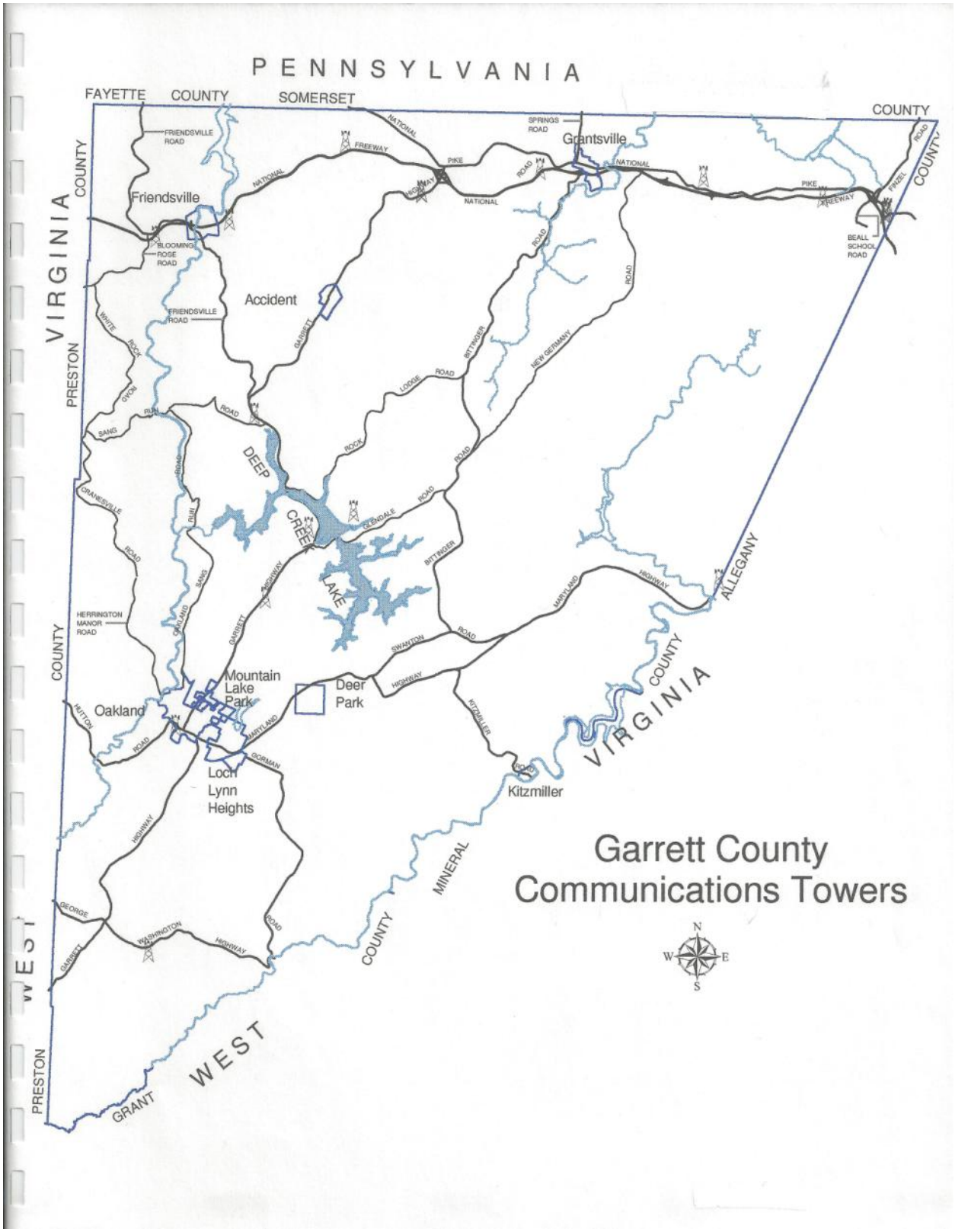

PENNSYLVANIA
FAYETTE COUNTY
SOMERSET COUNTY
VIRGINIA
PRESTON COUNTY
WEST VIRGINIA
MINERAL COUNTY
ALLEGANY COUNTY
GRANT
Friendsville
Accident
Grantsville
Oakland
Mountain Lake Park
Deer Park
Loch Lynn Heights
Kitzmiller
DEEP CREEK LAKE
Garrett County
Communications Towers
N
S
E
W

Figure 37

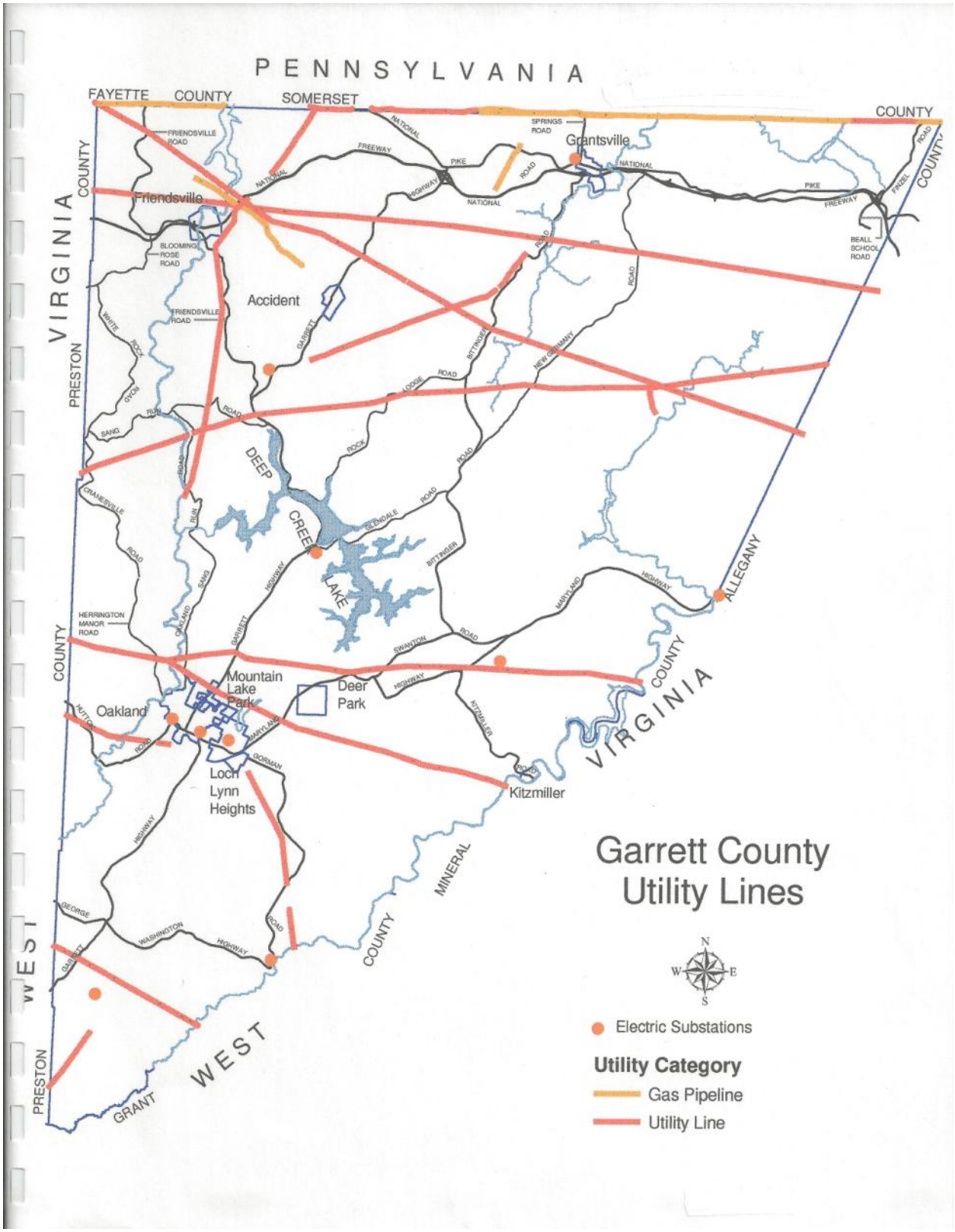

PENNSYLVANIA
FAYETTE COUNTY
SOMERSET
COUNTY
VIRGINIA
PRESTON
COUNTY
Friendsville
Accident
Grantsville
DEEP
CREEK
LAKE
ALLEGANY
COUNTY
VIRGINIA
Mountain
Lake
Park
Deer
Park
Oakland
Loch
Lynn
Heights
Kitzmiller
MINERAL
COUNTY
WEST
WEST
PRESTON
GRANT
Garrett County
Utility Lines
N
W
E
S
Electric Substations
Utility Category
Gas Pipeline
Utility Line

Figure 38

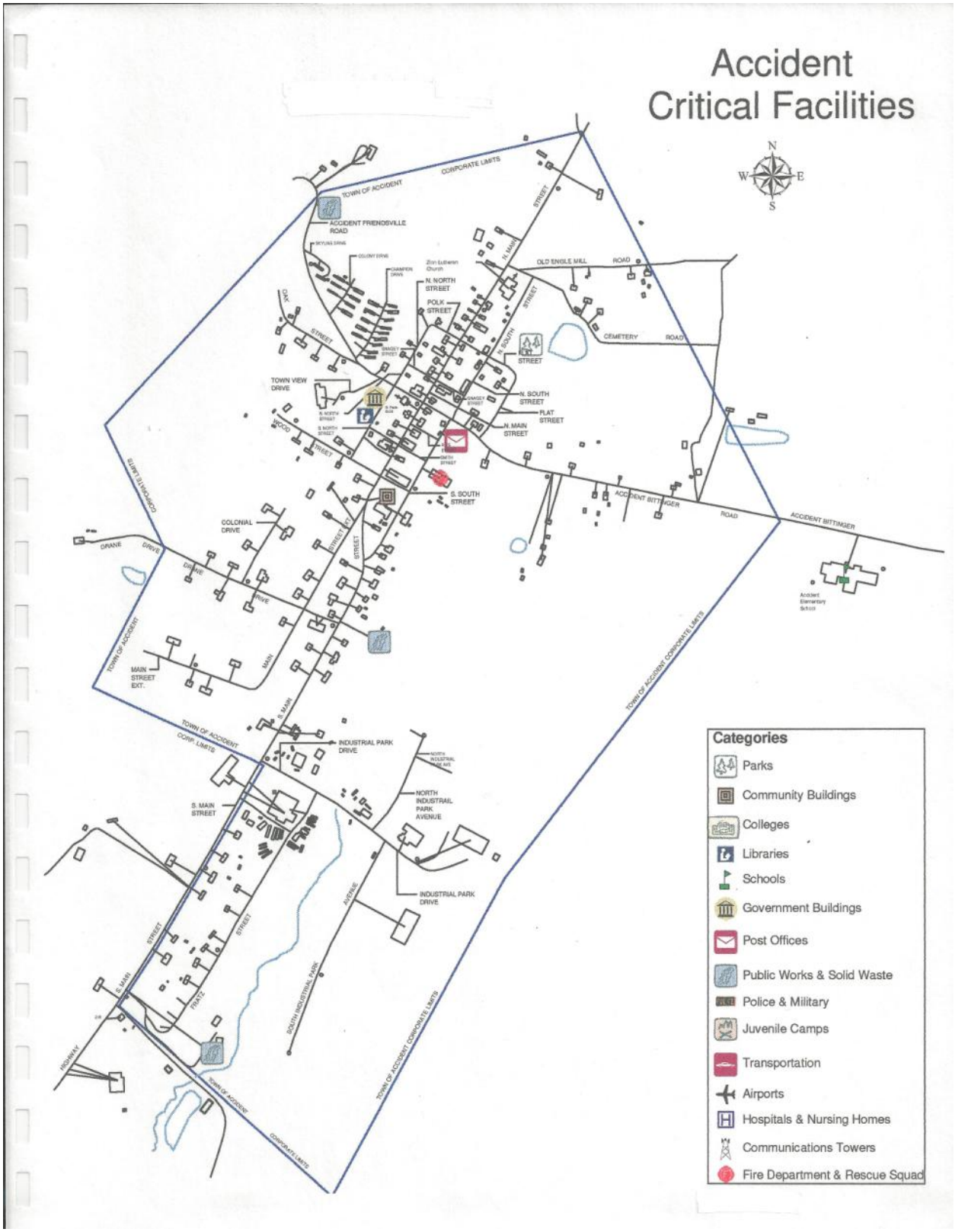

Accident
Critical Facilities
N
W
E
S
TOWN OF ACCIDENT
CORPORATE LIMITS
ACCIDENT FRIENDSVILLE ROAD
OLD ENGLE MILL ROAD
CEMETERY ROAD
N. NORTH STREET
POLK STREET
N. SOUTH STREET
FLAT STREET
N. MAIN STREET
TOWN VIEW DRIVE
S. SOUTH STREET
ACCIDENT BITTINGER ROAD
COLONIAL DRIVE
DIANE DRIVE
MAIN STREET EXT.
S. MAIN STREET
INDUSTRIAL PARK DRIVE
NORTH INDUSTRIAL PARK AVENUE
SOUTH INDUSTRIAL PARK AVENUE
HIGHWAY
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad

Figure 39

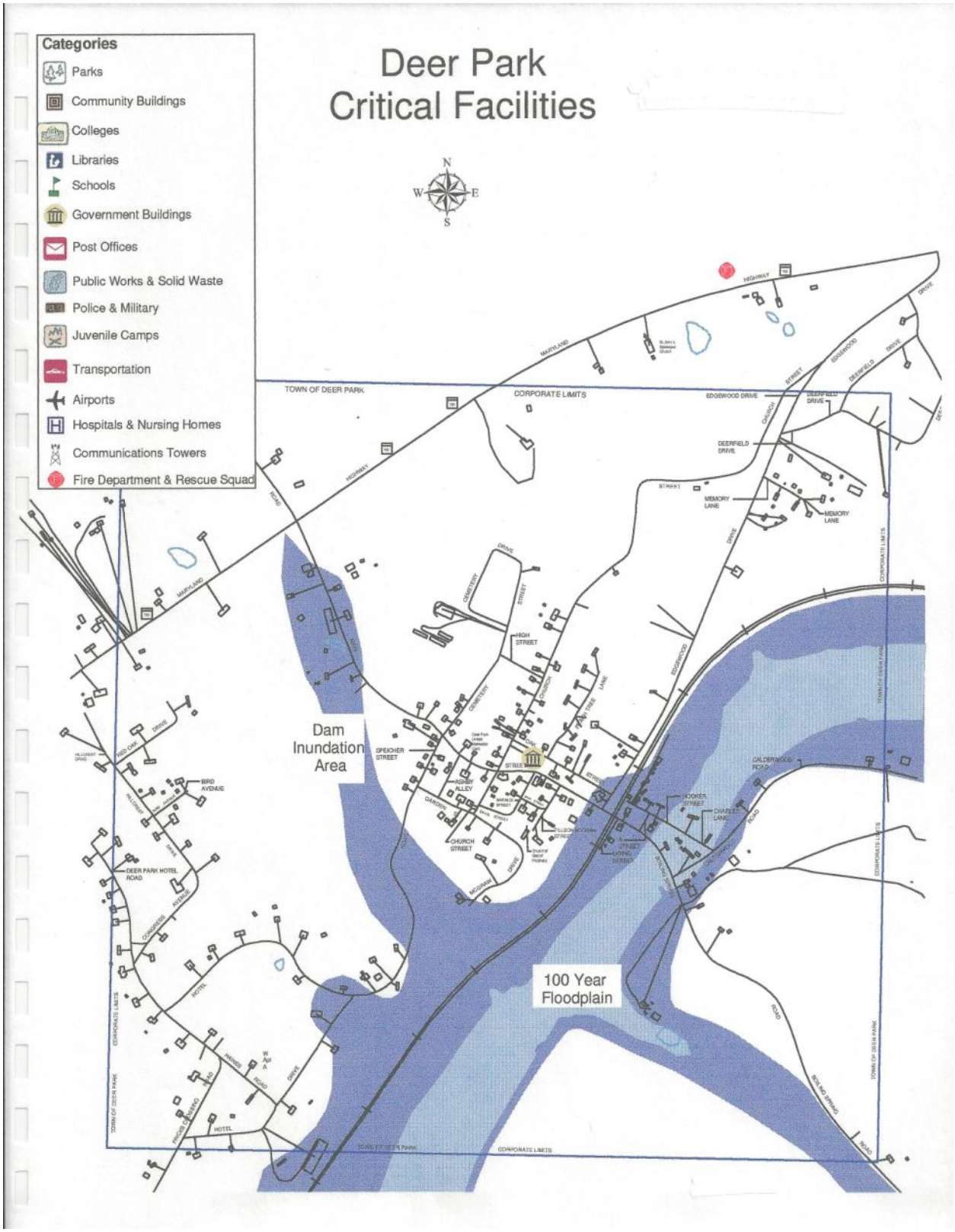

Deer Park
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
N
W
E
S
TOWN OF DEER PARK
CORPORATE LIMITS
Dam
Inundation
Area
100 Year
Floodplain
HIGH STREET
CHURCH STREET
SPEICHER STREET
DEERFIELD DRIVE
MEMORY LANE
EDGEWOOD DRIVE
CALDERWOOD ROAD
HOOKER STREET
CHARLES LANE
BIRD AVENUE
DEER PARK HOTEL ROAD
HOTEL
MARYLAND
HIGHWAY
ROAD
DRIVE
STREET

Figure 40

Friendsville
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
100 Year
Floodplain
N
W
E
S
CORPORATE LIMITS
TOWN OF FRIENDSVILLE
YOUGHIOGHENY
RIVER
MAPLE
NATIONAL
FREEWAY
PARK STREET
CEMETERY ROAD
OLD RIVER ROAD
SECOND AVENUE
FIRST AVENUE
THIRD AVENUE
BEAR CREEK

Figure 41

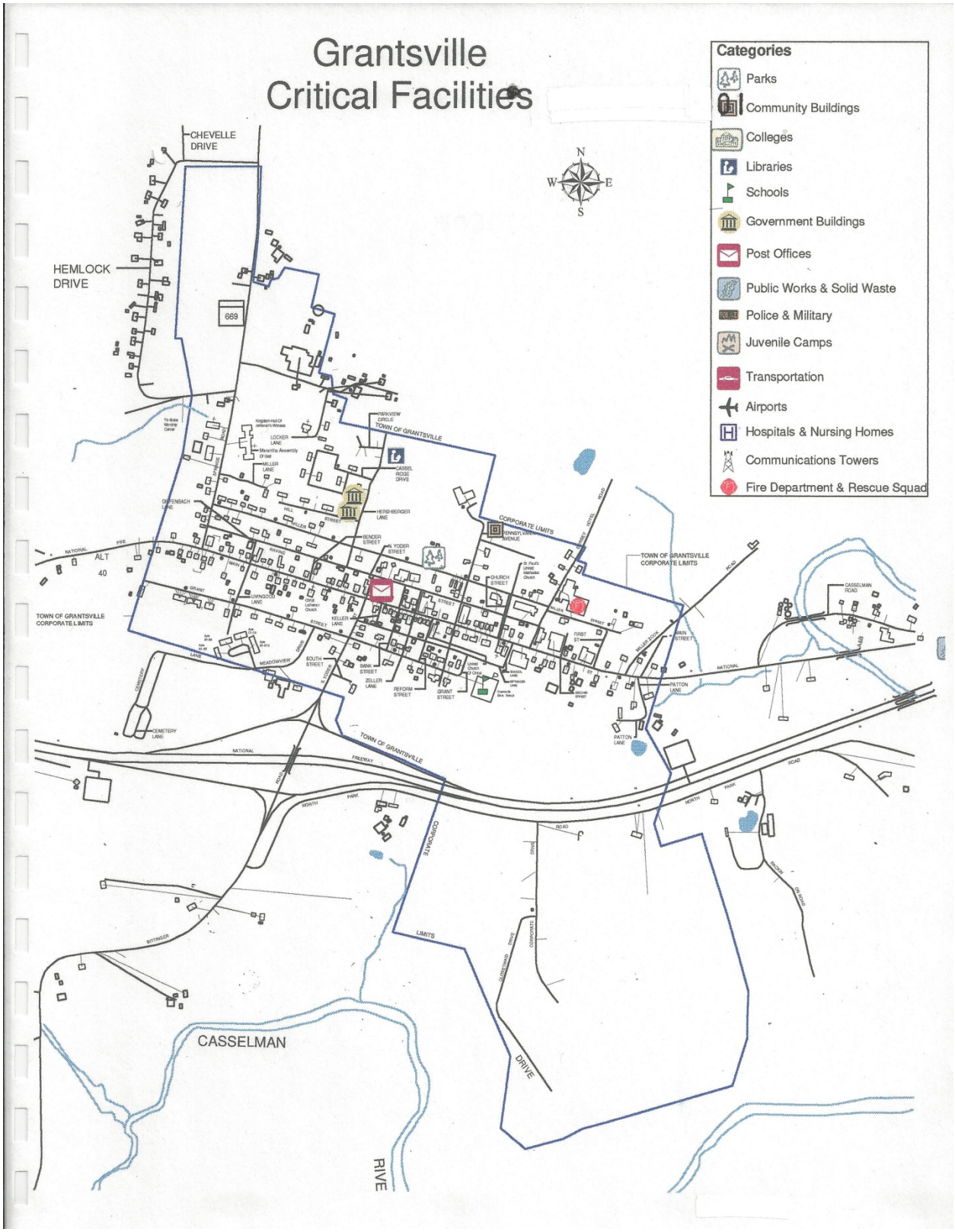

Grantsville
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
N
S
E
W
CHEVELLE DRIVE
HEMLOCK DRIVE
669
TOWN OF GRANTSVILLE
CORPORATE LIMITS
TOWN OF GRANTSVILLE CORPORATE LIMITS
ALT 40
CASSELMAN
RIVE
DRIVE

Figure 42

Kitzmiller
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
N
S
100 Year
Floodplain
CORPORATE LIMITS
TOWN OF KITZMILLER
KITZMILLER ROAD
NORTH AMERICAN ROAD
SHALLMAR ROAD
NORTH BRANCH
RAILROAD
PARK STREET
OAK STREET
ALLEY K
SPRING ST.
HAZEL STREET
HOMESTEAD STREET
ORCHARD STREET
WILLOW STREET
STATE STREET
HEDGE LANE
KITZMILLER ADDITION ALLEY
EAST MAIN STREET
UNION STREET
E. CENTRE STREET
WEST MAIN STREET
RACE STREET
FOURTH STREET
CHURCH STREET
ALLEY
THIRD STREET
CENTRE STREET
SECOND STREET
Kitzmiller Elementary School
Assembly Of God Church
Immaculate Conception Catholic Church
Mt. Bethel Methodist Church
DRIVER STREET

Figure 43

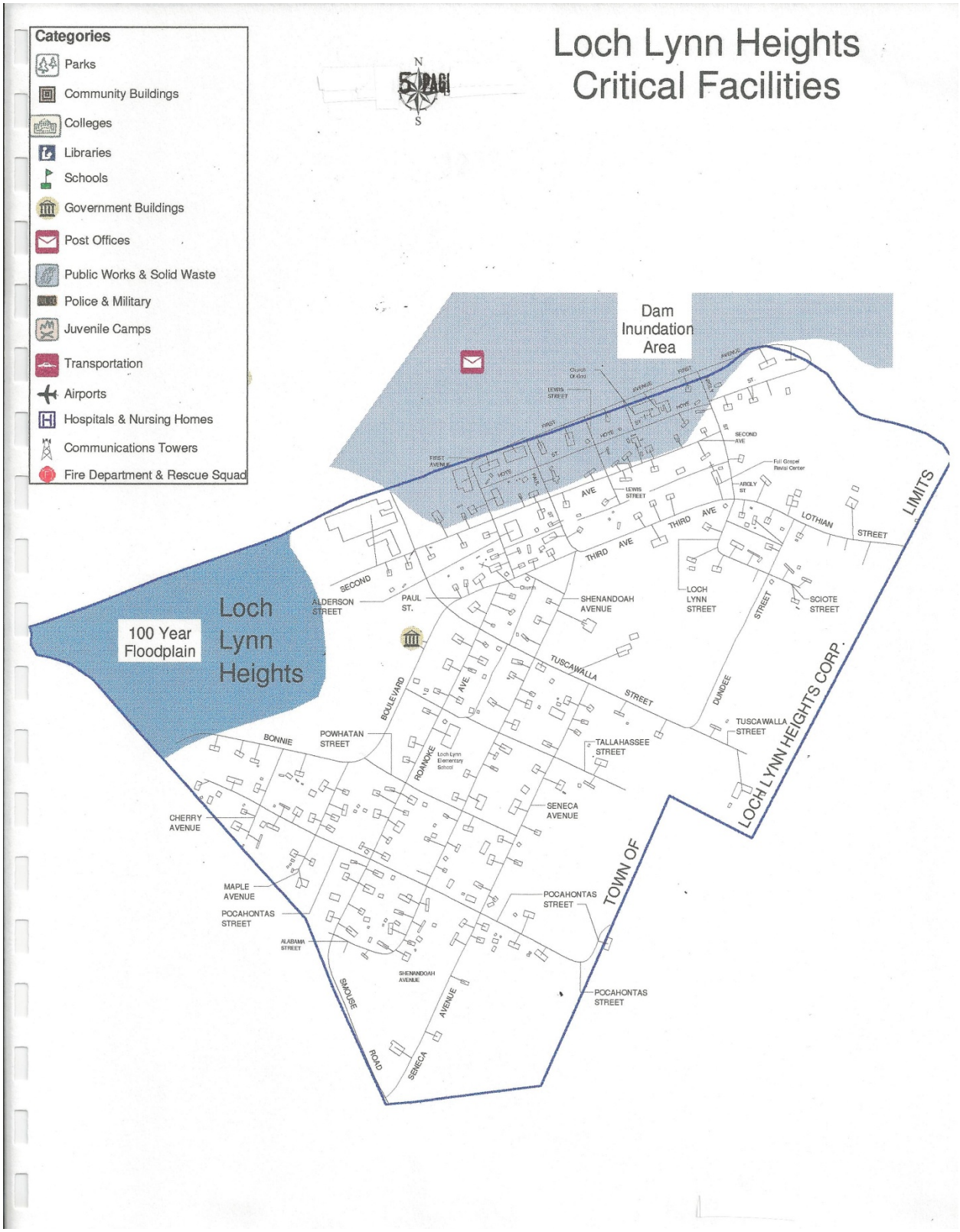

Loch Lynn Heights
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
N
S
Dam
Inundation
Area
100 Year
Floodplain
Loch
Lynn
Heights
LOCH LYNN HEIGHTS CORP. LIMITS
TOWN OF
SECOND
ALDERSON STREET
PAUL ST.
SHENANDOAH AVENUE
LOCH LYNN STREET
SCIOTE STREET
THIRD AVE
LOTHIAN STREET
TUSCAWALLA STREET
DUNDEE
TALLAHASSEE STREET
BONNIE
POWHATAN STREET
BOULEVARD
ROANOKE
SENECA AVENUE
CHERRY AVENUE
MAPLE AVENUE
POCAHONTAS STREET
ALABAMA STREET
SMOUSE ROAD
SENECA AVENUE

Figure 44

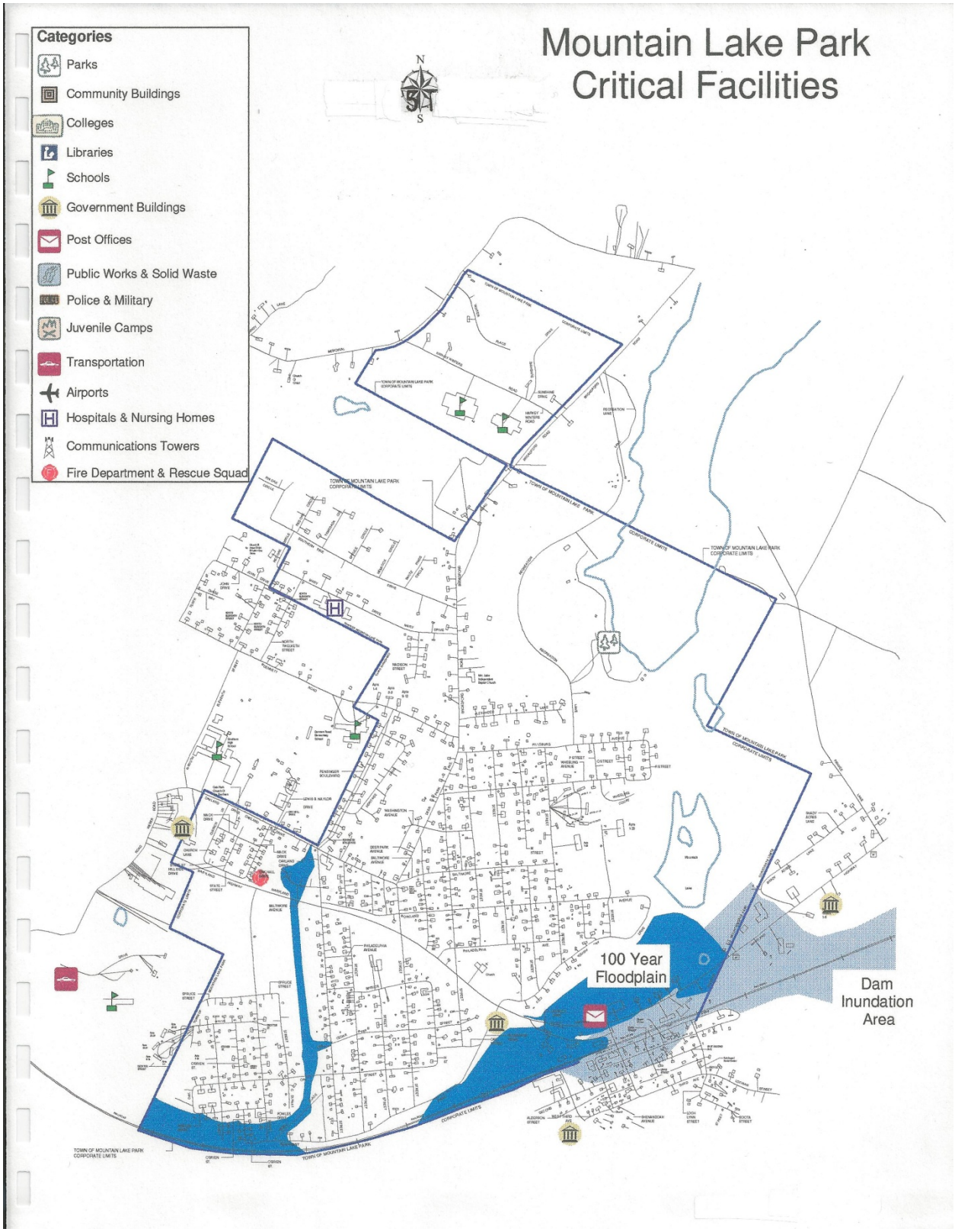
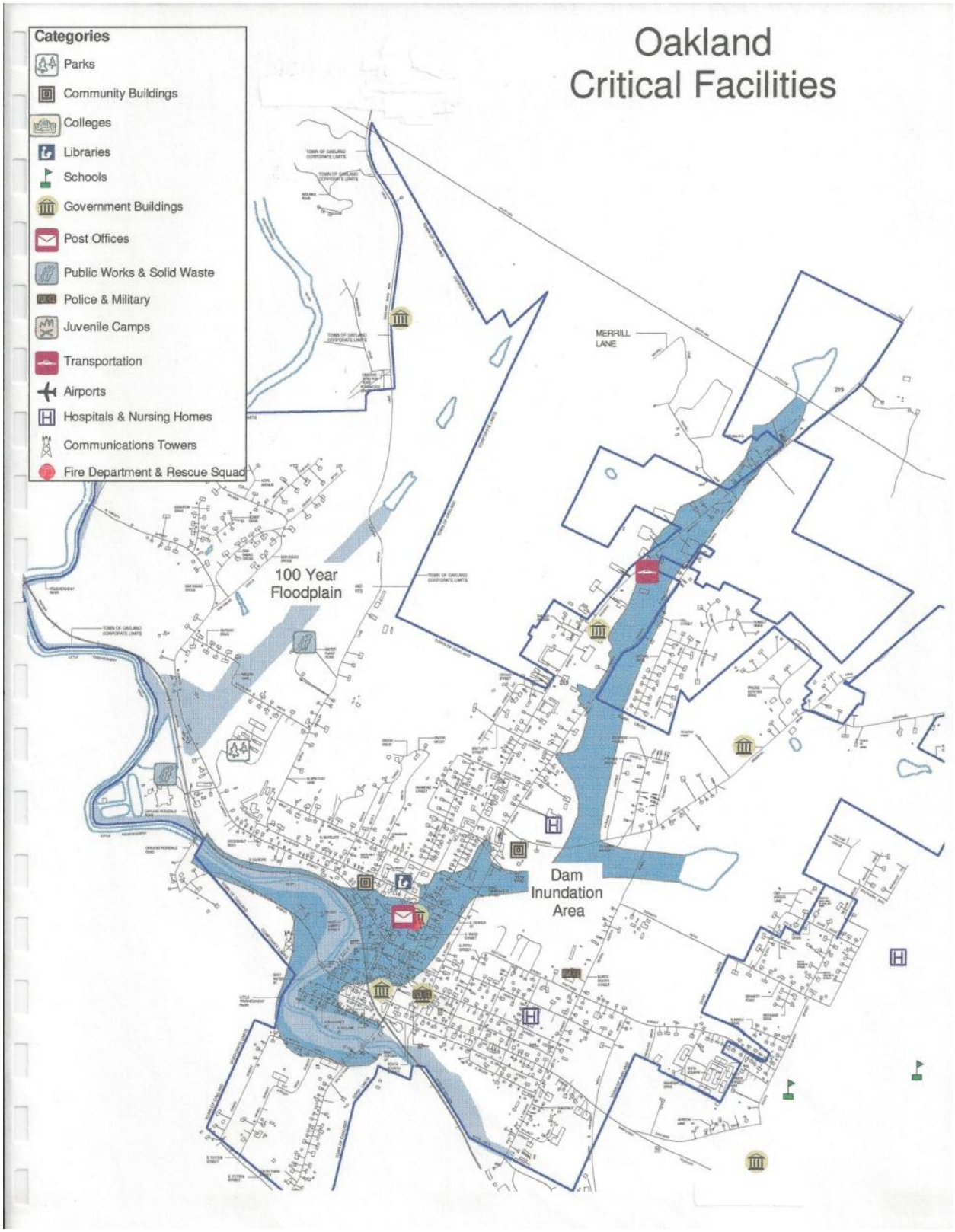

Mountain Lake Park
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
N
S
100 Year
Floodplain
Dam
Inundation
Area

Figure 45


Oakland
Critical Facilities
Categories
Parks
Community Buildings
Colleges
Libraries
Schools
Government Buildings
Post Offices
Public Works & Solid Waste
Police & Military
Juvenile Camps
Transportation
Airports
Hospitals & Nursing Homes
Communications Towers
Fire Department & Rescue Squad
MERRILL LANE
100 Year Floodplain
Dam Inundation Area

DAM INUNDATION AREA –DEEP CREEK DAM

FRIENDSVILLE

STREET	RESIDENTIAL	COMMERCIAL
FIRST AVE	29	2
SECOND AVE	23	
THIRD AVE	1	
DAVE DIXON RD	6	
WATER ST	18	
CHURCH LANE	5	
ROSS AVE	9	
MAPLE ST	55	2
CHESTNUT ST	7	
OAK ST	12	
WALNUT ST	34	
PARK ST	9	
SAWMILL LANE	4	
CEMETARY RD	3	
MORRIS AVE	13	
OLD RIVER RD	7	
BEAR CREEK CT	8	
	243	4
UNINCORPORATED		
SANG RUN RD	10	
GRAND TOTAL	253	4

Source: Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Figure 46

DAM INUNDATION AREA –SAVAGE RIVER DAM

BLOOMINGTON

STREET	RESIDENTIAL	COMMERCIAL
SAVAGE RIVER RD.	1	
RALEY AVE	1	
NORTH ST	5	
PARSON AVE	4	
HAMPSHIRE AVE	5	
BRICK ROW	1	
KNIGHT ST	6	
NORTH BRANCH AVE	14	1
NO. HAMMIL AVE	5	
PATTISON AVE	7	
WARNICK AVE	3	
HOWARD AVE	1	
MARYLAND AVE	1	
HAMMILL AVE	5	1
LONG AVE	4	
BRUSTER DR	2	
POTOMAC AVE	4	
OWENS AVE	7	
TOTAL	76	2
SAVAGE RIVER RD	16	
GRAND TOTAL	92	2

Source: Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Figure 47

DAM INUNDATION AREA –BLOOMINGTON DAM

BLOOMINGTON

STREET	RESIDENTIAL	COMMERCIAL
SAVAGE RIVER RD.	1	
RALEY AVE	1	
NORTH ST	5	
PARSON AVE	4	
HAMPSHIRE AVE	5	
BRICK ROW	1	
KNIGHT ST	6	
NORTH BRANCH AVE	14	1
NO. HAMMIL AVE	5	
PATTISON AVE	7	
WARNICK AVE	3	
HOWARD AVE	1	
MARYLAND AVE	1	
HAMMILL AVE	5	1
LONG AVE	4	
BRUSTER DR	2	
POTOMAC AVE	4	
OWENS AVE	7	
TOTAL	76	2

Source: Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Figure 48

DAM INUNDATION AREA –STONEY RIVER/MT. STORM

KITZMILLER-SHALLMAR

STREET	RESIDENTIAL	COMMERCIAL
KITZMILLER RD	25	
OAK ST	5	
SPRING ST	9	
HAZEL ST	3	
HOMESTEAD ST	4	
WILLOW ST	5	
STATE ST	10	
PARK ST	8	
W. MAIN ST	35	
E. MAIN ST	30	
RACE ST	3	
FOURTH ST	-	
CHURCH ST	10	1
THIRD ST	4	
CENTRE ST	16	
SECOND ST	1	
E. CENTRE ST	2	
UNION ST	-	
HEDGE LANE	1	
ORCHARD ST	3	
TOTAL	175	1
SHALLMAR RD	20	
GRAND TOTAL	195	1

Source: Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Figure 49

DAM INUNDATION AREA –SCD SITES 1, 2, & 3

OAKLAND

STREET	RESIDENTIAL	COMMERCIAL
ALL THREE SITES		
NORTH FOURTH ST	2	1
EAST CROOK ST		1
NORTH THIRD ST	8	1
EAST CENTER ST	1	1
SOUTH THIRD ST	17	
EAST GREEN ST	5	
EAST ALDER ST	15	
SOUTH SECOND ST	24	
EAST LIBERTY ST	12	
WEST LIBERTYST		1
SOUTH FIRST ST	1	1
TOWN PARK LA	1	
EAST OAK ST	9	
EAST WATER ST	26	
EAST MASON ST	3	
TOTAL	124	6
SITE 2 ONLY		
GARRETT HIGHWAY	6	13
MERRILL LANE	1	
MITCHEL DRIVE	1	
TOTAL	8	13
GRAND TOTAL FOR SITE 2	132	19

Source: Garrett Soil Conservation District
Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Note: This data is based on an Emergency Action Plan prepared by the Garrett SCD.

Figure 50

DAM INUNDATION AREA –SCD SITE 5

DEER PARK-LOCH LYNN HTS-MTN. LAKE PARK

STREET	RESIDENTIAL	COMMERCIAL
DEER PARK		
EDGEWOOD DR	1	
MAIN ST	7	
MCGRAW DR	1	
HOTEL DR	4	
SIDING ST	1	
BOILING SP. RD	3	
CALDERWOOD RD	4	
HOOKER ST	5	
TOTAL	26	
LOCH LYNN HTS		
FIRST AVE	10	
HOYE ST	3	
SECOND ST	10	
PAUL ST	1	
LEWIS ST	1	
TOTAL	25	
MTN LAKE PARK		
MARYLAND HIGHWAY	3	6
UNINCORPORATED		
BOILING SP. RD	1	
FRICKS CROSSING RD	1	
LEON WHITE RD	1	
MARYLAND HIGHWAY	3	
GARRETT ROAD	11	
TOTAL	17	
GRAND TOTAL	71	6

Source: Garrett Soil Conservation District
Garrett County Department of Planning and Land Development
Maryland Department of Assessments and Taxation

Note: This data is based on a preliminary map compiled from SCD data and has not been field verified.

Figure 51

Figure 52

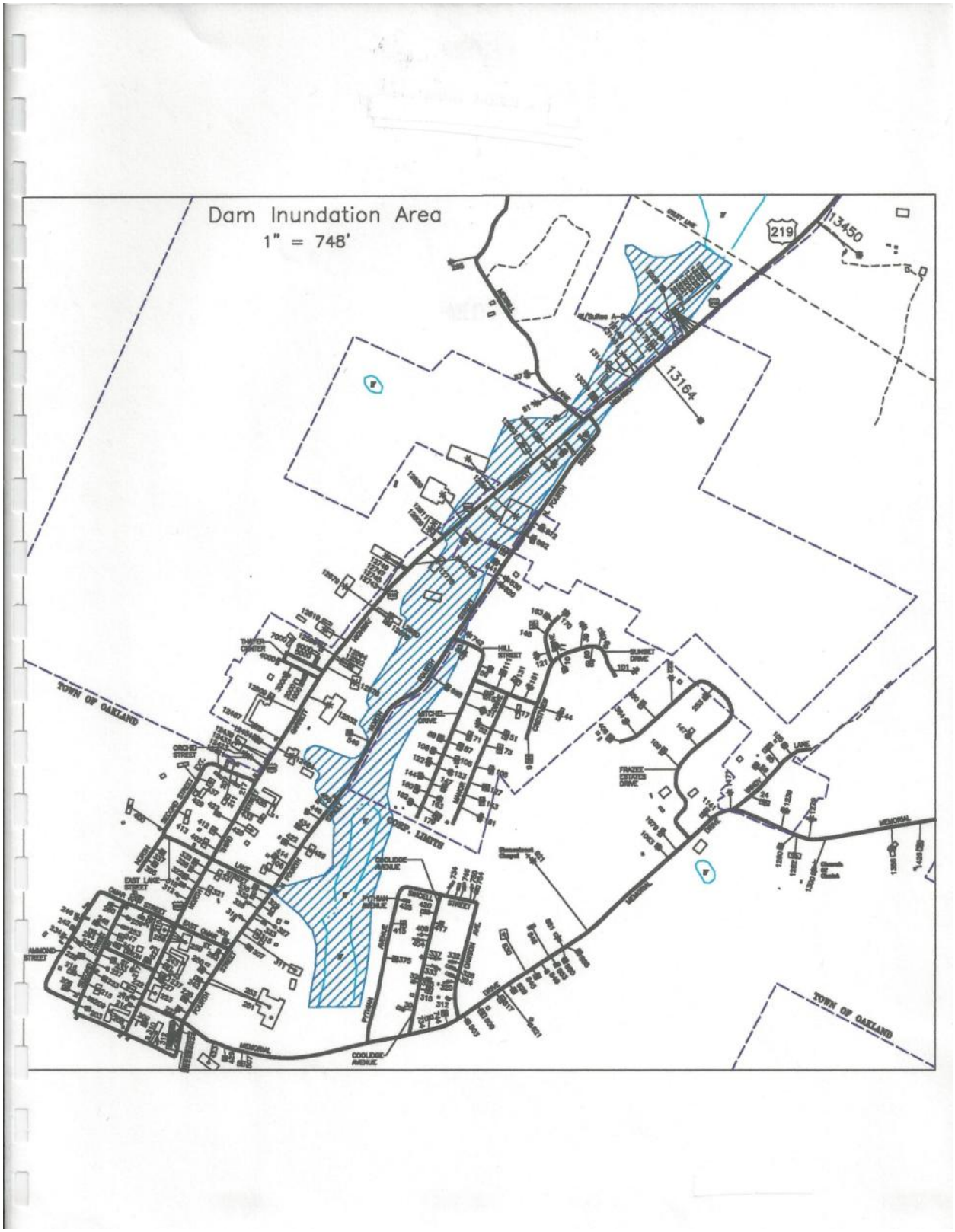
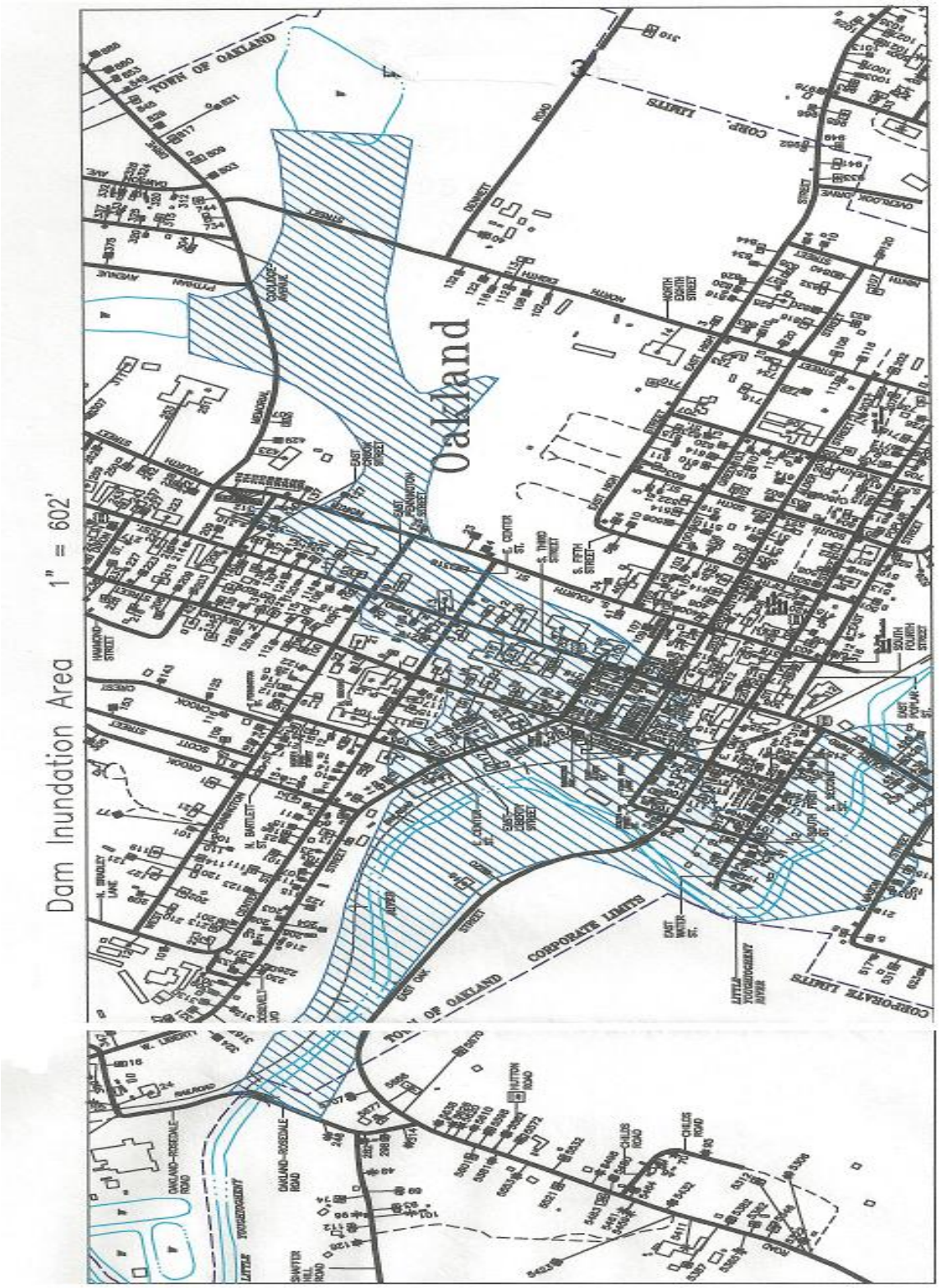

Dam Inundation Area
1" = 748'
219
13450
13164
TOWN OF OAKLAND
TOWN OF OAKLAND

Figure 53


Dam Inundation Area
1" = 602'
Oakland
TOWN OF OAKLAND
CORPORATE LIMITS
CORPORATE LIMITS
TOWN OF OAKLAND
CORPORATE LIMITS

APPENDIX B: STATUS OF COMPLETED 2005 ACTION ITEMS

Mitigation actions items identified and ranked in the 2005 Plan were discussed by the 2011 HMPC; the status of all completed items is provided in red below.

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Prevention					
Review and where necessary revise and update local floodplain ordinances. Possible changes include vegetative buffers and freeboard requirements. **Status:** No revisions have been made to the 1991 Garrett County Floodplain Ordinance; this ordinance requires one foot above base flood elevation.	4 5 7	4.3 5.2 7.3	Short-term	Flood	Medium High
Prohibit or restrict additional housing in areas of high risk, particularly in the 100-year floodplain. **Status:** No new restrictions have been implemented.	4 5 7	4.3 5.2 7.3	*Short-term*	Flood	Medium High
Prepare CRS (Community Rating System) application to reduce the cost of flood insurance within the county. **Status:** No incorporated or unincorporated areas in Garrett County are currently enrolled in the CRS program.	1 2 4 6	1.1 2.1 4.1; 4.3 6.5	Long-term	Flood	Medium
Expand the mission of the Local Emergency Planning Committee to include All Hazards disaster planning. **Status:** Membership of the LEPC has doubled since the previous planning cycle and is now an all hazard disaster planning committee.	1 3	1.1; 1.2 3.1; 3.2	Short-term	All	**High**

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Work with FEMA, MEMA, and MDE to develop digital FIRMS and identify areas for revision of FIRMS. **Status:** Digital Flood Insurance Rate Maps (DFIRMs) are being developed by FEMA and a preliminary product was released in November 2011 and the final product is due for completion in September of 2013.	1 4 5 6	1.1; 1.2; 1.3 4.1; 4.3 5.1; 5.2 6.5	Long-term	Flood	**High**
Conduct a Hazardous Materials Survey to identify all hazardous materials that are either stored or traveling through the county. **Status:** The *Garrett County Hazardous Materials Emergency Response Plan* was completed in 2007 and was updated in 2012. In 2009 the *Garrett County Hazardous Materials Commodity Flow Study* was also completed. Five sites throughout the County were surveyed.	4	4.1; 4.2	Long-tern	HazMat	Medium
Using Hazardous Materials Survey results, develop a plan to mitigate any identified risks. **Status:** Risks identified in the *2009 Garrett County Hazardous Materials Commodity Flow Study* were incorporated into the *2012 Garrett County Hazardous Materials Emergency Response Plan*.	4	4.1; 4.2	Long-term	HazMat	Medium
Allocate county resources and assistance to mitigation projects when possible. Include mitigation projects in Capital Improvement Plan. **Status:** Mitigation projects are stated in the Garrett County Budget Report. No projects have been completed during the planning cycle due to a lack of funding.	2 6	2.2 6.1; 6.2; 6.3; 6.4	Long-term	All	Medium High

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Work with the Soil Conservation District, NRCS and MDE to complete mapping of flood inundation areas to complete plans for the six SCD Flood Control Dams in the Little Youghiogheny Basin. **Status:** The EAP for the six SCD Flood Control Dams in the Little Youghiogheny Basin were completed in 2007. The *Deep Creek Hydroelectric Emergency Action Plan* is in the process of being updated for 2011.	1 3 4 5 6	1.3 3.1; 3.2; 3.3 4.1; 4.2; 4.3 5.1; 5.2 6.2	Long-term	Flood, Dam Failure	**High**
Work with SHA, County Roads, State Police, Sheriff and Fire & Rescue organizations to develop a fog monitoring and warning system. **Status:** Two camera/weather systems are located on I-68. The County also utilizes the Coordinated Highways Action Response Team (CHART) to inform the public about local traffic information, winter storm information, visibility, and precipitation for a particular area. IN addition, electric signboards are located on Interstate 68 to inform motorists of fog warnings in the area.	1 3 4	1.2; 1.3 3.1; 3.3 4.3	Short-term	Fog	**High**
Work DNR, Allegheny Power, Verizon and other utilities to promote an ongoing tree-trimming program. **Status:** All utility companies must be licensed by the State and obtain roadside tree cutting permits. State Highway Administration and the County Roads Department work with all utility companies to mitigate the effects of severe weather disrupting their services.	1 3 6	1.1 3.1; 3.3 6.4	Ongoing	Winter Storms, Thunderstorm, Lightning, High Winds, Tornado, Hurricane	Medium High

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Initiate a program to inspect and ensure operation of power generators at pre-identified critical facilities. **Status:** Deer Park Fire Department has recently purchased a new generator.	1 3 4	1.1 3.3 4.3	Ongoing	All	Medium Low
Work with DNR to monitor and warn residents of Wildfires dangers. **Status:** The Maryland DNR Forest Service develops and maintains a list of qualified personnel who meet or exceed the minimum requirements necessary in order to be eligible for dispatch. The agency actively recruits department and fire service personnel to participate in this program with many of the participants returning year after year for fire duty. The National Weather Service also monitors wildfires across the U.S. and will issue a fire weather watch for the area if a wildfire threat exists in the area.	3 8	3.1; 3.3 8.2; 8.3	Long-term	Wildfire	Medium
Review and update Building Codes with respect to wind loads and 100 year flood elevations. **Status:** Building codes were updated for the County utilizing the 2009 International Building Code (IBC) and adopted with revisions on 27 June 2010.	4 5 7	4.3 5.2 7.3	Short-term	Flood, High Winds, Tornado	Medium
Work with Public Utility Companies to identify and prioritize facilities at risk in high hazard areas. **Status:** Annual Pipeline Awareness with Columbia Gas, Texas Eastern, and Miss Utility is held in Allegany County. Meetings also take place periodically with Potomac Edison's Traffic Advisory for large-scale power outages.	2 3 4 5 6	2.1 3.1 4.1 5.4 6.4; 6.5	Long-term	All	Medium

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Property Protection					
Elevate, relocate or acquire property affected by flooding in targeted areas. **Status:** In 1999, six homes located within the 100-year floodplain were purchased and demolished in the Shallmar community. Since that time, no additional structures have been modified for flood protection.	1 2 5 6	1.1; 1.3 2.1; 2.2; 2.3 5.1; 5.3 6.2; 6.3; 6.4; 6.5	Long-term	Flood	Medium
Public Education and Awareness					
Work with the County Health Department to provide information to citizens on infectious diseases. **Status:** Information on infectious disease is available at the Garrett County Health Department website.	4	4.1; 4.2; 4.3	Ongoing	Epidemic	Medium
Incorporate information about disaster preparedness and mitigation activities and opportunities on the County's website. **Status:** Disaster preparedness information is available from the Garrett County Emergency Service website and the County's Health Department: Public Health Preparedness website.	4 6	4.1; 4.2 6.5	Ongoing	All	Medium High
Work with representatives from the National Flood Insurance Program to hold courses in the County for real estate and flood insurance agents. **Status:** The National Flood Insurance Program holds regional training, workshops and conferences for adjusters, agents, and lenders on flood insurance dealing with real estate.	3 4	3.1; 3.3 4.1; 4.2; 4.4; 4.5	Short-term	Flood	Medium High

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Work with FEMA & MEMA to hold Business Continuity Training Workshops. **Status**: The MEMA website provides information on business continuity. Additional information is available in the County's Emergency Health Plan Appendix H: Business Continuity Plan.	3 4	3.1 4.1; 4.2; 4.3; 4.4; 4.5	Short-term	All	Medium
Partner with the National Weather Service to provide training to people throughout the county on Storm Spotting. **Status:** The National Weather Service conducts free classes on its SWYWARN program regularly for citizens in the County. The two areas that provide training to Garrett County residents are Pittsburgh, PA and Baltimore, MD.	3 4	3.1 4.1; 4.2	Short-term	Winter Storms, Flood, Fog, Thunderstorm, Lightning, High Winds, Tornado, Wildfire, Hurricane	Medium High
Conduct natural hazards awareness programs in schools and community centers. **Status:** Rick Cain from the National Weather Service conducted presentations at County schools. Garrett College also conducted SKYWARN classes.	3 4	3.1; 3.3 4.1; 4.2; 4.3	Short-term	Winter Storms, Flood, Fog, Thunderstorm, Lightning, High Winds, Tornado, Wildfire, Hurricane	Medium

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Natural Resource Protection					
Pursue vegetation and restoration practices that assist in enhancing and restoring the natural and beneficial functions of the watershed. **Status:** Restoring the natural and beneficial functions of watersheds in the County is primarily conducted by the Department of Natural Resources (DNR) and Maryland Department of the Environment (MDE). Restoration projects such as protecting the North Branch of the Potomac from Acid Mine Drainage with the installation of lime dosers and protecting Deep Creek's shoreline will continue through State and Federal funding.	1 7	1.3 7.1; 7.2; 7.3	Short-term	Flood	Medium
Promote community & neighborhood planning for wildfire protection. **Status:** The Garrett County Health Department's Environmental Health Division provides information on wildfire protection.	8	8.1; 8.2; 8.3	Short-term	Wildfire	Medium
Emergency Services					
Coordinate with the American Red Cross to upgrade all shelter resources. **Status:** The Red Cross has a regional chapter located in Baltimore; however a there is a regional contact for Western Maryland available.	1 3	1.2 3.1	Short-term	All	Medium High

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Teach CERT (Community Emergency Response Training) classes to interested citizens to assist first responders at specified emergencies throughout the county. **Status:** The CERT program conducts CERT Basic Training Course twice a year with a total of 180 individuals that have completed this training since March 2005. CERT also participates in various disaster type exercises and conducts training for basic first aid and additional CBRNE awareness.	1 3 4, 6	1.2 3.1; 3.2 4.1; 6.5	Ongoing	All	Medium High
Hold disaster exercises in various areas of the county. Types of exercise: flood, high wind, winter storm. Hazardous Materials spills, Weapons of Mass Destruction, and Bio-Terrorism exercises. **Status:** Garrett County's Emergency Management Division conducts disaster exercises on a regular basis in different locations across the County. Recent exercises include: HazMat trainings, plan simulator live fire training, a terrorist attack exercise at Wisp Resort, and in the fall of 2010, a HazMat decontamination exercise was completed in Oakland.	1 2 3 4 8	1.1; 1.2; 1.3 2.1 3.1; 3.2 4.1 8.1	Ongoing	All	Medium High
Develop list of all training opportunities and distribute to all local emergency responders. **Status:** Training opportunities are advertised and registration is handled by Garrett College Continuing Education.	1 3	1.1; 1.2 3.1; 3.3	Ongoing	All	Medium High

ACTION	GOALS	OBJECTIVES	TIMEFRAME	HAZARD	RATING
Review and update all annexes in the County Emergency Operations Plan. Include participation from all municipalities. **Status:** Modification and updates were made to the Mass Care and Sheltering and Debris Management Annexes.	1 2 3	1.1; 1.2 2.1 3.2	Long-term	All	**High**
Utilize and where necessary update hazard warning systems. **Status:** Garrett County Emergency Management utilizes a Reverse 911 Public Notification System. Reverse 9-1-1 is a communications tool that combines the 9-1-1 database with GIS mapping technology to deliver outbound emergency notification from the 9-1-1 Center. Users can quickly target a precise geographic area and place literally thousands of calls in a short time to residents that might be impacted of a particular incident.	1 6 8	1.2; 1.3 6.4 8.1	Long-term	All	Medium High

APPENDIX C: GRANT FUNDING SOURCES

The following is a list of Federal and State Grants that may assist in implementing local All Hazard Mitigation Plans. This information is subject to change at any time; contact the federal or state agency for current grant status.

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Flood Proofing, acquisition and relocation of flood prone properties, wind resistant or retrofit, stormwater improvements, education and awareness, All Hazards Mitigation Planning. Acquisition, relocation, elevation and flood-proofing of flood-prone insured properties, flood mitigation planning.	Federal - 75% State - 12.5% Local - 12.5%	Local government must be in compliance with the National Flood Insurance Program to be eligible. Projects must be cost effective, environmentally sound and solve a problem. Repetitive loss properties are a high priority.	After a Presidential Disaster Declaration
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Grants can be used for management costs, information dissemination, planning, technical assistance and mitigation projects.	Federal - 75% Local - 25%	Local governments must be in compliance with the National Flood Insurance Program to be eligible. Projects must be environmentally sound and cost effective.	TBD
Federal Emergency Management Agency, Hazard Mitigation Grant Program (HMGP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Repair of Infrastructure damaged during a flood that results in a Presidential disaster declaration. Cost effective mitigation measures may be eligible during the repair of damaged facilities.	Federal - 75% State - 12.5% Local - 12.5%	Available for public assets: roads, government buildings, bridges, etc.	After a Presidential Disaster Declaration
Federal Emergency Management Agency, Pre Disaster Mitigation Grant Program (PDM)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.	Federal - 75% Non Federal - 25%	PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.	TBD
Federal Emergency Management Agency, Flood Mitigation Assistance Program (FMA)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Assist States and communities to implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program.	Federal - 75% Non Federal - 25%	Available once a Flood Mitigation Plan has been developed and approved by FEMA.	TBD
National Flood Insurance Program (NFIP)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Provides financial protection by enabling persons to purchase insurance against floods, mudslide or flood related erosion.	Varies	Includes Federally backed insurance against flooding, available to individuals and businesses that participate in the NFIP.	Anytime

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Economic Development Administration, Economic Adjustment Program	U.S. Department of Commerce Economic Development Administration Curtis Center, Suite 140 South Independence Square West Philadelphia, PA 19106-3821 215-597-4603	Improvements and reconstruction of public facilities after a disaster or industry closing. Research studies designed to facilitate economic development.	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria.	Anytime
Economic Development Administration, Public Works and Development Facilities	U.S. Department of Commerce Economic Development Administration Curtis Center, Suite 140 South Independence Square West Philadelphia, PA 19106-3821 215-597-4603	Water and sewer, Industrial access roads, rail spurs, port improvements technological and related infrastructure	Federal - 50%-70% Local- 30%-50%	Documenting economic distress, job impact and projects that is consistency with a Comprehensive Economic Development Strategy are important funding selection criteria.	Anytime
Small Business Administration (SBA) Pre-disaster Mitigation Loan Program	Herbert L. Mitchell, Office of Disaster Assistance, Small Business Administration, 409 3rd Street, SW, Washington, DC 20415;202-205-6734	Activities done for the purpose of protecting real and personal property against disaster related damage.	No information	The mitigation measures must protect property or contents from damage that may be caused by future disasters and must conform to the priorities and goals of the state or local government's mitigation plan.	Anytime
Community Development Block Grants / Entitlement Grants	Office of Block Grant Assistance, 451 Seventy Street SW., Washington, DC 20410-7000;202-708-3587	Used for long-term recovery needs, such as: rehabilitation residential and commercial building; homeownership assistance, including down-payment assistance and interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities.	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to entitlement communities.	After a Presidential Disaster Declaration
Community Development Block Grants / States Program	Office of Block Grant Assistance, 451 Seventy Street SW., Washington, DC 20410-7000;202-708-3587	Used for long-term recovery needs, such as: rehabilitation residential and commercial building; homeownership assistance, including down-payment assistance and interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities.	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to States for non-entitlement communities.	After a Presidential Disaster Declaration

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Fire Suppression Assistance Program	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20472 ; 202-646-4240.	Provides real-time assistance for the suppression of any fire on public (non-Federal) or privately owned forest or grassland that threatens to become a major disaster.	Federal - 70% Local - 30%	The State must first meet annual floor cost (f percent of average fiscal year fire costs) on a single declared fire. After the State's out-of-pocket expenses exceed twice the average fiscal year costs, funds are made available for 100 percent of all costs for each declared fire.	Funds form President's Disaster Relief Fund for use in a designated emergency or major disaster area.
Historic Preservation: Repair and Restoration of Disaster-Damaged Historic Properties	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20472 ; 202-646-4621.	To evaluate the effects of repairs to, restoration of, or mitigation hazards to disaster-damaged historic structures working in concert with the requirements of the Stafford Act.	Federal - 75% Local - 25%	Eligible to State and local governments, and any political subdivision of a State. Also, eligible are private non-profit organizations that operate educational, utility, emergency, or medical facilities.	After a Presidential Disaster Declaration
Transportation: Emergency Relief Program	Director, Office of Program Administration, FHWA, DOT, 400 Seventh Street SW., Washington, DC 20590; 202-366-0450	Provides aid for the repair of Federal-aid roads and roads on Federal lands.	Federal - 100%	Application is submitted by the State department of transportation for damages to Federal-aid highway routes, and by the applicable Federal agency for damages to roads on Federal lands.	After serious damage to Federal-aid roads or roads on Federal lands caused by a natural disaster or by catastrophic failure.
Animals: Emergency Haying and Grazing	Emergency and Non-insured Assistance Programs, FSA, USDA, P.O. Box 2415, Washington, DC 20013; 202-720-4053	To help livestock producers in approved counties when the growth and yield of hay and pasture have been substantially reduced because of a widespread natural disaster.	No information	Assistance is provided by the Secretary of Agriculture to harvest hay or graze cropland or other commercial use of forage devoted to the Conservation Reserve Program (CRP0 in response to a drought or other similar emergency.	Anytime
Emergency Watershed Protection Program	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	Implementing emergency recovery measures for runoff retardation and erosion prevention to relieve imminent hazards to life and property created by a natural disaster that causes a sudden impairment of a watershed.	Federal - 75% Local - 25%	It cannot fund operation and maintenance work or repair private or public transportation facilities or utilities. The work cannot adversely affect downstream water rights and funds cannot be used to install measures not essential to the reduction of hazards.	TBD
Watershed Protection and Flood Prevention Program	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	To provide technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in watersheds.	Varies due to project type.	Watershed area must not exceed 250,000 acres. Capacity of a single structure is limited to 25,000 acre-feet of total capacity and 12,500 acre-feet of floodwater detention capacity.	TBD

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Watershed Surveys and Planning	Natural Resources Conservation Service 14th and Independence Avenue, SW Washington, DC 20250	To provide planning assistance to Federal, State, and local agencies for the development of coordinated water and related programs in watersheds and river basins. Emphasis is on flood damage reduction, erosion control, water conservation, preservation of wetlands and water quality improvements.	No information	These watershed plans form the basis for installing needed works of improvement and include estimated benefits and costs, cost-sharing, operation and maintenance arrangements, and other information necessary to justify the need for Federal assistance in carrying out the plan.	Anytime
Emergency Advance Measures for Flood Prevention	USACE Washington DC 20314; 202-761-4561	To perform activities prior to flooding or flood fight that would assist in protecting against loss of life and damages to property due to flooding.	No information	There must be an immediate threat of unusual flooding present before advance measures can be considered. Any work performed under this program will be temporary in nature and must have a favorable benefit cost ratio.	TBD
Emergency Streambank and Shoreline Protection	USACE Washington DC 20314; 202-761-4561	Authorizes the construction of emergency streambank protection measures to prevent damage to highways, bridge approaches, municipal water supply systems, sewage disposal plants, and other essential public works facilities endangered by floods or storms due to bank erosion.	No information	Churches, hospitals, schools, and other non-profit service facilities may also be protected under this program. This authority does not apply to privately-owned property or structures.	TBD
Small Flood Control Projects	USACE Washington DC 20314; 202-761-4561	Authorizes the construction of small flood control projects that have not already been specifically authorized by Congress.	No information	There are two general categories of projects: structural and nonstructural. Structural projects may include levees, floodwalls, diversion channels, pumping plants, and bridge modifications. Nonstructural projects have little or no effect on water surface elevations, and may include flood proofing, the relocation of structures, and flood warning systems.	TBD
Flood: Emergency Advance Measures for Flood Prevention	USACE Washington DC 20314; 202-761-4561	To mitigate, before an event, the potential loss of life and damages to property due to floods.	No information	Assistance may consist of temporary levees, channel cleaning, preparation for abnormal snowpacks, etc.	Anytime
Continuing Authorities Program (CAP)	USACE Washington DC 20314; 202-761-4561	Initiates a short reconnaissance effort to determine Federal interest in proceeding. If there is interest, a feasibility study is preformed.	Federal - 65% Local- 35%	A local sponsor must identify the problem and request assistance. Small flood control projects are also available.	Anytime

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Hazardous Materials: State Access to the Oil Spill Liability Trust Fund	Director, USCG National Pollution Funds Center, Suite 1000, 4200 Wilson Boulevard, Arlington, VA 22203-1804; 202-493-6700.	To encourage greater State participation in response to actual or threatened discharges of oil.	No information	Eligible to States and U.S. Trust Territories and possessions.	Anytime
Emergency Management Assistance (EMA)	Maryland Emergency Management Agency 5401Rue Saint Lo Drive Reisterstown, MD 21401	Funds may be used for salaries, travel expenses, and other administrative cost essential to the day-to-day operations of State and Local emergency management agencies. Program also includes management processes that ensure coordinated planning, accountability for progress, and trained qualified staffing.	Federal - 50%	EMA funded activities may include specific mitigation management efforts not otherwise eligible for Federal funding. Management Assistance program funds may not be used for construction, repairs, equipment, materials or physical operations required for damage mitigation projects for public or private buildings, roads, bridges, or other facilities.	Anytime
Community Assistance Program, State Support Services Element (CAP-SSSE)	CFDA Number: 97.023	Entering Floodplain Management Data into the Community Information System (CIS) (Required), Strategic Planning, Ordinance Assistance, CAP GAP Analysis, Community Assistance Visits and Community Assistance Contacts (Required), etc.	Local - 25%	Provides funding to States to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	No information
Cooperating Technical Partners	CFDA Number: 97.045	Flood Hazard Mapping products	Federal - 100%	Provides technical assistance, training, and/or data to support flood hazard data development activities.	TBD
Map Modernization Management Support	CFDA Number: 97.070	Community outreach on Flood Mapping	Federal - 100%	Provides funding to supplement, not supplant, ongoing flood hazard mapping management efforts by the local, regional, or State agencies.	TBD
National Dam Safety Program	CFDA Number: 97.041	Dam safety training for state personnel, increase in the number of dam inspections, Emergency Action Plans, etc.	No information	Provides financial assistance to the states for strengthening their dam safety programs.	Anytime
Assistant to Firefighters Grant	Source: U.S. Fire Administration CFDA Number: 97.044	Vehicles, safety equipment, protective equipment, etc.	Federal Grant Funds match depended upon population served by Fire Departments and nonaffiliated EMS organizations	Provides assistance to local fire department to protect citizens and firefighters against the effects of fire and fire-related incidents.	Annually in September projects are due.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	CFDA Number: 97.023	Clean-up of Superfund Sites	Federal - 100%	Provides funding to States to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	TBD

Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal, State and Local Cost Share Requirements	Other Program Characteristics	Grant Application Due Date
Homeland Security Grant Program (HSGP)	CFDA Number: 97.067	Planning, organization, equipment, training, and exercise needs at the state and local levels to prevent, protect against, respond to, and recover from acts of terrorism and other catastrophic events	Federal - Up to 75% State - at least 25%	Enhances the capacity of State and local emergency responders to prevent, respond to, and recover from a weapon of mass destruction (WMD) terrorism incident involving chemical, biological, radiological, nuclear, and explosive (CBRNE) devices and cyber attacks.	TBD
State Fire Training System Grants	Source: U.S. Fire Administration CFDA Number: 97.043	Provide support for the Nation's 50 State Fire Training Systems in delivering training and education programs to the Nation's fire and emergency services personnel.	Not Available	Provide financial assistance to State Fire Training Systems for the delivery of a variety of National Fire Academy (NFA) courses/programs.	Annually in August
Superfund Amendments and Reauthorization Act	CFDA Number: 97.020	Training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals.	Federal - no more than 80% Non-Federal - at least 20%	Individuals who would be eligible for this training include public officials, fire and police personnel, medical personnel, first responders, and other tribal response and planning personnel.	TBD

APPENDIX D: COMPLIANCE WITH NFIP

As requested by the Federal Emergency Management Agency (FEMA), additional information regarding Garrett County's strategy for complying with the National Flood Insurance Program (NFIP) has been provided.

Participation in the NFIP is based on a voluntary agreement between the County and its community and FEMA; however, complying with the NFIP extends beyond participation. Three components are utilized for complying with the NFIP and include: 1) floodplain identification and mapping risk, 2) responsible floodplain management and 3) flood insurance. The following bullets are the minimum compliance actions for each component. Details on how Garrett County complies with each action are denoted in red.

Garrett County Floodplain and Identification Mapping Status:

- Maintenance of publicly accessible copy of effective FIRM (flood insurance rate map) maps and FIS (flood insurance study); adopt most current DFIRM or FIRM and FIS; and support of local requests for map updates
  Garrett County maintains public access to all effective Flood Insurance Rate Maps (FIRMS) and Flood Insurance Studies (FIS) for the County and its municipalities. These documents can be reviewed at the Permits and Inspections Office, 2008 Maryland Highway, Suite 3, Mountain Lake Park, Maryland (M-F from 8:30 a.m. to 4:30 p.m.). Access to the preliminary Digital Flood Insurance Rate Maps (DFIRMS) is also available through the Office and will be available at the Garrett County website in the future.
- Share with FEMA any new technical or scientific data that could result in map revisions within 6 months of creation or identification of new data
  Garrett County has not had the opportunity to provide new technical or scientific data to FEMA that would result in a map change but would do so within six months of obtaining such data.
- Assistance with local floodplain determinations
  Garrett County assists the general public, the insurance community, real estate concerns and lending institutions in determinations of the Federal Emergency Management Agency (FEMA) mapped floodplain area and provides further assistance to those seeking guidance in submission to FEMA for floodplain area determinations and map changes.
- Maintain a record of approved Letters of Map Change
  Garrett County maintains both digital and paper copies of all approved Letters of Map Changes for the County and all its municipalities.

Garrett County Floodplain Management Status:

- Adopt a compliant floodplain management ordinance that at a minimum regulates the following:
  - Issue permits for all proposed development in the SFHA
    Garrett County issues permits for all proposed development within the 100-year floodplain.

- Obtain, review and utilize any Base Flood Elevation and floodway data, and require BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres
  Garrett County will obtain, review, and utilize any Base Flood Elevation (BFE) and floodway data. The County also requires BFE data for all subdivision proposals and other development proposals larger than 50 lots or 5 acres.
  Identify measures to keep all new and substantially improved construction reasonably safe from flooding to or above the Base Flood Elevation, including anchoring, using flood resistant materials, designing or locating utilities and service facilities to prevent water damage
  Garrett County requires 1 foot of freeboard for all utilities and structures and 3 feet of freeboard for electrical services.
- Document and maintain records of elevation data that document lowest floor elevation for new or substantially improved structures.
  Garrett County requires an elevation certificate for both pre and post construction.

- Enforce the ordinance by monitoring compliance and taking remedial action to correct violations
  Garrett County enforces the local ordinance by monitoring compliance and remedial action to correct violations.
- Consider adoption of activities that extend beyond the minimum requirements, including those identified for participation in the Community Rating System, freeboard, prohibition of production or storage of chemicals in SFHA, prohibition of certain types of structures such as: hospitals, nursing homes, jails, prohibition of certain types of residential housing such as manufactured homes, and finally floodplain ordinances that prohibit any new residential or non-residential structures in the SFHA.
  Garrett County requires 1 foot of freeboard for all utilities and structures and 3 feet of freeboard for electrical services.

Flood Insurance:

- Educate community members about the availability and value of flood insurance
  Garrett County participates in the National Flood Insurance Program (NFIP) and provides flood insurance requirements and its benefits to its citizens, lending institutions, and the real estate industry.
- Inform community property owners about changes to the DFIRM/FIRM that would impact their insurance rates
  Garrett County is currently participating in a multi-year project to update their FIRMS and FIS. The County has identified all addressed structures within the preliminary flood hazard area depicted on the new DFIRMS and is preparing notice to be sent by mail to all residents affected. The County is also preparing an update to its website that will provide information of the updated mapping and County Project and provide links to State and FEMA websites that will further supplement preliminary flood information and insurance needs. Additionally, the County will hold a public forum later this year (2012) with County Staff, MDE, and FEMA where affected property owners and citizens can review the new maps one on one and be provided answers to

questions concerning the new mapping, the County Floodplain Ordinance, and flood insurance issues.

- Provide general assistance to community members relating to insurance issues
  Garrett County Permits and Inspections Office routinely provides guidance to the many inquiries from the general public and affected property owners concerning flood insurance issues.

APPENDIX E: COMBINED RISK RATING

Combined Risk Rating:

The following was utilized to develop a scoring method for the Combined Risk Rating.

Information was obtained from the National Climatic Data Center, including damages, frequency, fatalities, and injuries. The local assessment was completed by the 2011 HMPC for all identified hazards. A scoring point system was established between 1- 5. This point system is detailed in the table below:

Point Value	Damages	Frequency (years)	Fatalities	Injuries	Local Assessment	Combined Risk **
1	$0	0 – 0.49	0	0	Low	Low
2	$0 - $50,000	0.5 – 0.99	N/A	N/A	Medium-Low	Medium-Low
3	$50,000 - $500,000	1 – 1.49	N/A	1	Medium	Medium
4	$500,000 - $1M	1.5 – 1.99	N/A	2 - 5	Medium-High	Medium-High
5	> $1M	> 2	> 1	> 5	High	High

** Combined Risk is the total of all five categories added together – 30-20=”High”; 19 -15=”Medium-High”; 14-10=”Medium”; 9-5=”Medium-Low”; 4-0=”Low”

The subsequent equation was developed in order to establish the combined risk rating:

Damage + Frequency + Fatalities + Injuries + Local Assessment(x2) = Combined Risk

APPENDIX F: SOURCES

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Prepared by Garrett County GIS Staff. GIS Data Layers-centerlines Garrett County, MD: 2007.

Prepared by Garrett County GIS Staff. GIS Data Layers-county boundary Garrett County, MD: 2007.

Prepared by Garrett County GIS Staff. GIS Data Layers-streams Garrett County, MD: 2010.

Prepared by Garrett County GIS Staff. GIS Data Layers-town boundaries Garrett County, MD: 2007.

Prepared by U.S. Department of Agriculture, Natural Resources Conservation Service. GIS Data Layer-Soils U.S. Department of Agriculture, Natural Resources Conservation Service: 2007.

SOURCES UTILIZED THROUGHOUT THE PLAN

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Prepared by Garrett County GIS Staff. GIS Data Layers-county boundary Garrett County, MD: 2007.

Prepared by Garrett County GIS Staff. GIS Data Layers-streams Garrett County, MD: 2010.

Prepared by Garrett County GIS Staff. GIS Data Layers-town boundaries Garrett County, MD: 2007.

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Prepared by ESRI. GIS Data Layers – World Terrain Base. Environmental Systems Research Institute: 2010.

Prepared by Maryland Emergency Management Agency and Dewberry LLC. 2011 Maryland All-Hazard Mitigation Plan Update. June 2011.

APPENDIX G: HMPC MEETING MINUTES

Garrett County, Maryland
Local Emergency Planning Committee

Minutes

Meeting:	**Local Emergency Planning Committee Annual Meeting;**		
Date of Meeting:	20 January 2011	**Time:**	10:00 am – 12:00 pm
Meeting Facilitator:	Brad Frantz, Director Public Safety & Emg. Mgt.	**Location:**	Garrett County Airport

Meeting Topics Discussed
▪ Review of 15 October 2010 Meeting Minutes ▪ Marcellus Shale-HazMat Implications ▪ Exercise Sub-Committee Report ▪ 2011 Training Activities ▪ Garrett County Hazardous Materials Response Plan ▪ 2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization ▪ Garrett Co. Emergency Operations Plan-Debris Management Plan

Attendees				
Name	**Organization**		**Name**	**Organization**
Jay Moyer	Roads Dept.		Jeff Broadwater	Public Utilities
Craig Umbel	Garrett Health Dept.		Rick Cosner	MD SHA
Robert Corley	Sheriff's Office		John Feather	Oakland VFD
William Ewing	Citizen Representative		Don Shilobod	Constellation Energy
Jean Tressler	Garrett College		Commissioner Gatto	Garrett Co. Commissioner
Brad Frantz	Dept. of Public Safety & Emerg. Mgt.		Steve Smith	Dept. of Public Safety & Emerg. Mgt.
Virginia Smith	Dept. of Public Safety & Emerg. Mgt.		Ron Bray	Board of Education

Review of 15 October 2010 Meeting Minutes
No comments. Minutes approved as read.

Marcellus Shale-HazMat Implications

Craig Umbel presented a handout indicating the various hazardous materials, i.e. Hydrogen Chloride, utilized in the gas drilling process. The LEPC discussed the need for preparations in order to respond to potential hazardous materials incidents. Specifically the transport of these materials within Garrett County. Once drilling has commenced, these materials are diluted, however transportation of these materials may be problematic.

- ✓ Steve Smith will assemble a listing of HazMat Response Equipment & Training specific to Marcellus shale gas drilling operations;
- ✓ The LEPC will make recommendations pertaining to response personnel and equipment;
- ✓ The LEPC will request that companies drilling within the County provide their transportation routes within the County.

Exercise Sub-Committee Report

Brad Frantz reported that a date for the HazMat Exercise has been established, **10 September 2011**. A draft of Exercise Goals & Objectives was distributed for review and comment.

2011 Training Activities

A 2011 training calendar will be developed and distributed. Potential training opportunities related to the HazMat Exercise include:

- NIMS ICS Training
- Triage Training
- IMS for EMS
- Reverse 9-1-1 Training
- Shelter Training Refresher

Garrett County Hazardous Materials Response Plan

The updated listing of Garrett County HazMat Technicians along with their contact information will be included in the *Garrett County Hazardous Materials Response Plan*. In addition, 2011 information on fixed-site hazardous materials storage locations will be added to the Plan, as well.

Note: Steve Smith is creating a HazMat Technician Call-Down Listing for inclusion into the Reverse 9-1-1 System.

HazMat Decontamination Drill

Date: 25 January 2011 Location: Grantsville VFD

Instructors: Steve Smith & John Feather

The drill included 31 participants, 5 of which are Garrett County HazMat Technicians. The following companies were represented: Grantsville, Oakland, Eastern Garrett, Salisbury, Accident, Friendsville, and Shaft. Also participating in the drill were members from the Allegany County HazMat Team.

The Decontamination Equipment & Procedures visual display developed by the Oakland VFD-John Feather was utilized during the drill. The drill consisted of decontamination equipment set-up and operation. In addition, participants suited-up in appropriate Personal Protective Equipment (PPE).

Key Training Points:

Familiarized surrounding mutual aid companies with assisting in the set-up and operation of the Decontamination Equipment housed at Easter Garrett and Oakland VFD;

Provided refresher training for current HazMat Technicians and operations personnel;

Continued enhancement of relationships between participating companies.

2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization

Garrett County-Dept. of Public Safety & Emergency Management recently received a planning grant from the Federal Emergency Management Agency. These grant funds will be utilized to update the 2003 Multi-Hazard Mitigation Plan. The purpose of this type of planning document is to review, assess and update these communities' current vulnerabilities to natural hazards and prepare a long-term strategy to address these hazards in an effort to prevent future damage and loss of life of Garrett County residents.

The requirements of a local hazard mitigation plan include the development of a hazard identification and risk assessment which leads to the development of a comprehensive mitigation planning strategy for reducing risks to life and property. In addition, the plan requirements include a mitigation strategy section that identifies a range of specific mitigation actions and projects that reduce the risks to new and existing buildings and infrastructure. The mitigation strategy includes an action plan describing how identified mitigation activities will be prioritized, implemented, and administered.

During the LEPC meeting committee members reviewed hazards that were identified in the previous Plan. Following the review of the 2003 hazard identification and ranking, hazard data tables containing updated hazard history data from 2003-present were distributed. Virginia Smith requested that the LEPC Committee perform a Hazard Identification and Ranking exercise for inclusion into the 2011 Plan Update. Each committee member rated identified hazards based on their agency or community

perspective.

Next Steps: The results will be tabulated and reviewed at the next LEPC Meeting. Updated hazard profiles will be presented, as well.

Garrett County Emergency Operations Plan-Debris Management (Annex) ESF # 18

The LEPC reviewed ESF # 18 (Annex Debris Management). Based upon comments made during the review process, Virginia Smith will update ESF # 18.

Next Step: Establish a meeting between all responsible parties designated within ESF #18 Debris Management; March 2011.

Next Meeting Date

- LEPC Committee Meeting Date: **14 April 2011**
  Location: **Sante Fe Restaurant**
  Time: **11:00 AM**

  Note: This will be a working lunch meeting. We have added the Hazard Mitigation Plan Update to the agenda, which requires us to add additional time to the regular LEPC meeting.

Garrett County, Maryland
Local Emergency Planning Committee

Minutes

Meeting:	**Local Emergency Planning Committee Annual Meeting;**		
Date of Meeting:	14 April 2011	**Time:**	10:30 am – 12:00 pm
Meeting Facilitator:	Brad Frantz, Director Public Safety & Emg. Mgt.	**Location:**	Garrett College

Meeting Topics Discussed

LEPC Meeting Topics

- Review of 20 January 2011 Meeting Minutes
- Grants Update, HazMat Conference & EPA Region III Newsletter
- Exercise Sub-Committee Report
- 2011 Training Activities
- Garrett County Hazardous Materials Response Plan

Citizen Corp. Council Meeting Topic

- Emergency Services Club Activities

Hazard Mitigation Planning Committee Meeting Topics

- 2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization Results & Discussion
- Status of Mitigation Strategies/Action Items from previous Plan

Attendees

Name	Organization		Name	Organization
Jay Moyer	Roads Dept.		Linda Lin dsey	Public Utilities
Alicia Streets	Dept. of Social Services		Rick Cosner	MD SHA
Mike Bittinger	Sheriff's Office		John Hill	Community Action Committee
William Ewing	Citizen Representative		Jeff Hinebaugh	Garrett Memorial
Jean Tressler	Garrett College		Commissioner Gatto	Garrett Co. Commissioner
Brad Frantz	Dept. of Public Safety & Emerg. Mgt.		Steve Smith	Dept. of Public Safety & Emerg. Mgt.
Virginia Smith	Dept. of Public Safety & Emerg. Mgt.			

Review of 15 October 2010 Meeting Minutes

No comments. Minutes approved as read.

Grants Update, HazMat Conference & EPA Region III Newsletter

Grants Update:
Maryland State Community Right-To-Know (CRTK) Grant 2011 Program:
The amount of the 2011 Grant awarded to the Garrett County LEPC is $8,850.

Conference & Newsletter:
Brad Frantz distributed both the 2011 HazMat Conference Flyer and the EPA Region III Newsletter to members of the LEPC (attached).

Exercise Sub-Committee Report

Brad Frantz reported that a date for the HazMat Exercise has been established, **10 September 2011**. A Task Listing was distributed to the LEPC. The Task Listing demonstrates the tremendous amount of work that is being put towards the exercise and dedication of individual LEPC members .

2011 Training Activities

A 2011 training calendar will be developed and distributed. Potential training opportunities related to the HazMat Exercise include:

- NIMS ICS Training
- Triage Training
- IMS for EMS
- Reverse 9-1-1 Training
- Shelter Training Refresher

Garrett County Hazardous Materials Response Plan

The updated listing of Garrett County HazMat Technicians along with their contact information will be included in the *Garrett County Hazardous Materials Response Plan*. In addition, 2011 information on fixed-site hazardous materials storage locations will be added to the Plan, as well.

Note: Steve Smith is creating a HazMat Technician Call-Down Listing for inclusion into the Reverse 9-1-1 System.

An update overview page along with specific portions of the Plan that have been modified and/or added was distributed at the meeting. New items included: Attachment C-HazMat Fixed Site Reports, Attachment D-HazMat Standard Operating Procedures, Attachment E: Absorbent Disposal, Attachment F: HazMat Patient Transport and Hospital Care, Attachment-G Decontamination, and Attachment H-Chemical Protective Clothing Testing. Members of the LEPC and Garrett County HazMat Technicians were asked to review the Plan and provide comments. The Plan will be presented to the Garrett County Board of Commissioners for adoption. This document will be provided to all participants in the upcoming September HazMat Exercise.

Citizen Corps Council-Emergency Services Club Activities

ESC Activities:

- ✓ 14 April 2011 the ESC made a presentation at the Mary Browning Senior Center.
- ✓ 20 April 2011 Northern & Southern ESC members will travel to Baltimore City to tour the Baltimore City Fire Station, MEIMSS, and Shock Trauma.
- ✓ 20 May 2011 the Southern ESC will conduct a mock traffic accident (drinking & driving), for the entire school during the activity period, 11-12:00.

It was suggested that a ESC page be added to the Department of Public Safety Website. Brad Frantz will contact Nathanial Watkins to discuss ideas.

2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization

During the 20 January 2011 LEPC meeting committee members reviewed hazards that were identified in the previous Plan and performed a Hazard Identification and Ranking exercise for inclusion into the 2011 Plan Update. Each committee member rated identified hazards based on their agency or community perspective. The results of this task were presented to the LEPC/HMPC by Virginia Smith. The LEPC had questions pertaining to the *2008 State of Maryland Hazard Analysis* hazard risk rankings for Garrett County. These questions have been incorporated into the update section of the 2011 Plan.

Copies of draft Plan Chapters 1-4, including Hazard Profiles were distributed during the meeting and are attached.

Hazard Mitigation Strategies, specifically action items from the previous Plan were discussed. Committee members discussed these items, which resulted in a status update for each action item.

Next Steps:

- ✓ In May 2011 Brad & Ginny will attend the municipal meeting of all eight incorporated jurisdictions and discuss the Hazard Mitigation Plan Update Process. At this meeting each

municipality will have the opportunity to work on hazard identification and ranking specific to their jurisdiction.

- ✓ June 2011 Vulnerability and Loss Estimation Presentation & Mitigation Strategies.

Garrett County Emergency Operations Plan-Debris Management (Annex) ESF # 18
Updated ESF # 18 (Annex Debris Management) was distributed and discussed. Next Step: Establish a meeting between all responsible parties designated within ESF #18 Debris Management; May 2011.

Next Meeting Date
▪ LEPC Committee Meeting Date: **9 June 2011** Location: **Garrett College** Time: **10:30 AM**

Garrett County, Maryland
Local Emergency Planning Committee

Minutes

Meeting:	**Local Emergency Planning Committee Annual Meeting;**		
Date of Meeting:	8 September 2011	**Time:**	10:00 am – 11:30 pm
Meeting Facilitator:	Brad Frantz, Director Public Safety & Emg. Mgt.	**Location:**	Garrett College

Meeting Topics Discussed

LEPC Meeting Topics

- 2011 Garrett County Hazardous Materials Response Plan Update
- Shelter Trailer & October 2011 Training
- 2011-2012 Training Activities (NIMS 300 & 400 Level)
- 2012 Hazardous Materials Exercise

Citizen Corp. Council Meeting Topic

- Emergency Services Club Activities

Hazard Mitigation Planning Committee Meeting Topics

- 2011 Hazard Mitigation Plan Update-Review results of Hazard Identification & Prioritization
- Review Status of Mitigation Strategies/Action Items from previous Plan
- Discuss new Plan Chapters

Attendees

Name	Organization		Name	Organization
Jean Tressler	Garrett College		Craig Umbel	GC Health Dept.
Brad Frantz	Dept. of Public Safety & Emerg. Mgt.		Rick Cosner	MD SHA
Virginia Smith	Dept. of Public Safety & Emerg. Mgt.		Steve Smith	Dept. of Public Safety & Emerg. Mgt.
John Feather	GC Fire & Rescue Assoication		Lou Battistella	Citizen Representative

Review of 14 April 2010 Meeting Minutes

No comments. Minutes approved as read.

Garrett County Hazardous Materials Response Plan Update

Reviewed the draft of the updated Plan. Most of the items discussed during the April LEPC meeting regarding the update process have been accomplished with a few exceptions as follows:

- Current MSDS sheets needed for Mettiki Coal and Town of Grantsville;
- Input needed from GCMH pertaining to Attachment F.

New items included in Plan Update: Attachment C-HazMat Fixed Site Reports, Attachment D-HazMat Standard Operating Procedures, Attachment E: Absorbent Disposal, Attachment F: HazMat Patient Transport and Hospital Care, Attachment-G Decontamination, and Attachment H- Chemical Protective Clothing Testing. Members of the LEPC and Garrett County HazMat Technicians were asked to review the Plan and provide comments. The Plan will be presented to the Garrett County Board of Commissioners for adoption. This document will be provided to all participants in the upcoming Spring 2012 HazMat Exercise.

Shelter Trailer & October 2011 Training

The Garrett County Department of Public Safety has ordered a 16 ft. trailer and equipment for shelter response activities utilizing Homeland Security Grant funding. This is consisted with the recent update made to the GC EOP-ESF #6 Mass Care & Sheltering.

The GC Dept. of Social Services (Alicia Streets) has coordinated with the GC Dept. of Public Safety to schedule a training/exercise program for her department on October 18th. At that time the shelter trailer and associated equipment-Cots, Blankets, Personal Care Kits will be utilized during the simulated disaster event.

Training Activities

Potential training opportunities related to the HazMat Exercise include:

- NIMS ICS Training (300 & 400)
- Triage Training
- IMS for EMS
- Reverse 9-1-1 Training
- Shelter Training Refresher

  Note: Jean Tressler is in the process of working with MFRI to establish training dates for the NIMS 300 & 400 Level classes. She is looking into the possibility of using MFRI Special Programs to ensure that the class scheduling meets the needs of GC.

2012 Hazardous Materials Exercise

Brad Frantz announced that his department has obtained the Aircraft Simulator from the WV Extension Center for the upcoming HazMat Exercise. The Exercise date has been scheduled for May 18th.

While reviewing the updated HazMat Response Plan, specifically the new SOP's, necessary items that are needed for response activities were identified. These items will be needed for the exercise as well, if the overarching goal of the exercise is to test the GC Hazardous Materials Response Plan.

- Color-coded flags to mark the hot, warm, and cold zones;
- Level A Training Suits;
- Footwear for Decon. Patients;
- In-Suit Communications;
- Absorbent Foam;
- Absorbent Material (woody cellulose material;
- Steel Drums;
- Level A & B encapsulated suits.
-

Note: Current grant funding and opportunities are being explored at this time.

Citizen Corps Council-Emergency Services Club Activities

Several donations have been made to the ES Club's recently. The FOP donated ½ hog from the Garrett County Fair for the ES Clubs to raffle off. Raffle tickets mat be purchased from any ES Club member. In addition, the Pittsburgh Pirates donated 25 tickets to the ES Clubs as a reward for their community efforts.

ES Club members will once again be manning the Fire Safety Unit and passing out free fire extinguishers at the Autumn Glory Festival.

As a result of a suggestion made at the April LEPC meeting, an ES Club link was added to the Department of Public Safety Website page. The page is currently being updated to reflect the 2011/2012 school year.

2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization
The results of the Hazard Identification and Prioritization process were discussed along with the status of the previous Mitigation Strategies & Action Items. Draft Plan Chapters 1-11 have been completed and are available for review and comment.

Next Meeting Date
▪ LEPC Committee Meeting Date: **1 December 2011** Location: **Garrett College** Time: **10:00 AM**

Garrett County, Maryland
Local Emergency Planning Committee

Minutes

Meeting:	**Local Emergency Planning Committee Annual Meeting;**		
Date of Meeting:	6 December 2011	**Time:**	10:00 am – 11:00 pm
Meeting Facilitator:	Brad Frantz, Director Public Safety & Emg. Mgt.	**Location:**	Garrett College

Meeting Topics Discussed

LEPC Meeting Topics

- 2011 Garrett County Hazardous Materials Response Plan Update
- Shelter Trailer & October 2011 Training
- 2012 Training Activities (NIMS 300 & 400 Level)
- 2012 Hazardous Materials Exercise

Citizen Corp. Council Meeting Topic

- Emergency Services Club Activities

Hazard Mitigation Planning Committee Meeting Topics

- 2011 Hazard Mitigation Plan Update-Review results of Hazard Identification & Prioritization
- Review Status of Mitigation Strategies/Action Items from previous Plan
- Discuss new Plan Chapters

Attendees

Name	Organization		Name	Organization
Jean Tressler	Garrett College		Craig Umbel	GC Health Dept.
Brad Frantz	Dept. of Public Safety & Emerg. Mgt.		Rick Cosner	MD SHA
Virginia Smith	Dept. of Public Safety & Emerg. Mgt.		Steve Smith	Dept. of Public Safety & Emerg. Mgt.
John Feather	GC Fire & Rescue Association		Lou Battistella	Citizen Representative
Alicia Streets	Dept. of Social Services		Dwayne Kitis	MIEMSS
Erica Carlson	MEMA		John Hill	Community Action
Brian Broadwater	MSP		Linda Lindsey	GC Public Utilities
Craig Umbel	GC Health Dept.		Jeff Hinebaugh	GC Memorial Hospital

Review of 8 September 2012 Meeting Minutes

No comments. Minutes approved as read.

Garrett County Hazardous Materials Response Plan Update

Presented draft Plan to GC Board of County Commissioners on 1 November 2011. Information needed to complete draft Plan include:

- Current Tier II needed for Mettiki Coal;
- Additional contact information for HazMat Tech., Mike Simmons.

The finalized draft Plan will be presented to the Garrett County Board of Commissioners for adoption. This document will be provided to all participants in the upcoming Spring 2012 HazMat Exercise.

Discussion pertaining to the distribution of the adopted Plan and the method by which new items, specifically SOP's, are highlighted to the various volunteer Fire & Rescue companies ensued. Jeff Hinebaugh suggested that a short train-the-trainer targeted at fire chiefs and training officers may be a sound method to deliver the new information within the Plan. Jean Tressler volunteered to work on the logistics-date, time and participant sign-up (target month-February 2012). Note: all class participants will be given multiple copies of the Plan and a CD to take back to each of their respective stations.

It is important to note that one of the overall goals of the May 19th HazMat Exercise is the implementation of the *Garrett County Hazardous Materials Response Plan.* In order to accomplish this goal all participants must have a working knowledge of the Plan and the SOP's within.

Shelter Trailer & October 2011 Training

The Garrett County Department of Public Safety purchased a 16 ft. trailer and equipment for shelter response activities utilizing Homeland Security Grant funding. The Trailer is housed at the Garrett County Airport.

GC Dept. of Social Services (Alicia Streets) coordinated with the GC Dept. of Public Safety to conduct training/exercise program for her department on 18 October 2011. During the exercise Ms. Streets had two separate shifts of workers participate in order to simulate a shift change. The first shift arrived at the exercise location, Oakland Armory, to find a empty trailer and boxes of goods/equipment. That shift quickly recovered from the initial shock (kidding… kind of) and quickly set to work. They sorted and organized all items, while taking a comprehensive inventory. All items were neatly assembled into the trailer within designated locations that have been labeled and a schematic display depicting the placement of all items was developed. This depiction will be displayed on the wall of the trailer for future use during activation.

The second shift reviewed the inventory and items within the trailer as a QC/QA activity and made suggestions. Following the review, the 2nd shift unboxed each of the (4) different types of cots and practiced cot set-up, while tracking the time. The special needs cots took quite a bit longer to set-up, which was noted.

Following the exercise a list of items needed and a completed trailer inventory list was generated. Ms.

Street indicated that the event was a success.

Training Activities

Potential training opportunities related to the HazMat Exercise include:

- NIMS ICS Training (300 & 400); Brad Frantz & Jean Tressler have been working with Kingsley Poole, MFRI to establish training dates and to determine target audience(s). MFRI will only pay to train fire personnel, so evening classes for NIMS 300 should be covered. The NIMS 300-400 class needed for our EOC ESF leads will need to be paid for with training funds from the grant. Dates for the training(s) are April 9-18, 2012. Additional detailed information will be forthcoming.
- Triage Training-Dwayne Kitis
- IMS for EMS-Dwayne Kitis
- Miltenberger Conference-Decontamination Training scheduled for Mid-March.
- EOC Training-Erica Carlson will schedule sometime in March 2012
- MEMA Conference in Ocean City, MD: May 29-June 1, 2012; Erica Carlson indicated that MEMA is looking for agenda item ideas & speakers. Please contact Ms. Carlson pertaining to this conference with your thoughts.

2012 Hazardous Materials Exercise

Note: This item has been carried over from the last meeting. Purchasing slated for December 2011.

While reviewing the updated HazMat Response Plan, specifically the new SOP's, necessary items that are needed for response activities were identified. These items will be needed for the exercise as well, if the overarching goal of the exercise is to test the GC Hazardous Materials Response Plan.

- Color-coded flags to mark the hot, warm, and cold zones;
- Disposal boot coverings for patients;
- Level A Training Suits;
- Footwear for Decon. Patients;
- In-Suit Communications;

- Absorbent Foam;
- Absorbent Material (woody cellulose material);
- Steel Drums;
- Level A & B encapsulated suits.

Citizen Corps Council-Emergency Services Club Activities

Several donations have been made to the ES Club's recently. The FOP donated ½ hog from the Garrett County Fair for the ES Clubs to raffle off. The club made $1,200 from raffle proceeds.

The Tichnell family donated funding to the GC ESC's. A portion of the donated funds will be utilized for "Student of the Year" plaque(s) from each of the ESC's-Northern & Southern, in memory of their son.

2011 Hazard Mitigation Plan Update-Hazard Identification & Prioritization

Brad Frantz & Ginny Smith attended the GC Mayors monthly meeting in November. Rough draft portions of the Plan were discussed. As a result of the meeting, the Circuit Rider has been added to the GC LEPC contact listing. He will report back to the group new information pertaining to the Plan development.

GIS data has been sought for inclusion into the draft Plan. New parcel data is currently being reviewed by GC Planning Dept. staff and will be distributed to requesting entities when available. Brad Frantz has provided a portable hard drive to Mrs. Debbie Carpenter-Planning for data transfer purposes.

Brad Frantz & Ginny Smith will attend an additional monthly meeting of the GC Mayor's following data acquisition. Anticipated timeframe for completed draft-March 2012.

Next Meeting Date

- LEPC Committee Meeting Date: **7 March 2012**
  Location: **Garrett College-Continuing Education Bldg.**
  Time: **10:00 AM**

- **LEPC Sub-Committee Meeting Date: 11 January 2012**
  Location: **Garrett College-Continuing Education Bldg.**
  Time: **10:00 AM**

APPENDIX H: PUBLIC MEETING MINUTES