LAND RESOURCES

Geography

The Town of Hardwick is in north-central Vermont at the western edge of Caledonia County and is bordered by three counties: Orleans (north), Lamoille (west) and Washington (south). Hardwick comprises approximately 24,890 acres (38.6 square miles) of sloping farmland and forest, which extends up into hills and low mountains, all drained by the narrow valleys of the Lamoille River and its tributaries.

Topography

Elevation

Elevations in Hardwick range from over 1,800 feet above sea level in the northwest corner of town to a low 810 feet in the west where the Lamoille River crosses into the Town of Wolcott. Elevation is generally not a limitation to development in Hardwick as only Buffalo Mountain and some high slopes in the northwest corner of town are above 1,500 feet.

Steep slopes

Slopes are considered "steep slopes" when they reach or exceed a 25% grade over a distance of 50 feet. Some soil types, particularly clay, are unstable at slopes as shallow as 5-8%, but based on Hardwick's soil types, this is not usually an issue. The sand, gravel, and boulder soils found in town are generally stable to at least 30% provided that they have some vegetation cover (i.e. grass or trees). Steep slopes present problems when they are cleared for development or timber extraction because soil erosion is increased when vegetation is removed. Hardwick has many areas that are considered to have steep slopes (see Natural Resources Constraints Map). The map also identifies land with a slope over 20%. These areas have development limitations due to conventional wastewater rules established by the State of Vermont which prohibit wastewater systems on slopes above 20%.

Geology

Bedrock

The shallow subsurface of Hardwick contains no major faults, but it does contain three major geologic units comprised of metamorphic rocks. Rocks along and east of Route 14 belong to the "limey" Northfield Formation, those further east to the Waits River Formation, and those to the west to the Moretown Formation. The bedrock materials under Hardwick contain few metallic minerals. As is known from the history of our granite industry, there is bedrock with quality dimension stone attributes around Buffalo Mountain and areas to the south.

Surface materials

Away from the river valleys the surface materials in Hardwick are primarily glacial till. In wet areas, the surface materials will be peat and muck. The valley bottoms and floodplains are dominated by sand and gravel river deposits and, because highways usually follow rivers, these

are best developed along Routes 14, 15, and 16. Additionally, there are glacial kames (steep-sided mounds of sand and gravel deposited by a melting ice sheet) along Route 16 near East Hardwick and along the north side of Route 15 towards Wolcott.

Hardwick is rich in both sand and gravel deposits which are valuable non-renewable resources. Sand and gravel are needed for road repair and construction. These deposits are also important areas for recharging groundwater supplies.

Soils

The type of soil in an area can determine both opportunities and limitations to construction and agriculture. Soils that pose limits to development are often characterized by excessive slope, shallow depth to bedrock, high seasonal water, instability or high erosion potential. Soils also vary in how easily they absorb water and in their load-bearing capacity. Where percolation rates are sufficient, soils can be used to treat effluent from a septic system. Soils also have qualities that make them productive for timber and agricultural by providing the medium and nutrients for growth. Primary Agricultural soils have been classified based on these and other criteria. A Soil Resources Map and Agriculture Values Map are included with this plan to show the general locations of these soils.

Goals, Policies, & Recommendations

GOAL

- To protect and enhance Hardwick's land resources, including productive farm and forestland and available earth resources, in order to maintain an adequate land base to sustain farming and forestry operations and to secure needed supplies of sand and gravel for the benefit of existing and future generations.

POLICIES

- 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.
- Development on slopes greater than 25 percent is prohibited.
- Further fragmentation of productive agricultural and forestland is to be avoided.
- Development within agricultural areas will be sited to minimize the permanent loss of agricultural soils. Non-agricultural structures should not be placed in open fields and meadows; such structures and related infrastructure will be set back from field edges and follow tree lines where feasible to minimize disturbance and visual impacts, and to maximize open productive space.

ACTIONS & RECOMMENDATIONS FOR IMPLEMENTATION

- The town supports 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 and the Conservation Commission should review proposed purchases and comment based on the goals of this plan.