Town of Belvidere, Vermont
Town Plan 2015-2020

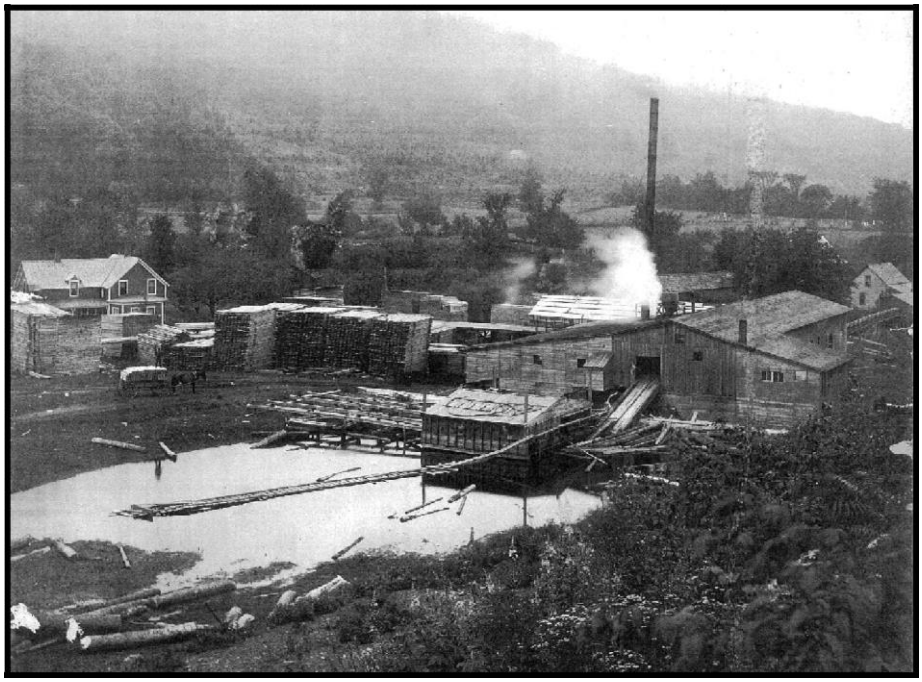


Photo of the Parker/Billings Lumber Mill
located on the present day Loucks property in Belvidere Center.

Adopted by the Belvidere Selectboard on DATE
Regionally Approved by Lamoille County Planning Commission on DATE
Plan Expires – DATE plus five years

Prepared by the
Belvidere Planning Commission
as authorized in Section 4381 of Chapter 117 of Title 24, Vermont Statutes Annotated and includes sections specified in Section 4382 of that law.

with assistance from
Lamoille County Planning Commission

control, education, recreation, and wildlife habitat. The wetland complex is considered habitat for the state's endangered common loon (Gavia immer), the endangered Southern Twayblade orchid (Listeria autralis), and also was rated as a high quality northern level bog. The size of the wetland complex and the undisturbed area surrounding the complex makes this area suitable for wildlife species that need large ranges such as black bear, bobcat and moose.

According to the Draft Lamoille River Basin Water Quality Management Plan (2008), Belvidere Bog could be at risk of being impacted by runoff from agricultural, silvicultural, and residential development runoff. To protect Belvidere Bog from these impacts, the Town can encourage purchase by the Agency of Natural Resources of the bog and surrounding buffer area. Currently only a portion of the wetland complex is owned publicly. The second set of protection methods is to petition the state to have Belvidere Bog declared a Class I wetland and request its inclusion on the Fragile Areas Registry. This will provide greater protection from encroachment and identify the area as being significant.

Flood Resiliency

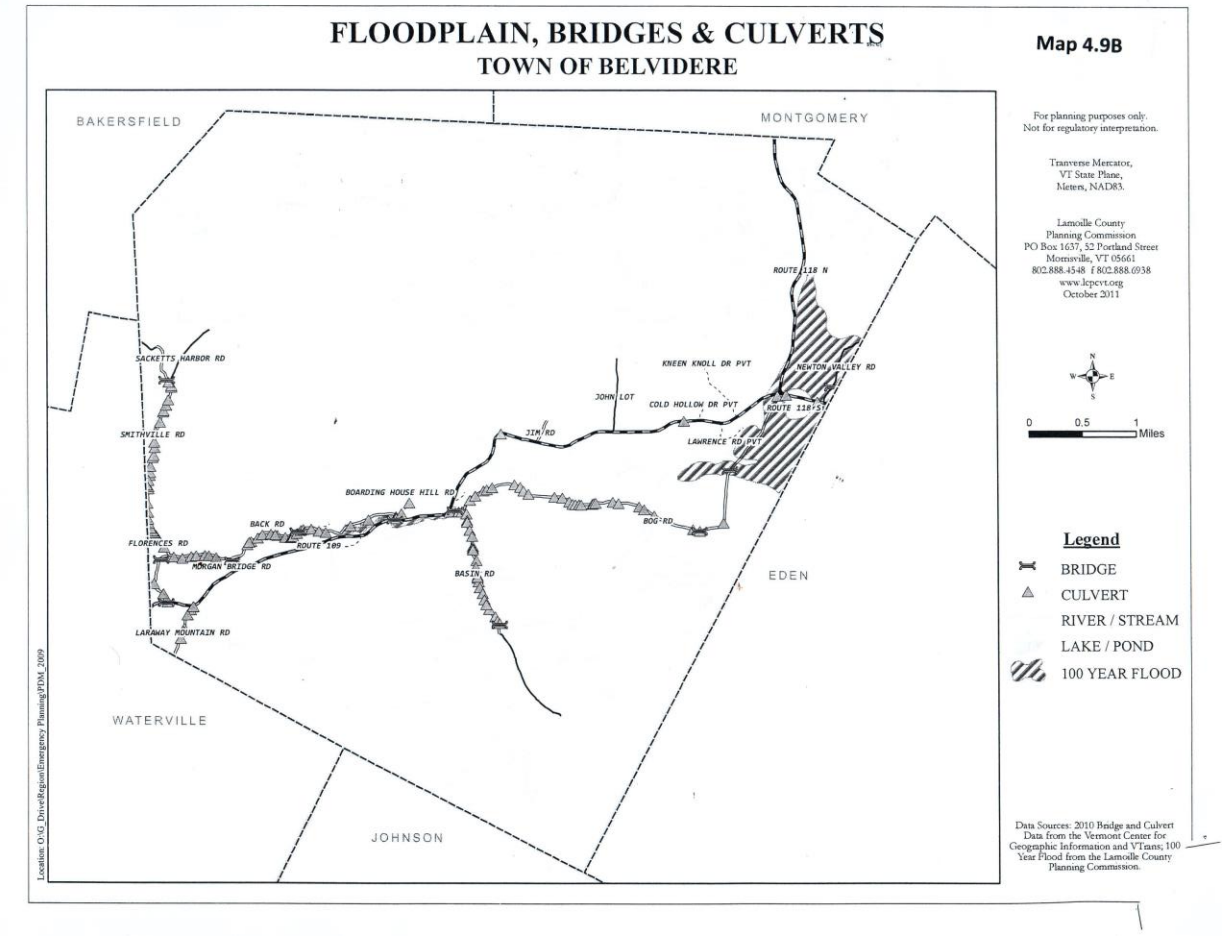
Based on the results of local community interviews, a Hazard Questionnaire conducted during the 2005 planning development process, the history of disasters in Town, and the Belvidere HI/RA, the following hazards were identified as significant threats to the community.

- Flood inundation and flash flooding
- Winter storm r ice storm
- Windstorms

Based on the Belvidere HI/RA, the community vulnerability to a flood is high based on the frequent possibility of an incident with the potential for catastrophic impact.

Fourteen vulnerable structures are located in the 100-year floodplain. The estimated loss for damage to these properties based on a median house value of $144,100 (2005-2009 American Community Survey) is over 2 million dollars.

The Floodplain, Bridge and Culvert map (Map 4.9B) identifies the areas of Town that are within the 100-year floodplain. Generally these include lands adjacent to Route 118 and 109 in the northeast area of Town and lands along the North Branch of the Lamoille River parallel to Route 109 and the Town center. The Town of Belvidere is unique in that the transportation infrastructure leading into and out of the Town is essential in disaster and emergency response. During the 1995 flood, the Town was essential and island as all routes into Belvidere were under water. Route 109 floods in Waterville and the Hogback Road from Johnson is prone to flooding as well. The only other route into Belvidere would be from the Plot Road from Johnson on a Class 3 dirt road, causing travel for emergency vehicles during winter and mud season problematic.

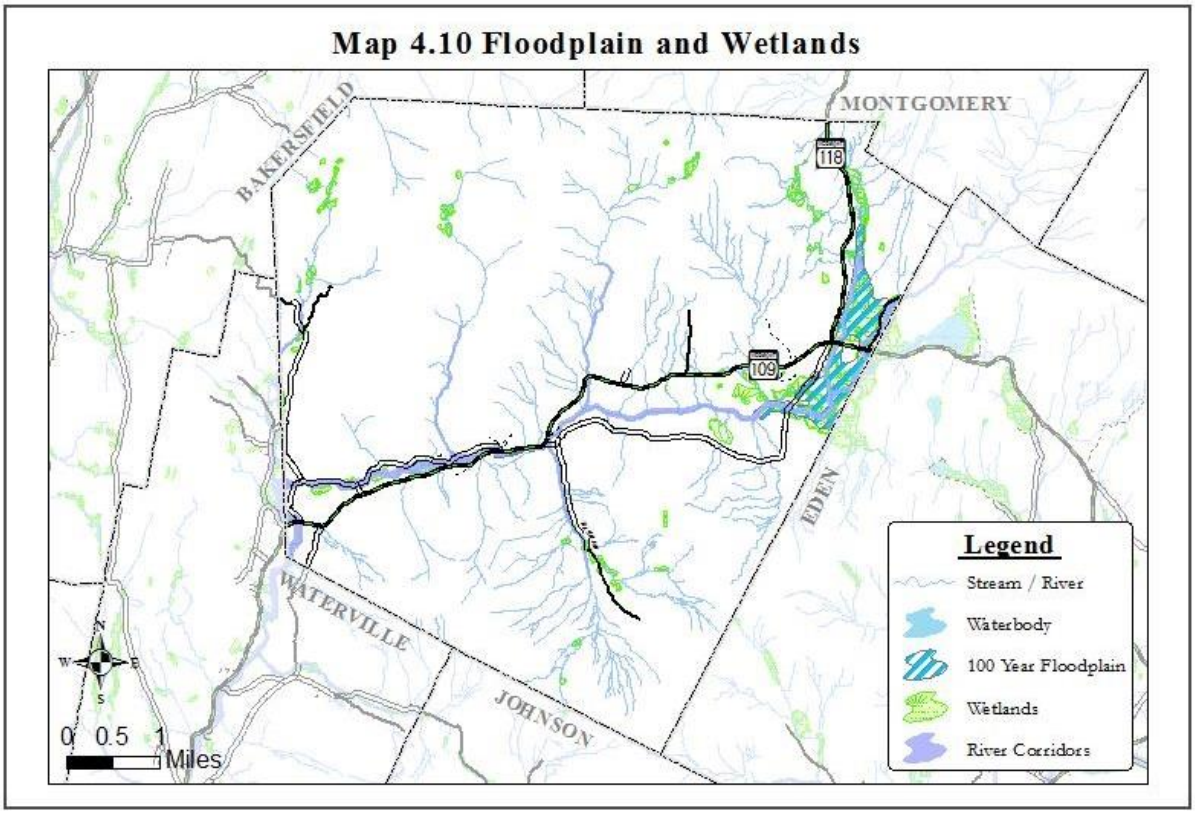


During the May 2012 flood Smithville Road was damaged and Back Road (Town Highway 3) between the two covered bridges is prone to flooding as well.

In general, Belvidere's flood susceptibility is highly localized from storm event to storm event with no significant chronically impacted areas. Occasionally, houses within the Village see a small amount of water in the basements. As mitigation Acton, the Town replaced culverts and performed ditching on Basin Road, replaced Culverts on Laraway Road, and replaced culverts on Highway 3.

Flood Hazard Areas.

Floodplains are land areas adjacent to water bodies, primarily rivers, which are subject to seasonal or periodic flooding. These areas store runoff during heavy rains and spring thaws, thus slowing the velocity of water flowing downstream. Floodplains are considered unsuitable for development for several reasons: potential danger to life and property, loss of flood water storage, effects on channel capacity and downstream communities, and improper functioning of subsurface sewage disposal systems when there are high water tables. Construction of impervious surfaces, such as driveways and homes, hamper the ability of floodplains to absorb water, and to assimilate nutrients from residential and agricultural runoff. More suitable uses,



such as recreation and agriculture, will ensure a higher level of riverine health, and will prevent property and environmental damages associated with flooding.

Other flood hazards result from flash flood situations in particular along steeper stream sections. Clearing of vegetation cover and constructing impervious surfaces, like roofs and parking lots, increases storm runoff particularly in higher elevations. To prevent flash flood situations, developments cannot increase the volume or velocity of streams. Channelizing and straightening streams increases stream velocity and increases the risk of flash floods. Many times, roads and driveways up steep hills create perfect conditions for flash floods because they are designed to rapidly drain water from the surface and send it downhill in a straight steep ditch.

Flood Protection Programs

Belvidere participates in the National Flood Insurance Program (NFIP). Communities are required by the Federal Emergency Management Agency (FEMA) to adopt flood hazard regulations under the NFIP, which is structured to minimize risk to life and property. Regulations are required for property owners to become eligible for home mortgage loans and flood insurance. Belvidere adopted a stand-alone Flood Hazard Area Regulation Ordinance in 2000, which places regulations on areas of Special Flood Hazard as identified on the Federal Emergency Management Association's (FEMA) National Flood Insurance Maps. The areas designated as Zone A in the Special Flood Hazard Areas are those that have a 1 percent chance

of flooding in any given year (the 100-year floodplain, Map 4.10). FEMA's Flood Insurance Rate Maps can be found in the Town Clerk's office. Unfortunately, these maps have not been updated since 1980 and may no longer provide the most accurate information. The 100 year floodplain (for planning purposes only), is shown in Map 4.10.

The Better Backroads Program from the state has road standards to avoid erosion and flash floods resulting from road design and construction. In 2002, the Selectboard improved Boarding Hill Road with rock lined ditches and new culverts using funds supplied by the Better Backroads Program. This road had been experiencing routine washouts during heavy storm events. It is hoped that with these improvements, costs will be saved on repairs and water quality of the North Branch will be maintained.

Belvidere has also adopted driveway standards to protect against washouts. The Selectboard should consider adopting state road standards so that any new roads, public or private, will be constructed to avoid flooding.

Groundwater Resources.

Groundwater is the source for over 90% of the drinking water for rural communities in Vermont. It is replenished through rain and surface waters, which percolate through the soil. Any activity that introduces contaminants directly into the ground (such as underground storage tanks, septic disposal fields, and agricultural activities) can affect groundwater quality. Since surface waters may also travel underground, surface water quality may affect groundwater quality as well.

Since all water in Belvidere is provided through private wells and springs, it is important to protect the quality of well water through appropriate separation between wellheads and septic disposal fields and other hazards. All wells and springs are required to meet Vermont's Water Supply Rules. According the Vermont Geological Survey, the lands along Route 109 between Rattling Brook and Belvidere Corners have soil and geological characteristics that provide the best potential for groundwater.

The Agency of Natural Resources is responsible for the Vermont Source Protection Program to protect Vermont's public water sources. A public water supply is defined as any water supply system with fifteen or more connections or that serves at least 25 individuals daily at least 60 days per year. Source Protection Areas are defined around public water sources where contaminants are likely to move. While there are many private wells and springs, there are currently no public water source protection areas within Belvidere.

Without detailed information about the direction of groundwater flow in Belvidere and surrounding communities, it is vital that all groundwater recharge areas town-wide be protected from activities that could contaminate the drinking water supply of residences.

Surface Water Class.

Vermont's waters are classified according to a system that establishes goals to be attained or minimum standards to maintain, depending upon the present quality of a particular section of water. Assessments done during the Lamoille County Stream Stability Assessment (LCPC 2000) found that the North Branch is in excellent condition from its headwaters to Belvidere and in good condition through Belvidere. The section of the North Branch has very stable and in near-reference condition. The North Branch exhibits excellent riparian corridor quality, access to its floodplain, and little channel and bank erosion. Fish and macro invertebrate sampling was done on the North Branch in Belvidere during September 1992. A memo on the fish sample results stated: "the water appears to be a tannic color with low to moderate alkalinity. The physical habitat of the section was characterized by minimal sedimentation and a boulder-cobble-course gravel substrate. The population integrity was rated excellent due to the dominance of benthic insectivores combined with a strong presence of three trout species. Four of seven species collected were considered intolerant to general pollution effects... The Vermont Index of Biological Integrity rated excellent (43 out of a possible 45)." The macro-invertebrate community also was rated to be in excellent condition (Lamoille River Watershed Assessment Report, 2001).

Until recently, the Vermont Surface Water Management designation included two classes: A and B. Now, water is classified into five groups: class A(1), A(2), B(1), B(2), and B(3) depending on their management plan. Class A waters were divided into two subclasses: A(1) and A(2). Presently in the state, Vermont Statute classifies waters above 2,500 feet in elevation as A (1). The management objective for A(1) waters is to maintain their natural condition. Waters used as public water supplies are classified A(2). All remaining waters are class B(1), B(2), and B(3). The typing system (as it is termed) for class B waters is, for the most part, maintenance of acceptable conditions of water quality criteria such as aquatic biota, aquatic habitat, and recreational opportunities. A simplification of the B(1), B(2), and B(3) designations would be to say that the spectrum from B(3) to B(1) is described as "good," "better," and "best" aquatic conditions. All class B waters must still support the designated uses described in the Vermont Water Quality Standards for Class B waters, which includes suitability for boating, swimming, and drinking with treatment. Classification of Belvidere's Class B waters has been postponed.

There was an effort to classify the North Branch of the Lamoille River as a Class A1 water in the early to mid-90s. Despite a number of letters from residents, private consultants, and state officials supporting reclassification, the process was never completed and the petition never filed with the Board.

Basin Planning and Geomorphic Assessments.

In 2008, the Vermont Agency of Natural Resources completed a draft watershed plan for the Lamoille River for the purpose of improving water quality and aquatic habitat in the watershed.

The draft Lamoille River Basin Water Quality Management Plan identifies many issues that need to be addressed to improve water quality in the Lamoille River Basin. The Plan does not identify any specific water quality projects in Belvidere because the North Branch and its tributaries generally have very good water quality. It is important for the Town to manage riparian habitats and runoff to maintain the water quality for future generations.

An assessment of the fluvial geomorphology, or how flowing waters shape the land, while eroding, transporting, and depositing sediment, was done during the Lamoille County Stream Stability Assessment (LCPC 2000). That study found that the North Branch is in excellent condition from its headwaters to Belvidere and in good condition through Belvidere. The section of the North Branch is very stable and in near-reference condition. The North Branch exhibits excellent riparian corridor quality, access to its floodplain, and little channel and bank erosion.

While the shoreline of the North Branch is in excellent condition there are no regulations in effect to prevent encroachment or other threats to the health of the river. Enforcement of the on-site septic and floodplain regulations is important to protecting water quality but additional shoreline regulations would better protect this resource. The VT Agency of Natural Resources is using the results of geomorphic assessment studies to map fluvial erosion hazard (FEH) corridors. Limiting development within these areas will minimize risk and provide streams the opportunity to reestablish a stable, equilibrium condition. Maintaining vegetated buffers around waterways also helps to minimize risk to property and provides water quality benefits. These buffers can be incorporated into local ordinances to ensure that future development does not further encroach on the Town's waterways. FEH maps and other resources provide a way to identify the appropriate buffer width needed to protect a river corridor.

Stormwater runoff from impervious surfaces, such as roads, roofs, and parking lots, and agricultural runoff are the two largest contributors to water pollution in the Lamoille Basin. The Department of Agriculture has produced 'accepted' and 'best' management practices for farms and silvicultural operations (AAPs and BMPs are also discussed above in soil resources). The primary concern with agricultural runoff is nutrient loading into the streams causing algae and biological pollution downstream. Where farms are believed to be having an impact on water quality, BMPs and other measures can be used to help prevent the runoff from entering the streams. Belvidere has no dairy operations and the existing farms are generally small. Complying with AMPs and BMPs should, therefore, not be difficult. The Planning Commission will assist landowners who are looking to adopt management practices that prevent agricultural runoff with information and direction to USDA in Morrisville. There are many other organizations in Lamoille County also willing to contribute supplies and expertise to resolve water quality issues if the interest exists.

Runoff from logging operations will have impacts on water quality if erosion increases sediment runoff into streams and wetlands. Use of AMPs and BMPs mitigate these effects. Most loggers

are aware of these requirements and comply with them. Anyone looking for information or assistance in complying with these standards should contact the County Forester for information.

New changes in state regulation are requiring tighter regulation of this issue. Using some basic development standards should prevent this from becoming an issue. Developers who 1) setback projects at least 50 feet from streams and 2) avoid channelizing runoff will be helping to ensure stormwater runoff does not enter waterways. These rules can be required through zoning bylaws but educating landowners can work effectively as well. Addressing the stormwater issue now is far easier than trying to go back and retrofit old developments as is being proposed in other communities.

Fragile and Natural Areas and Wildlife Resources.

Fragile & Natural Areas.

In 1976, the State of Vermont created an inventory of significant natural areas throughout the state. While natural area designation does not provide a site with any additional protection from development, it does act as a tool for increasing local knowledge of Vermont's important natural heritage. Only three sites in Belvidere were placed on the Natural Areas Inventory and none of these were placed on the Fragile Areas Registry. The sites placed on the Natural Areas Registry include:

Belvidere Bog

As discussed above in water resources, Belvidere Bog is approximately 375 acres of wetlands including seven different communities. It contains endangered species and habitats and, while not on the Fragile Areas Registry, is likely a candidate for inclusion. The registry would require any state action or state owned lands to meet a water and land use plan. Private lands would not be required to meet standards although recommendations are made.

Deer Yards

The deer yards in Belvidere were placed on the Natural Area Inventory due to their crucial importance to the survival of deer in town in the winter. They are discussed further below.

Kelly River Falls

Kelly River Falls is a small set of cascades adjacent to Belvidere Junction just north of Route 109. As discussed in the water resources section, the falls have local importance. It is unlikely the area would qualify for the Fragile Area Registry.

Critical Wildlife Habitat in Belvidere.

Vermont has identified several unique natural habitats in Belvidere, including deer habitat, bear habitat, locations of rare, threatened, and endangered species, and fisheries (Map 4.11).

Deer Wintering Areas

Vermont's deer require specific winter habitat in order to survive the seasonally severe weather and heavy snowfall. Winter deer yards provide two features important to whitetail deer survival: shelter and food. Statewide, between 6% and 8% of Vermont's forestland is suitable for winter deer range under average winter conditions. Wintering areas do not change significantly between years and can be used by generations of deer over several decades if appropriate habitat conditions are maintained.

Bear Habitat

Bears require large areas of uninterrupted forestland for breeding. They also require travel corridors to move from one part of their habitat to another, especially as forested areas may be subdivided and developed. The Vermont Department of Fish and Wildlife prepared a map of black bear habitat in 1989 to indicate general areas of bear habitat. According to this map, all of Belvidere has been identified as bear habitat.

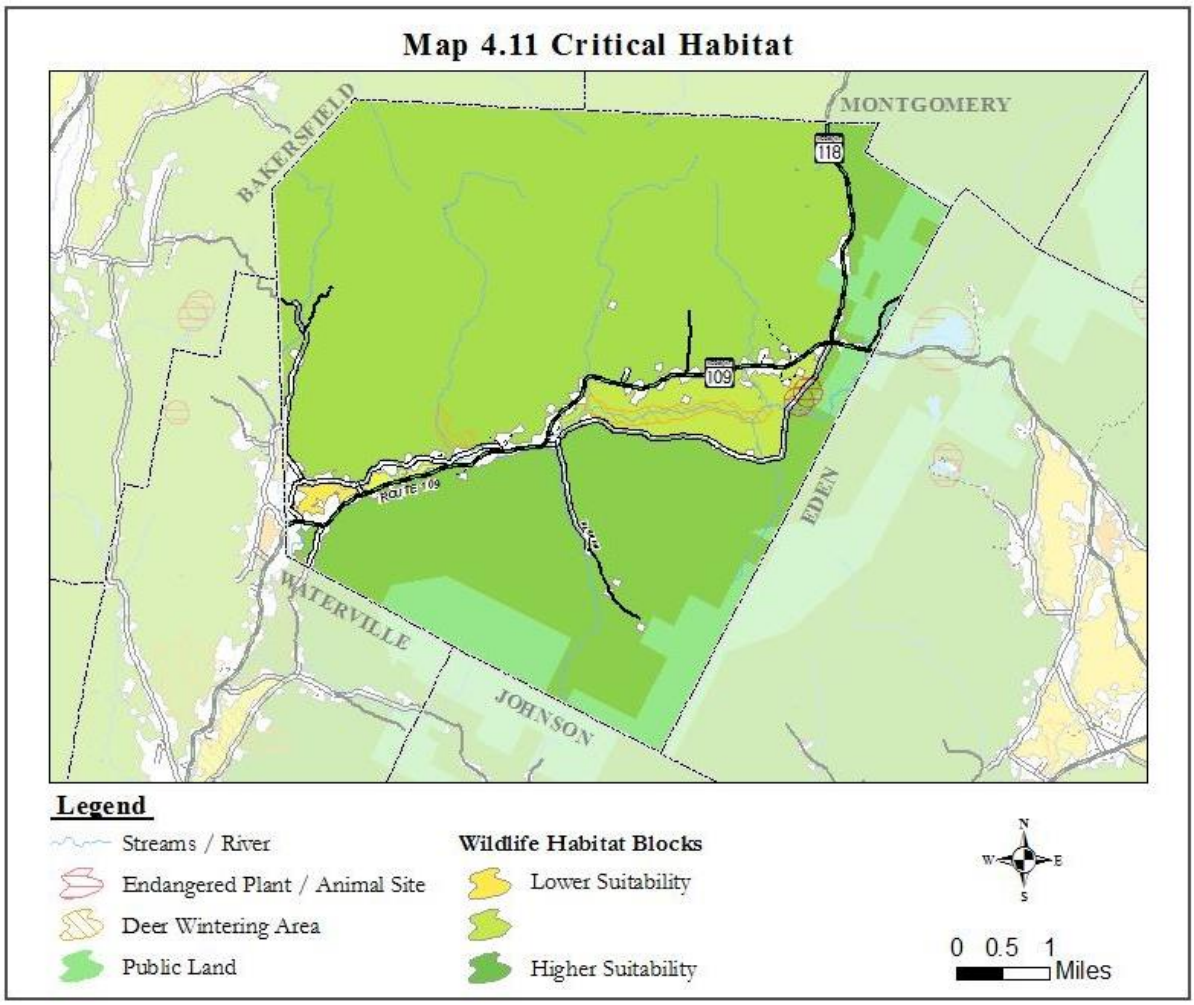
Rare & Endangered Species Habitat

Rare plants and animals are important for a variety of reasons. Some are indicators of unusual habitats or of colder (or warmer) climates in Vermont's distant past. Some serve as indicators of environmental quality. Some species may provide compounds for medicines or agricultural or industrial products. Finally, some are attractive and add beauty to the natural landscape. Many uncommon species will disappear if not recognized and given some form of local protection.

All of Belvidere's known rare and endangered species are associated with Belvidere Bog. Protection of this area is vital to these species and the Planning Commission should coordinate with the state to ensure the long-term preservation of the site.

Fisheries

According to the Draft Lamoille Basin Water Quality Management Plan (2008) Vermont Rivers Study, the North Branch has a naturally sustaining population of brown and brook trout along its entire length. State water quality records show that Belvidere Bog wetland complex has been rated highly significant for cold-water fishery habitat. Quality fisheries are important for recreation and for their role as a part of a healthy riparian environment.



Conclusions.

Based on the findings of this chapter, the land use plan should consider two districts to protect the natural resources of Belvidere - a Natural Areas District and a Forest District. First, a Natural Areas District should be established that encompasses areas that are environmentally sensitive. Two areas stand out for consideration. Belvidere Bog is clearly a local treasure of statewide importance. Establishing a district to protect this area would be important to the long-term management of the area. Second are the high elevation areas of Cold Hollow and Laraway Mountains. Both of these mountaintops are over 2,500 feet, have shallow soils, are generally greater than 30 percent slope, and have erodible soils. While forested, these areas may not be appropriate for timber management due to the high risk of soil erosion. The land use plan should address mechanisms that would protect these areas without causing an undue burden on property owners.

The Forest District is needed to protect the prime forestlands that exist in town today from fragmentation and development. These areas are the best land for timber management which have forest soils, shallow slopes, and presently in large lots. While areas under 1,500-foot elevation may be appropriate for development, those above 1,500 feet should be conserved as working forestland (unless limited by the environmental concerns mentioned above). Again, any

potential loss of development rights by property owners will need to be addressed in the implementation of the plan.

Within the Development District, regulation of uses adjacent to streams and rivers would go a long way to protecting water quality, wildlife habitat, and the health and safety of the public.

Goals, Policies, and Recommendations.

This Town Plan has three goals concerning natural resources - to regulate growth so that:

- Areas of natural beauty and wildlife habitat are not adversely affected but rather enhanced, encouraged, and maintained.
- Timberland management is economically feasible in the wooded area.
- Agricultural use of land is encouraged and protected.

Natural Resource Goals:

Discussion: In order to achieve these goals, Belvidere needs to identify and protect the natural resources that make the foundation of the working landscape. Belvidere today has an abundance of resources from clean water to healthy forestland to natural areas. Belvidere has adopted three goals in hopes that future generations not only have the same opportunities we have but are given a stronger healthy environment in which to work, live, and play.

- To use Belvidere's earth resources conservatively for the benefit of existing and future generations and to conserve and enhance the agricultural and forestry soils in town today.
- For Belvidere's water resources, including its ponds, streams, rivers, wetlands, groundwater, and associated habitats to be preserved and, where degraded, improved in order to ensure water quality for drinking, recreation, and the environment.
- To protect and maintain in a healthy condition natural areas and areas with significant ecological value including wetlands, uplands, and critical plant and animal habitats.

Policies:

Discussion: The Town has developed the following policies in order to guide development in such a way as to protect the natural resources and achieve the goals mentioned above. Until other land use regulations are adopted, the town will be limited to commenting on Act 250 proceedings therefore any application should be reviewed in light of these policies. Many of the policies are not burdensome and residents are asked to consider them in planning projects. If issues such as water quality, gravel operations that become a nuisance, or development that threatens our natural areas come to light, the planning commission should consider proposing regulations that would oversee projects in these areas.

Land Resources.

- Earth resources (primarily gravel) should be reasonably developed if deemed to be in the public interest.
- Development that is proposed near or over important earth resources should account for the potential loss of that resource.
- Extraction and related processing operations will be permitted only when it has been demonstrated that there will be no undue adverse impacts on the town or its residents. Potential conflicts between current land use and proposed extraction operations will be minimized. Strict standards for the operation, maintenance, and restoration of extraction sites may be established as appropriate based on the unique conditions of the area affected. The full restoration of extraction sites will be ensured through the submission of site restoration plans.
- All development within the Town must be pursued with strict regard to the capability of the soils to support it.
- Development on slopes greater than 30 percent are prohibited.
- Further fragmentation of productive agricultural and forestland is to be avoided; continued access to productive forest and farmland will be ensured.
- Development within forest areas will be sited to avoid taking forest soils out of
- production.

Water Resources.

- Development near rivers and streams should be located in such a way as to minimize the number of stream crossings.
- A natural vegetative buffer 25 feet wide is required for all streams and 50 feet for the North Branch.
- All wetlands are required to have a 50-foot buffer. No filling or draining of wetlands is permitted. Belvidere Bog should have a 100-foot vegetative buffer.
- No structures should be constructed within a flood hazard area. Filling of the flood hazard area or obstructing the flow of floodwaters is also prohibited.
- Agriculture, recreation fields, parks, and open space are all appropriate uses of flood hazard area.
- No form of land waste disposal or storage of possible contaminants should be permitted in high water table and ground water recharge areas.
- All construction where soil is to be disturbed should provide adequate erosion control so that no soil moves off site or into surface waters or wetlands.
- Agriculture and forestry must abide by AAPs and AMPs. Where an activity may have a negative impact on water quality, BMPs are recommended.

Flood Resiliency

- Development near rivers and streams should be located in such a way as to minimize the number of stream crossings.
- A natural vegetative buffer 25 feet wide is required for all streams and 50 feet for the North Branch.
- All wetlands are required to have a 50-foot buffer. No filling or draining of wetlands is permitted. Belvidere Bog should have a 100-foot vegetative buffer.
- No structures should be constructed within a flood hazard area. Filling of the flood hazard area or obstructing the flow of floodwaters is also prohibited.
- Belvidere will review the sensitivity assessment for the North Brach of the Lamoille River when the Agency of Natural Resources provides a report.

Natural & Fragile Areas.

- Development proximate to Kelly River Falls and Belvidere Bog will take place in such a way as to preserve their value for education, science, research, aesthetics, and recreation.
- Deer wintering areas must be protected from development and other uses that threaten the ability of the habitat to support the species. Commercial, residential, and industrial development shall not occur in these areas. Development will be permitted adjacent to deer wintering areas only if it is demonstrated, in consultation with the Department of Fish and Wildlife, that the integrity of the area for deer habitat will be preserved. Rare, threatened and endangered plants and animals and their habitats will be protected and preserved through appropriate conservation techniques. Where appropriate, a buffer strip should be designed and maintained to ensure protection.

Recommendations:

Land Resources.

- The Town should consider purchasing the rights to a gravel pit or to purchase a property with sufficient gravel resources to provide for the town's needs in the future.
- Municipal gravel pits in Belvidere should develop plans to address environmental impacts as well as future restoration of the sites.
- Farm and forestland owners are encouraged to participate in the UVA program.
- The Planning Commission should assist landowners interested in Accepted and Best Management Practices with information and resources.
- The Town should support the efforts of organizations in the purchase of development rights and other conservation methods provided the land protected meets the objectives of this plan. Where possible, the planning commission should review proposed purchases and comment based on the goals of this plan.

Water Resources.

- The Planning Commission should consider acquiring funds to have a wetland inventory of the town conducted.
- The Town should consider purchasing properties or development rights of properties within the floodplain to permanently prevent development in those areas.
- The Planning Commission should consider creating a plan for the flood hazard areas to address recreational opportunities, flood hazard protection, and the potential for implementation of water quality measures.

Natural & Fragile Areas.

- Belvidere supports the acquisition of lands within and around the Belvidere Bog by local or state conservation agencies.
- The Town should petition the state to include Belvidere Bog on the Fragile Areas Registry as well as a Class I wetland so that the area is given the greatest amount of protection from any potential encroachment.
- As a result of living in Belvidere, many landowners have an ethic to be good stewards of the land. The Planning Commission recognizes that more can be accomplished by educating, advising, and assisting landowners with their natural and wildlife resource concerns than could be accomplished through regulations. The Planning Commission will support and provide guidance to any property owner with questions or concerns about their natural resources.