

## CHAPTER III

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### NATURAL RESOURCES, FEATURES AND HAZARDS

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#### A. Overview

Natural resources (plants, animals, soils, minerals, air, and water) provide us with the foundation of our basic life supports: the air we breathe, the water we drink, the land we live on, and the food we eat. They also play an important role in dictating where we build our houses and develop our streets. Our quality of life, including our health, depends upon the quality and quantity of these natural resources and their role in the larger ecosystem. We expect that these natural resources will be available when needed, sometimes without a great understanding or appreciation of how fragile they are. Unfortunately, natural resources *are* limited and our everyday activities can impact them profoundly. The consequences of our actions are not always apparent until resources are gone, diminished, or unusable. Natural areas have intangible benefits, as well, as sources of inspiration, learning, and beauty. It is in the town's best interest to use its critical resources wisely and protect those that are most vulnerable, fragile and irreplaceable.

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#### B. History of the Landscape

In the late 1700's, when settlers first came to Vermont, they saw thick forests of both hardwood and softwood, filled with wildlife. The topsoil was organic and soft. However, settlers soon began clearing the forests to make pastures for sheep to graze in and so their crops could grow. After cultivation of the land, the topsoil was stony and thin (frost heaving caused bedrock to lift to the surface). By the early 1800's, residents deforested 75% percent of the land and exterminated much of the wildlife. Clearing the trees caused a variety of problems. Topsoil eroded into the streams polluting them and killing many fish as a result. Wetlands and ponds dried. Food became scarce and crops refused to grow. Families were unable to heat their homes. Unable to survive in this harsh environment, many people left Vermont for the west with the promise of a new life. Only the hearty stayed behind.

In the late 19<sup>th</sup> and early 20<sup>th</sup> centuries turkey, deer, beaver, moose, fish, and other extirpated wildlife species were reintroduced to Vermont. The deer population quickly multiplied; and by 1896 the state was able to establish a hunting season. White pine trees began to grow back in the open land and by the late 1900's the trees had grown large enough to harvest. Eventually the logging industry recovered. Today, 78% of Vermont, (and a similar percentage of Williamstown), is forested, providing habitat for wildlife and other benefits for the community. Although we have no old growth forests left, our forested landscape affords us an abundance of outdoor activities, beautiful landscapes, and a great quality of life.

## C. Productive Resources

### Forest Lands

In Williamstown, citizens are never out of sight of the forests. Forests shelter us against wind, rain, sun, and heat, provide us with food sources, protect our watershed, produce oxygen, and are important for timber and heating our homes. Hunters, maple syrup sugar makers, outdoor enthusiasts, and leaf peepers enjoy our forests. At the heart our forests, are the complex relationships between plants, animals and microbes that enable the ecosystem to function almost like a living organism.

Williamstown's forests are a mix of hardwoods and softwoods. Tree species include maple, beech, birch, cherry, basswood, aspen, spruce, balsam fir, hemlock, ash, elm, and many others. This mix of tree species is valuable for wildlife and helps to reduce the impact of species-specific diseases or insects. Currently, Williamstown's forests are healthy and sustainable, but there are concerns for the future, including forest fragmentation and conversion to other uses. Williamstown currently has about 20,000 acres of forested land, nearly a thousand acres of which is protected within the boundaries of Ainsworth State Park. Another 9,355 acres receive some protection from development and enforced management through Vermont's Use Value appraisal Program.

Well-managed multiple use lands can play a major role in conserving and enhancing biological diversity to maintain options for future generations. Please refer to **Map 2 Wetlands, Wildlife Habitat and Natural resources**.

### Agricultural Lands

As small in numbers as our hardworking farmers are, Williamstown residents still care deeply about them. Without them, we realize that much of our rural character would be lost. Our farms are also very important for other more practical reasons – they are an important part of our economy and they provide food and sustenance.

There are 1,840 acres of important farmland soils in Williamstown - 27 acres categorized as “prime” and 1,647 considered to be of “Statewide significance” (see **Map 4 Earth and Mineral Resources**). Ironically, the best agricultural soils are often the easiest to develop as they are generally flat, well drained and stable. However, it is important to understand that local sources of food could become critical given the uncertainties of our nation's energy/transportation future and the town agricultural potential could be significantly diminished if farmlands are excessively build upon, paved, or divided into small, unworkable parcels.

For the moment, however, Williamstown's agricultural base is relatively healthy, stable and diverse. There are a handful of full time farms, approximately 20 “working” farms, and a number of “hobby” or part time farms. However, the increasing tax burden on large landowners is often cited as a reason for the sale of farmland and its subsequent conversion to other uses. Landowners can reduce their tax burden by applying for the Vermont Current Use Value Appraisal Program. The program helps owners of productive forest or agricultural land by lowering their taxes to reflect their actual, use opposed to most profitable, use. Current Williamstown landowners have approximately 9,355 acres of land enrolled in this program.

Land trusts can also help landowners who wish to continue to work their land to remain solvent. These organizations will work with willing landowners to purchase the development rights to important parcels. The owner will usually retain title and will often use the sale price as reinvestment capital to keep operations modern and productive. In 1997, Williamstown had 255 acres protected by the Vermont Housing and

Conservation Board. In 2003, the Agency negotiated a farm conservation project with another Williamstown family and now holds the easement on another 343 acres of land.

## **Earth Resources**

### **1. Topography/Slope:**

Geological upheavals and glacial weathering, which took place millions of years ago, sculptured the land of Williamstown into mountains, hills, wetlands, rivers, and lakes. Currently, elevations in Williamstown range from under 800 feet along Steven's Branch to the highest at 2,060 feet at Mount Pleasant in the northeast corner of town. Elevations of land in combination with soil factors can be important factors in land use planning. Improper development in areas with excessive erosion and instability can cause nutrient loading, stream siltation and groundwater contamination. Development in areas with excessively steep slopes may also have hidden financial burdens for the town. New roads on unsuitable slopes may be costly to construct and maintain. In addition, access by fire, emergency medical, and law enforcement and service vehicles is more difficult in these areas. Slopes over 25% are considered unsuitable for most development and septic systems.

### **2. Geology:**

Most of the rock deposits in the Williamstown area are a mixture of limestone, schist, and granite. Williamstown residents once quarried granite on a grand scale. In 2004, Pike Industries established a 30-acre quarry operation (on a 90-acre farm) in Williamstown. This operation removed approximately 100,000 tons of material last year.

Rock of Ages owns about 170 acres used as a granite quarry near Foxville and a large quarry is located near the border of Williamstown and Berlin on Route 63. The town also has a few sandpits and gravel deposits that supply commercial extraction operations, including:

- Two large sand pits located in Williamstown on Jay Lane off Route 14.
- A gravel and sand pit owned by the town located on a 23-acre site located at the Barre town line on Vermont Route 14 north of the village.
- A 23-acre gravel pit in Williamstown owned by the town of Barre. (This pit has been in operation for nearly 30 years. Gravel reserves above the groundwater table in the original 10-acre section of the gravel pit are nearly exhausted. Barre plans to close down this gravel pit in the near future, thus it should be closely monitored. In 1990, Barre purchased a little over 13 acres nearby).
- Several borrow pits and small private gravel/sand pits.

Operation of the town gravel pit has saved the town a great deal of money. This site provides winter sand and is a source of crushed gravel for the town and its 69 miles of gravel roads. Approximately 8,500 cubic yards of winter sand is stored annually.

Sand, gravel, and quarry operations supply much needed materials for road maintenance and construction; but if not properly developed and managed, they can result in unstable slopes and slides. Furthermore, they have the potential to adversely affect surface and groundwater quality and quantity, increase noise, dust, traffic levels and accidents on local roads, and affect the lives of people and animals that live nearby. It is vital that town officials pay close attention to the potential location and operation of future mining and extraction operations to avoid land use conflicts, environmental damage and habitat destruction. Additionally, the town should avoid areas that will cause unreasonable congestion or unsafe conditions with

respect to the use of the highways and intersections, and access roads. Refer to **Map 4 Earth and Mineral Resources** for more detailed information.

### **3. Soils:**

Soil provides fertility, stores water, holds rain and runoff for later release, cleans and filters pathogens and toxins, buffers acidity, and decomposes waste and some litter. Soils are the most important environmental factor that governs the use of land in rural areas. Soil scientists classify soils based on structure, form, composition, and suitability for various types of development. Four characteristics are of primary concern for planning: the bearing capacity, erodability, drainage, and resource value. Some soils are suitable for structures and highways, while other soils are well suited for growing plants and vegetables. Other soil conditions constrain development and/or the placement of on-site septic systems. Most of Williamstown is comprised of a layer of glacial till over bedrock. This till is usually thin (less than 20 feet), particularly in the higher elevations, and is composed of materials from clay to boulders.

The United States Department of Agriculture's (USDA) Natural Resources Conservation Service has completed a soil survey of Orange County, Vermont. The survey contains useful information in managing farms, woodlands, site locations for roads, ponds, recreation, and buildings. This survey describes Williamstown's soil primarily having a higher percentage of poorly drained soils than other associations of soils.

## **D. Protective Resources**

### **Surface Water**

Surface waters are abundant in Williamstown. The town is dotted with many ponds, interconnected systems of streams and rivers, and many acres of wetlands. These surface waters offer scenic beauty and recreational opportunities. They draw fishermen, canoeists and boaters to our town, and provide a livelihood to the residents of our town. Furthermore, these bodies of water are literally wellsprings and reservoirs of life for the insects, fish, microorganisms, birds, and wildlife that share our town.

Staples, Cutter, and Rood ponds are located along the Steven's Branch and the Second Branch of the White River in the Southern part of Williamstown. Limehurst Pond, a 500-yard long, narrow shaped body of water is rimmed on the west by gentle hillsides. Other ponds include Rouleau, Whitcomb, and Lotus Lake. Ainsworth State Park has a small one-acre shallow pond. There are also a number of smaller private ponds and brooks scattered throughout the town (Martin Brook, Cold Spring Brook, among several others).

Since rivers and streams are interconnected systems, at a broad, watershed scale the Stevens Branch of the Winooski River flows northward to the Winooski River and ends up in Lake Champlain. Meanwhile, the Second Branch flows southward to the White River system.

### **Wetlands**

Wetlands are numerous in Williamstown (see **Map 2**). They include areas commonly known as marshes, swamps, bogs, fens, shrub swamps and wooded swamps, or wet meadows. The water may be visible standing water or unseen ground water. Many of our wetland areas tend to be small because of the hilly topography and are located at the margins of larger upland water systems like lakes, ponds, rivers, and streams. Wetland areas are important because they store floodwater, reduce the impact of downstream flooding and

erosion, provide habitat for wildlife, support erosion control, and improve water quality by filtering out impurities.

Currently, 90% of Williamstown's wetland areas are on private land. In the Northwestern corner section of Williamstown (at the corners of Bador and Hebert Road) is a very private, secluded swamp, located deep in a forest that has over 20-acres of surface water. Known locally as Beaver Meadow Swamp, this area is rich in wildlife and, not surprisingly, has an especially large habitat of beavers.

Vermont Wetland Rules classify all wetlands into one of three classes:

- Class One wetland areas are those that are exceptional or irreplaceable in contribution so they merit the highest level of protection,
- Class Two wetland areas are those wetlands which are found to be significant enough so they merit some protection (50-foot buffer zones), and
- Class Three wetland areas are those wetlands that have not been determined to be sufficiently significant enough to merit any protection. However, these wetlands may be protected by other federal, state, or local regulations. For example, they may be mapped as a significant habitat area.

Wetland protection programs and regulating laws exist at the federal, state, and local levels of Vermont. Community members must contact officials for any work activity that influences water levels in the wetland area that involves draining, dredging, filling, or grading.

Upon request, the Department of Environmental Conservation may determine wetland boundaries through field investigation. Citizens may contact the Wetlands Office at (802) 241-3770 for more information on state wetland rules and Conditional Use Determinations (CUD).

### **Natural Heritage Sites**

Throughout Williamstown, there are many peat lands (areas with partially decayed, moisture-absorbing plant matter), including bogs and fens. In those peat lands there are a number of sites of ecological importance because they host protected communities of rare and uncommon native plants, rare mosses, shrubs, and grasses. These plants are rare because they have very particular habitat requirements. Others are at the edges of their ranges, are vulnerable to disturbance or collection, or have difficulty reproducing for unknown reasons. The state protects these rare plants with a status of "threatened" or "endangered" under the Vermont Endangered Species Law. The Federal Endangered Species Act also protects these sites of ecological importance.

In 1995, a study was done by the United States Environmental Protection Agency to explore fen (wetland, deep peat sites) and riverside seep (groundwater seepage) communities in Williamstown that host protected communities. This study concluded that there are two sites that met criteria for "threatened" status, including a fen area on Birch Lane and another marshy area located on Pleasant Street. These wetland areas have rare plants and the area has rare qualities that are threatened, or endangered and are protected by the Federal Government. Several other sites were explored by researchers and identified as "highly ranked as fen and seep sites", including locations on South Stone Road, Birch Lane Road, Middle Stone Road, and North Stone Road. Other significant areas with rare communities are located on Berlin Pond Road, and Mill Hill Road. The state listed a marsh on Pleasant Street as having a rare plant that is "threatened." These significant habitats are depicted on **Map 2**.

## **Wildlife Habitat**

In Williamstown, wildlife is always close by and residents have learned to respect them. Many residents look forward to leaving a hard day of work and going home to see deer grazing in their backfield or a red fox crossing the street. Luckily, moose, white-tailed deer, bobcat, and beaver populations continue to expand in the Williamstown area. This increase has resulted in increased viewing and hunting opportunities. See **Map 2** for locations of deer wintering areas.

Many birds have adapted quite well to our village habitat. They eat at our bird feeders, nest in our barns, hop around on our lawns, and eat berries off our ornamental trees. The wild turkey, ruffed grouse, and woodcock continue to expand. Many people report seeing large flocks of up to fifty wild turkeys in their backyards. Other birds prefer areas not to go anywhere near humans like the Blue Heron who frequent our wetland areas and Canada Geese who enjoy the cornfields.

Other creatures of the forest and wetlands are plentiful and equally important contributing to our web of life in their own special way. Significant among these are reptiles, amphibians, and fish and insects many of which pollinate our fruit trees and crops.

## **Scenic Areas**

Williamstown's scenic beauty is defined by a landscape of soft hills and valleys, wetlands, open pastures, stone-walls, thick forestland, and dirt roads lined with maple trees. Many of our back roads still offer beautiful open pastures filled with horses, sheep, and cows. As the town moves forward with its planning activities it should consider conducting a landscape assessment to determine what areas are most critical to community's visual character.

## **E. Environmental Hazards in Williamstown**

### **Overview**

Natural and manmade disasters can strike a community with little or no warning. Communities across the country are struggling to prepare for these possible events. The Williamstown select board adopted a customized Hazard Inventory/Vulnerability Assessment in June 2004, and as a result, a Pre Disaster Mitigation Plan was developed. A Hazard/Crisis team will need to be organized. Training and practice are also essential for the successful implementation of the Hazard/Crisis Plan. Community leaders and teachers will need ready access to the plan so they can understand its components and act on them to be prepared for a potential crisis. The Pre-Disaster Mitigation Plan will need to be reviewed and revised at least every 3 years.

### **Soil/Water/Air Pollution**

Contaminants in our soil, water and air can find their way into our bodies by contact, ingestion or respiration, causing both long term and short term health impacts. Williamstown has witnessed the dangers of pollution firsthand. State officials have found contamination within the proximity of the school. From 1973 through 1983, the (Interstate Industrial Uniform Laundry aka –UniFirst) UniFirst facility operated a laundry and dry cleaning business located on Hebert Road. The facility borders a residential neighborhood to the east,

public schools to the north and south, and residences and agricultural land to the west. In 1983, the State discovered soil and water contamination coming from the uniform-cleaning facility just above the elementary school. Soil contamination flows downward along the slope and seeps deep into cracks in the bedrock. Thus in 1984, to avoid protect public health the town hooked-up the nearby homes to the town's water supply. The state installed a network of collection drains and expanded them in 1985 and 1990. Monitoring is ongoing.

The old town landfill site on VT Route 14 closed down as a Williamstown landfill as ordered in a consent decree (official legal agreement) from the State of Vermont during the UniFirst contamination problems. The old landfill section has been covered and sealed, but one portion of the site is still contaminated and is restricted. Additional site monitoring and investigation will continue by the Department of Environmental Conservation (VDEC). Removal and transport of gravel contaminated by hazardous waste is in violation of federal RCRA regulations as well as a violation of the Williamstown Consent Decree. Another adjacent section of the town landfill is also contaminated. The solid waste rule on landfills enacted by the Vermont Department of Natural Resources requires that landfills closed after 1989 must sample their monitoring wells. The Williamstown Landfill closed around 1992. Another 2-acre wetland section of the town landfill was used as a CVSWD trash depository transfer station until 2003 and was closed because of potential water contamination.

All restrictions on this land have been removed as of 2009. This land can potentially be used for recreational use.

There are many private junkyards (any property with 3 or more unregistered vehicles) and dumpsites in Williamstown. Samples at some of these sites found concentrations of methyl tertiary butyl ether, trimethylbenzene, benzene, toluene, and other gasoline range organics.

The town tests water samples for contaminants on an annual basis by Williamstown Water Department. Fortunately, Williamstown's Water Quality Report, states that our current municipal water supply is currently of high quality and potable. However, Williamstown does have some potential water quality problems. The contaminated UniFirst facility site is located on the Rouleau Brook Watershed. Rouleau Brook is a tributary to the Stevens Branch, which flows into the Winooski River. To protect the future public health, on March 8, 2004, the Agency of Natural Resources' proposed reclassifying the site groundwater (about 85 acres) from a Class III (drinkable water) to Class IV (not suitable for potable water).

After numerous meetings, between ANR (Agency of Natural Resources) and a small group of concerned (and some effected) town citizens, ANR agreed to consider withdrawal of the reclassification order if the town would expand the water service area to include all the effected properties and adopt an ordinance which prohibited well drilling in the area. The citizens brought this option to the Select Board. The board then moved forward and negotiated with the ANR. The ordnance became effective January 3, 2009 and ANR withdrew its position to reclassify April 17, 2009.

Other potential sources of water quality problems originate from developed land, agricultural, atmospheric deposition, lawn/dump run-off, parking lots, construction sites, disturbed areas, road salt, and failed septic systems. Based on the Environmental Protection Agency's current data, 14% of surface waters in Orange County are impaired or threatened. Some are impaired by pathogens (bacteria and viruses), metals (mercury, copper, and lead), and by sediments. Others are impaired by high acidity levels.

According to Environmental Protection Agency sources, Williamstown's general air quality meets national standards. However, air quality is not monitored in Williamstown.

In the future we must continue to strive to protect our citizens from both the incidence of, and exposure to, environmental toxins. In recent years the federal government has been investing in the analysis and remediation of so called “brownfield” sites. Brownfields are defined by the United States Environmental Protection Agency (U.S. EPA) as “real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant.” Typical prior uses that may fall into this category in Central Vermont include old town dumps, photo developing sites, mill complexes, factories, dry cleaners, auto repair shops, gas stations and even some agricultural sites. Sites in Williamstown include, but are not restricted to, our two old town dumps and the UniFirst property. There is concern that there may be other properties in Williamstown that have not been designated as brownfield sites.

Brownfield sites often remain vacant and underutilized due to concerns over liability and unknown environmental assessment and clean-up costs; yet many sites can be rehabilitated. Redevelopment or re-use of potentially contaminated sites has many benefits, including:

- Elimination of eyesore properties
- Promotes/supports historic use patterns
- Protects human and environmental health
- Strengthens the local economy

Since brownfield sites are often in already developed areas, their reuse can help to promote compact land use and in-fill development. According to the U.S. Environmental Protection Agency’s web site “for every acre of brown fields redeveloped, it is estimated that an average of 4.5 acres of green fields are saved.”

The CVRPC has been very active in the area of brownfield rehabilitation, having received over a half million dollars in EPA grants since 2004 to assist towns in assessing and reclaiming important properties. Williamstown should consider taking advantage of the Commission’s expertise to identify and evaluates sites within the community for inclusion in the program.

### **Noise Pollution**

Any undesired loud and/or continuous sound can be considered “noise.” Noise pollution is defined as “continuous and unrelenting sounds at all levels or episodic and excessively loud sounds.” Higher noise levels may be appropriate and unavoidable within designated industrial, commercial, and mixed use areas. While it must be recognized that noise necessarily accompanies certain business and transportation operations, new development should make all reasonable efforts to minimize noise impacts and shall not exceed acceptable standards in residential areas. Among the strategies for the town to consider are: restricting hours of operation or construction, using vegetated buffer zones to filter sound, taking advantage of topography in designing projects to provide sound barriers, the use of structural barriers (i.e. earth berms and sound walls), and architectural design and materials.

### **Flooding and Fluvial Erosion**

Floodplains are low lying areas of land adjacent to a streams and rivers that are frequently inundated by water. While these places serve important ecological functions, including floodwater storage, sediment

trapping, nutrient filtering and aquifer recharge, they can be hazardous locations for people and property. Flooding (and flood related events), arising from a variety of causes, including heavy rain, melting snow, ice jams, poor drainage and dam breaks, is the most frequent, damaging and costly type of natural disaster experienced in the state and region. In fact, over the last 50 years flood recovery costs have averaged \$14 million per year (not adjusted for inflation) statewide. Unfortunately, it appears that Vermont can anticipate more frequent flooding occurrences in the years ahead as climate change models predict wetter summers with more intense rainfall events.

High water causes damage in two distinct, but related, ways. *Inundation* can fill structures with water and cause property damage and drowning. It is a great concern for those living in or near Flood Hazard Zones (the area inundated by water during a flood with a statistical probability of occurring once every 100 years – i.e., the “One Hundred Year Flood”). *Fluvial erosion* i.e. flash flooding actually causes greater damage. Within the area of a stream or river’s active channel movement, known as the Fluvial Erosion Hazard Zone (or FEH), bank failures and changes in river channel courses during floods can undermine buildings, roads, farm fields, and utility infrastructure.

Williamstown is not immune to either of these hazards. Over the years the town has experienced several damaging floods and high water events. The most recent events were July 2007 and July 2008.

Perhaps the best known mitigation program is the National Flood Insurance Program (NFIP). This program, administered through the Federal Emergency Management Agency (FEMA), identifies areas within the Flood Hazard Zone and prescribes development review standards and procedures for lands within regulated areas. Municipalities that comply with Federal standards can qualify their residents for flood insurance through the program at rates far below what would be available on the private market. It is essential, therefore, that Williamstown maintain its eligibility for this program. It is important to note that under this program, reduced insurance rates are available town-wide – not just to those located within the Flood Hazard Zones.

In the near future, Orange County will be undergoing a FEMA directed “map modernization process” which will provide the town with updated digital maps of Williamstown’s Flood Hazard Zones. Because the new maps will use ortho-photographs as a base, they may be more accurate and easier to interpret. When the updates are completed, Williamstown will have six months to review them and request any modifications. At the end of this period the maps will become official and the town’s Flood Hazard Regulations will have to comply with revised federal standards if Williamstown is to remain in the NFIP program. It is anticipated that Williamstown will face a deadline for program compliance in 2010 or 2011. The “current” FEMA maps, provided to the town some 30 years ago, depict 100 year flood levels, primarily identifying areas subject to the threat of inundation along the valley that parallels Route 14 and the Steven’s Branch and a few other areas scattered within the town. Development in these areas is restricted in order to prevent water pollution and damage to life and property in accordance with Williamstown’s Flood Hazard ordinance. Agriculture, recreation, forestry, and other similar low intensity uses are permitted

While the FEMA Flood Hazard Zones are important maps are for town planning and for mortgage lenders in deciding which properties need flood insurance protection, they do not address fluvial erosion hazards. Accordingly, the Department of Environmental Conservation, and many Regional Planning Commissions, has been busy conducting fluvial erosion hazard assessments for many river and stream segments statewide. Town’s can use erosion hazard mapping information to help avoid future life and property damage by allowing rivers and streams the area they need to maintain or re-establish their natural “equilibrium” (or stability) thereby avoiding the need for costly, and potentially environmentally damaging stream channelization and bank stabilization measures. While Flood Hazard and Fluvial Erosion Hazard Zones typically have large areas of coincidence, they are seldom, if ever, identical.

Even if Williamstown were to restrict new development from flood hazard and FEH zones, it would not solve every problem. Historically, the town has also witnessed damage from upland streams that have not been mapped by either of the above programs. Mountainous or hilly areas tend to have narrow, confined channels through which flood water move rapidly and travel downstream more quickly than in flat areas. Even though a building is not located in a valley where a rising river could overflow its banks and inundate the structure, it is not necessarily safe from flood damage. By establishing development setbacks, communities can prevent people from building structures too close to rivers, such that the structures could be flooded or swept away by strong currents in a storm.

Finally, it is important to consider how land use within a watershed impacts flooding. Impervious surfaces, such as roads, driveways, parking areas and buildings prevent water from soaking into the ground, increasing runoff and erosion potential. Any disturbance of the soil or any change in topography may increase erosion potential. Building development and soil tillage are two primary causes of soil disturbance in Williamstown. Logging is another. Excessive logging can leave hillsides open to erosion, removing the forest canopy that would have absorbed and retained much of the water. Improperly constructed logging roads may lead to increased erosion, particularly on poorly drained soils. Private driveway culverts are often undersized, causing washouts and road damage during intense storms.

Driveways which are improperly graded and ditched can direct water onto the main road, increasing highway maintenance costs. Improper maintenance of town roads and roadway culverts can lead to washouts. Soil and vegetation allowed to build up on the edges of roads prevent water from running into ditches. Clogged culverts restrict water flow. Inadequate investments in municipal infrastructure result in problems such as undersized (or too few) culverts, inadequate ditches, or the lack of headwalls on culverts.



## NATURAL RESOURCES & FEATURES

| Goals  | Policies  |
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| <p><b>1. To promote sound management, conservation and use of Williamstown’s natural resources by educating the community and establishing mechanisms to inform and assist town officials.</b></p> | <p>Establish a <i>Conservation Commission</i> to assist the town in identifying, studying, maintaining, and protecting important natural resources including ecologically sensitive areas. Responsibilities could include:</p> <ul style="list-style-type: none"> <li>Promoting public awareness about our natural resources and environmental threats;</li> <li>Enlisting public participation in identification, protection, preservation, mapping and enhancement of ecologically sensitive resources. Work with the high school students to use their GIS system to identify and map Williamstown’s natural resources.</li> <li>Seeking grants from the state and private foundations to educate the community</li> <li>Educate landowners about fish and wildlife habitat management practices</li> </ul>  |
| <p><b>2. To protect environmental quality by avoiding undue impact from human activity and maintaining natural areas that contribute to the quality of life in Williamstown.</b></p>               | <ul style="list-style-type: none"> <li>• Class 1 and 2 wetlands are considered significant and shall not be drained, filled, or altered to accommodate subdivision.</li> <li>• Class 3 wetlands are also considered very important and shall not be drained, filled, or altered to accommodate subdivision unless without review by the state and the issuance of a CUD.</li> <li>• Proposals for subdivision of a lot involving or adjacent to an identified wetland shall provide a minimum 50 foot setback for roads, buildings, structures and sewage systems from the wetlands.             <ul style="list-style-type: none"> <li>• Undisturbed areas of vegetation should be retained and encouraged along the banks of surface waters.</li> <li>• Any activity that would degrade important groundwater supplies is discouraged. Specifically, development activities in designated WHPA’s shall be carefully reviewed for groundwater impacts.</li> <li>• WHPA signs should be located bordering areas considered protected so residents can avoid contaminating important groundwater.</li> <li>• New development should be designed so as to minimize impacts on deer yards and critical wildlife habitat.</li> <li>• Work with the Department of Forest, Parks, and Recreation to assist with the State Management Plan for Ainsworth State Park.</li> <li>• Hazardous wastes shall be disposed of properly to prevent any degradation of groundwater</li> <li>• Construction on steep or unstable slopes and in high elevations (slopes in excess of 25% and elevations above 2,000 feet) is prohibited</li> <li>• Town should seek funding to administer a survey and study areas of possible contamination through participation in the Central Vermont Brownfields Inventory and Assessment Initiative</li> <li>• Storage and utilization of fertilizers, pesticides, petro-chemicals, herbicides, sludge, or other potentially harmful industrial, agricultural, commercial or residential materials, must be accomplished in a manner compatible with existing regulations</li> <li>• Seek funds to purchase and install monitoring wells at the Williamstown Landfill.</li> <li>• Encourage businesses and practices to not pollute or reduce existing pollution.</li> </ul> </li> </ul> |
| <p><b>3. To balance the benefits and uses of sand, gravel and other mineral and earth resources against the impacts associated with their extraction, processing and transportation.</b></p>       | <ul style="list-style-type: none"> <li>• Discourage the extraction of sand and gravel in locations that would be unduly detrimental to surrounding land uses or the environmental quality of the area.</li> <li>• All areas used to extract mineral and earth resources (sand, gravel, topsoil, and granite) will be stabilized during and after the extraction process (including saving topsoil and seeding and planting new trees).</li> </ul>   |

**4. To preserve the aesthetic quality and working landscape of the Town.**

- Support the Vermont Land Trust and the Vermont Housing and Conservation Board in their efforts to protect working lands.
- Seek grants for the enhancement of access to scenic areas. For example, create car turn-offs for viewing vistas, add benches for viewing waterfalls.
- Discourage ridgeline development or conspicuous development on locally prominent landscape/scenic features unless effectively screened, or clearly in the best interest of the general public.
- Encourage “clustered” or “open space” subdivision to promote the preservation of resources by allowing flexibility in the design and siting of buildings.

**5. To manage the quality and quantity of storm-water runoff in order to avoid property damage and negative impacts on surface and groundwater.**

- Structural Best Management Practices (BMP’s) should be used to control storm water on new development sites before and after construction (including plans for long-term maintenance and operations Methods may include diversions, seeding, mulching, check dams, construction schedules, basins, trenches, dry well, leaching catch basins, hay bales, inlet protections, sand and compost filters and others.).
- Acceptable Management Practices (AMP’S) should be employed on all agricultural, silvacultural and earth extraction operations.
- Contractors and landowners are encouraged to consult the “Erosion Control Prevention Manual” published by the Vermont Geological Survey prior to undertaking activities which will disturb the soil.

**6. To avoid, where possible, the conflicts, nuisances and hazards associated with land uses that produce dangerous, excessive or otherwise bothersome impacts.**

- Adopt a Noise Control Ordinance that establishes a maximum DBA allowable at property line boundaries.
- Advocate for noise reduction measures in the development review process. Techniques considered could include: restricting hours of operation or construction, using vegetated buffer zones to filter sound, taking advantage of topography in designing projects to provide sound barriers, the use of structural barriers (i.e. earth berms and sound walls), and architectural design and materials.

Adopt a Firing Range Ordinance

- Advocate for Firing ranges or similar uses to be prohibited inside, or within ¼ mile of village areas. In addition, they will not be permitted within ¼ mile of an existing residence unless all reasonable measures to prevent danger from stray bullets and damage to hearing are taken. Among the techniques available are: sound barriers, sound walls, and time restrictions.

**7. To reduce damage from future flooding events and to prevent changes to the landscape this could increase hazardous flooding conditions.**

- Initiate mapping of Williamstown’s FEH risk areas. Areas subject to fluvial erosion hazards, from gradual stream bank erosion to catastrophic channel enlargement, bank failure, and change in course, due to naturally occurring stream channel adjustments, should be identified and mapped in accordance with accepted state fluvial geomorphic assessment and mapping protocols.
- Review final revised FEMA flood hazard maps when they become available.
- Review and update Williamstown’s Flood Hazard Ordinance to comply with updated NFIP maps and standards and possibly to address fluvial erosion hazards. This should be accomplished through the adoption of a unified overlay district based on the above maps.

- Maintain development setback distances from smaller streams (those for which an FEH zone has not been mapped) to minimize the potential for flash flood damage. A 50 foot minimum buffer is recommended by VT ANR.
- Undersized or blocked bridges and culverts are a main culprit in exacerbating flooding and erosion hazards. Accordingly, Williamstown should continue to participate in CVRPC's Bridge and Culvert Program in order to develop a detailed GIS based inventory, with exact locations and specifications for these structures.

