

Chapter 2

ENVIRONMENT

BACKGROUND AND EXISTING CONDITIONS

CLIMATE AND TOPOGRAPHY

The climate of Lovettsville is classified as “modified continental” by the National Weather Service and is characterized by mild winters and warm, humid summers. The average mean annual temperature is 51 degrees. Precipitation is well distributed throughout the year with the maximum occurring in June and the minimum in February. The average annual precipitation is 40 inches. The prevailing wind is from a south-to-southwest direction, with secondary winds from the north. The topography of Lovettsville is generally uniform without much slope characteristic. The Short Hill Mountains are only a few miles to the west of Lovettsville and help make the Town’s setting attractive and refreshing.

GEOLOGY AND SOILS

The Town is underlain by saprolitic soils, typically extending to a depth of 60 feet or more and overlying metamorphic bedrock (metagranites and gneiss). The bedrock is relatively impermeable except where weathered and fractured areas occur. Groundwater occurs mainly in the weathered upper-most bedrock/soil-rock interface and in fractures in the upper 250 feet of bedrock. Well yields are generally low but can be substantially enhanced where fracturing is more prevalent. The most common soil associations in the Lovettsville area are:

Swampoodle-Lovettsville Complex (approximately 22 percent), consists of deep and very deep, well-drained clayey soils with seasonal water tables on nearly level summits. It is characterized by low strength and high frost heave potential and has a poor potential for development on central water and sewer. Adequate engineering solutions can usually offset this drawback.

Philomont-Purcellville-Swampoodle Complex (approximately 15 percent), consists of very deep, well drained loam and silt, as well as a well drained clayey soil, which is good for development on central water and sewer and for conventional septic systems.

Morrisonville-Philomont Complex (approximately 15 percent) is characterized by very deep, well-drained red silty, clayey, and brown loamy soils on undulating and rolling landscapes. It has good potential for development of central water and sewer and for conventional septic tank systems.

Approximately fifty percent of the soils underlying Lovettsville are contained within three soil type classifications, according to the detailed soils maps of Loudoun County. In general, the soils are considered fair to good for development on central water and sewer systems and on conventional septic systems.

FLOODPLAIN

Three major watersheds drain Lovettsville: Dutchman Creek, Quarter Branch, and tributaries to Catoctin Creek. The western part of Town, which constitutes the largest of the three drainage areas, flows north and west towards Dutchman Creek. The eastern portion of the Town drains south and east towards Catoctin Creek. The northern section of Town, north of Route 855 drains north towards Quarter Branch Creek. The water from these three streams eventually flows north to the Potomac River. (See Map 1: Environmental Resources and Conditions)

The Federal Emergency Management Agency (FEMA) completed an updated County floodplain map, July 5, 2001, which identifies a 100-year flood plain along Dutchman Creek within the Town limits, along the western corporate limits. This area, which encompasses approximately 16 acres within the Town, drains approximately 600 acres as the watercourse exits the Town limits to the north. This floodplain is categorized as a Special Flood Hazard Area, which can be expected to be inundated by the 100-year flood. FEMA recommends that property owners in this type of area purchase federal flood insurance for structures within the floodplain that might be damaged by a flood. A smaller flood hazard area is also identified within the Town limits on a tributary to Dutchman Creek running along West Broadway. Much of the floodplain in this area has been modified by engineering required for the development of the Town Center project.

The National Flood Insurance Program was established in 1968 to enable property owners in participating communities to purchase insurance as protection against flood losses in exchange for State and local floodplain management regulations that reduce future flooding. The Town has not taken advantage of this opportunity to apply for participation in the program.

Wetlands have been identified along Dutchman Creek tributaries on a portion of the Town Center project. The project has treated these areas according to the requirements of the US Army Corps of Engineers, which is the agency responsible for protecting wetlands throughout the country.

NATURAL VEGETATION

Natural trees, shrubs, and ground cover are considered a significant environmental feature as they serve a variety of ecological functions including retaining rainwater, controlling erosion, cleansing the air of pollutants, offering visual relief from development, and providing wildlife habitat. (See Map 1: Environmental Resources and Conditions)

There is scattered tree cover throughout the Town. There is significant tree cover in and near the stream valley along the southwest boundary of the Town north of Heritage Highlands, the retirement community. There is substantial tree cover along

streets and scattered on various properties in the old part of Town. Newer subdivisions have a limited amount of tree cover but much of the most recent residential development has trees that were planted as part of the development. The Town Center project has little tree save area but trees have and will be planted along all the streets.

WATER SUPPLY PROTECTION

In an effort to further protect the Town's ground water supply, Lovettsville completed a wellhead protection plan in 2005. This plan identified the Town's geographical features and public water production resources in an effort to determine potential threats to the public water supply. This plan provided a recommended list of actions to protect the Town's source water. In 2007 and 2008 the Town received grant funding provided by the Virginia Department of Environmental Quality to identify and abandon existing non-active wells that could pose a threat to the Town's water supply. Thirteen wells were professionally sealed during this process. In 2009 the Town was awarded additional grant funds to develop zoning and subdivision regulations that would protect wells in the Town.

ISSUES AND FUTURE NEEDS

TREE COVER

There are relatively few trees in the community, so there is a need to preserve as many as possible. Most of the developable land in the town does not have major tree stands so tree preservation on land as yet undeveloped will not provide much tree save. Many of the existing trees that make the old downtown attractive are located along the streets, such as Pennsylvania Avenue, S. Loudoun Street, S. Locust Street, parts of Church Street, and Quarter Branch Road on the north edge of town. The danger to existing trees along these roads is any widening of the streets that may be considered. The need to preserve these trees has to be weighed carefully with the need to improve transportation. New development should provide substantial tree planting, especially along streets and within parking lots, to provide shade and visual amenity. Given the lack of trees on developable land more consideration should be given to requiring more trees in new development,

FLOOD PLAIN AND DEVELOPMENT

Some Town residents could possibly take advantage of the FEMA National Flood Insurance Program but the Town would have to develop a flood management plan. The Town has updated its Flood Plain Ordinance in 2006 and it may provide support for an application to the National Flood Insurance Program. Article 8 of the Zoning Ordinance, Flood Plan Ordinance, requires various types of protection of the 100-year flood plain in the development process. An evaluation of the benefit of participating in the program is needed to see if there are enough landowners that would be affected.

DRAINAGE

The smaller existing drainage ways (sometimes known as swales) within the Town are an environmental resource that needs protection as well as a cultural feature reflecting the Town's rural character. As development occurs, drainage patterns can be altered and the amount of impervious area increases thus increasing storm water runoff. The drainage ways are then subject to increased flooding, erosion, and pollution. The need is to maintain runoff controls on development so that a maximum amount of runoff is absorbed on site or directed to off-site storm drains and facilities that can carry the excess storm flow. Drainage and runoff controls are contained in Town and County development regulations. Development also needs to increase the use of low impact design methods for water volume and quality control. These methods need to be promoted where they are not required because it is a means to help arrest the flashing of stormwater, which can erode stream banks. Low impact design methods can help water absorb more directly into the groundwater supply and protect the watercourse system.

WETLANDS

Wetlands perform a water filtration function that improves water quality and provide valuable habitat for wildlife. Wetlands can be preserved as development occurs if they are carefully incorporated into the development as natural areas. The Town, the County, and the Army Corps of Engineers require that development proposals involving wetlands demonstrate compliance with federal regulations.

WATER QUALITY

There is a never-ending need to protect both surface and ground water quality. Lovettsville is dependent on groundwater for the municipal water supply. Many pollutants such as fertilizers, motor oil, and road salts can affect water quality. To protect its water resources, the Town seeks to protect surface and ground water from the effects of point sources of pollution, such as leaking underground storage tanks and above ground chemical spills, and non-point sources such as pesticides, fertilizers, and other chemicals. But the Town has to compensate in terms of increased water treatment or spillage costs when residents use chemicals too extensively or do not dispose of chemicals and hazardous waste materials properly.

The Town can benefit from the information and planning involved in Loudoun County's on-going effort to protect water resources through its stakeholder committee even though the Town has its own water supply. The County effort is facilitated by the Loudoun County Department of Building and Development and is designed to help the County create a comprehensive water source management and protection strategy.

GOAL

To preserve, protect, enhance, supplement, or replace natural environmental resources to the greatest extent possible in an effort to provide amenity for living, working, and recreation and to minimize destruction of the local natural ecosystems.

POLICIES

1. Maximize the preservation of undisturbed open space, both with trees and without trees, for passive recreational benefit, ecological protection, and visual amenity.
2. Maximize preservation of existing healthy trees.
3. Promote the use of indigenous species of vegetation for all private and public development.
4. Encourage the inclusion of internal open space in new development.
5. Protect the water source in cooperation with Countywide efforts to manage and protect water sources.
6. Protect surface and ground water quality from stormwater runoff pollution and hazardous waste.
7. Minimize impact of development on stream valleys.
8. Minimize noise and the intrusion of glare into residential living environments from artificial light sources.
9. Protect viewsheds relating to natural scenery and other vistas important to the history and culture of the Town.
10. Maximize the use of natural drainage ways for stormwater management and non-point source pollution control.
11. Retain wetlands in their natural state, according to federal standards required by the US Army Corps of Engineers. (Ponds are not wetlands).
12. Development and redevelopment (including “by-right” development) should use stormwater runoff and drainage engineering techniques, such as Low Impact Design (LID) and Best Management Practices (BMPs).
13. Preserve streams in their natural stream condition to the greatest extent possible.
14. Provide clear and accessible information about wellhead protection goals, the delineation of wellhead protection areas, and the need to establish wellhead protection performance standards in the Subdivision and Zoning Ordinance.

15. Continue implementing the Town's Wellhead Protection Plan (adopted in 2005) to further protect the Town's water supply and promote public awareness and participation in public efforts aimed to provide wellhead protection.
16. Continue working cooperatively with Loudoun County toward implementing similar standards for portions of wellhead protection areas extending beyond Town limits.
17. Participate in the County stakeholder committee that is established to create a Countywide water source management and protection plan for both surface and groundwater.
18. Support citizen volunteer efforts to help keep streams free of debris and litter.
19. Develop an environmental review checklist as part of the development evaluation process to identify potential environmental impacts of development proposals. Request the assistance of Loudoun County in reviewing environmental aspects of development.
20. Encourage the use of energy-efficient technology for buildings and in the development process, generally.
21. Promote conservation of environmental resources awareness through educational outreach on issues such as low consumption light fixtures, rain barrels, rain gardens, recycling, and composting.
22. Review and revise the Zoning and Subdivision Ordinances to incorporate the highest level of environmental protection through the development process.
23. Evaluate the benefit of providing a cluster option or requirement to the Zoning and Subdivision Ordinances to promote the protection of open space and other environmental resources within individual developments. This could be designed to incorporate open space that is not otherwise required to be preserved as floodplain or wetlands.
24. ~~Undertake a review of the benefits of applying for eligibility in the National Flood Insurance Program application process so the Town may consider participating in the program, which benefits individual land owners who may have property damaged or destroyed by flooding~~ Encourage and facilitate the installation of technologies and equipment aimed at improving energy efficiency and harnessing clean, renewable energy sources in homes and businesses located in the Town, including (but not limited to) solar, wind and geothermal.