



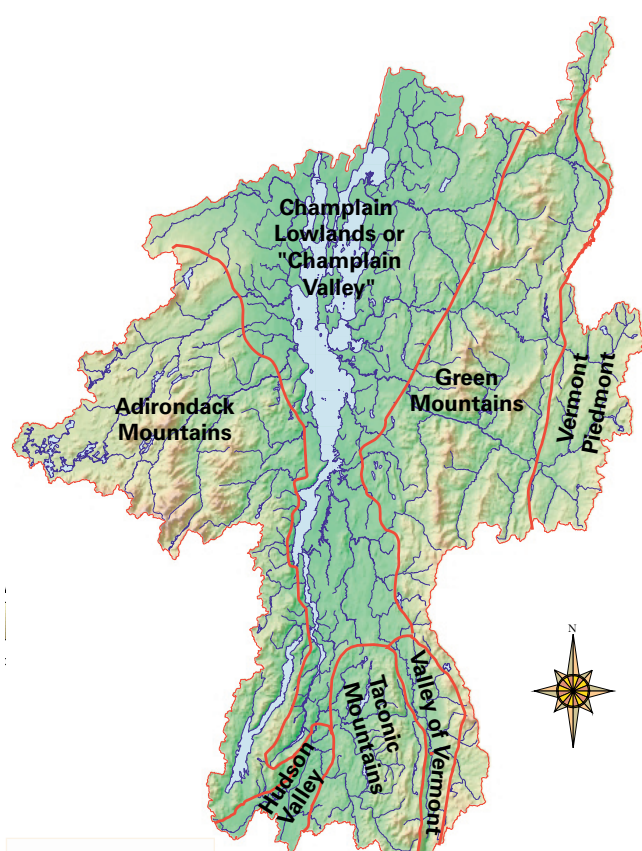
7. NATURAL SYSTEMS

INTRODUCTION

The natural systems of the Middlebury campus consist of its geology, hydrology, soils, plant and animal life, and the ecological interrelationships among them. These systems are part of the ecological underpinnings for life on campus and link the campus to the region. They are the product both of natural processes and human activity. Their form and arrangement contribute to the spatial structure of the campus and to the way the campus serves Middlebury's educational mission.

The goals of the Landscape Plan, developed by the Master Planning team, are to:

- *Strengthen the campus's relationship to the Vermont landscape, both in terms of its visual and spatial connections to its surroundings, and in terms of its contribution to regional ecosystems*
- *Reduce the impact of the campus on the local and global environment*
- *Improve the campus's outdoor spaces for multi-functional year-round use*
- *Enhance the civic structure of the campus*
- *Serve the educational mission of the College*



ASSESSMENT AND ANALYSIS

One is always aware at Middlebury that one is at the center of the grand landscape framed by the Green Mountains and the Adirondacks, that one is on a ridge of rock raised above a mosaic of forest patches, agricultural lands, and small villages: the Champlain lowlands to the west, to the east the broad valley of Otter Creek's eastern watershed extending to the Green Mountains. The sense of exposure, the awareness of the regional scale and of the sky and weather are often moving, even thrilling, and are fundamental parts of the Middlebury experience. The visual connection to the region is also a reminder of other, less immediately obvious, but equally important connections between Middlebury's campus environment and the ecological systems of the region.

The following analyses focus on particular aspects of the campus's natural systems: its geology and soils, its hydrology, its plant communities, its place in the regional ecosystems, the maintenance it receives, and the ways it is used to further Middlebury's educational mission.

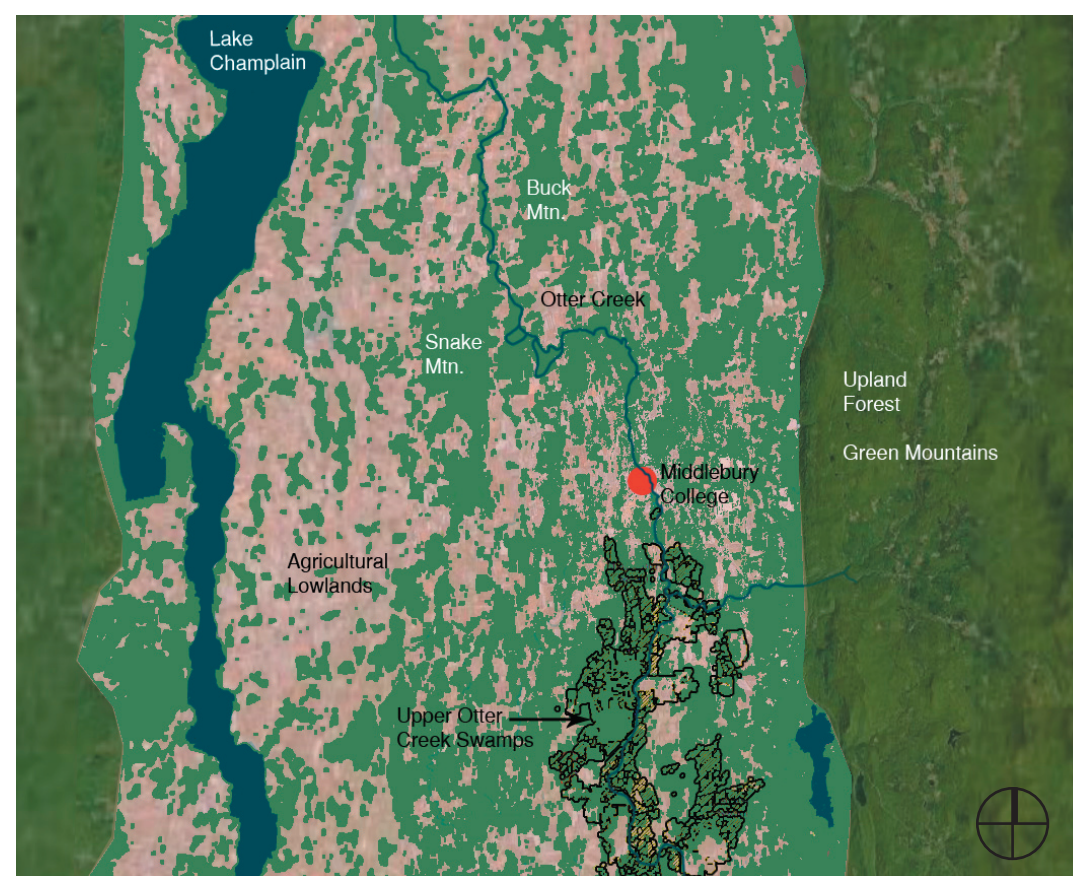


FIGURE 1

Middlebury College, the surrounding woods and farmland, and the Green Mountains

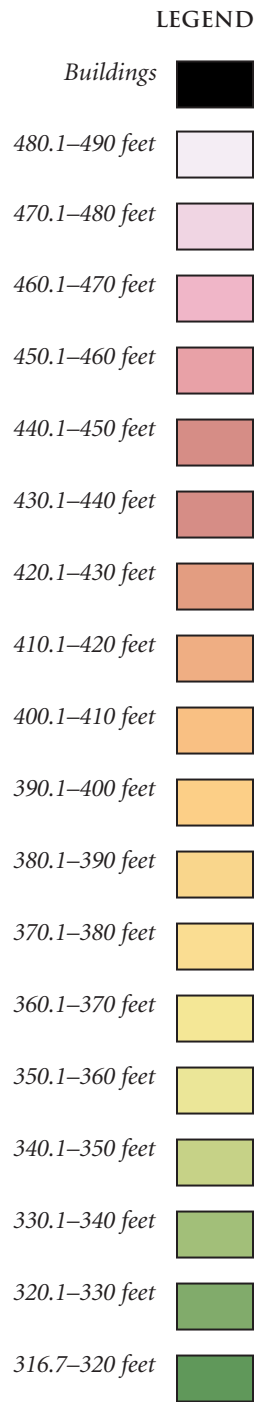
FIGURE 2

*Physiographic Regions of the Lake Champlain Basin
Source: Lake Champlain Basin Program, map by Northern Cartographic*

FIGURE 3

*Regional Ecological Context:
the Champlain Basin is a matrix
of lowland agriculture, forest, and
swamps*

FIGURE 1
Middlebury's Topography



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Soils and Drainage

Five hundred million years ago, a warm, shallow sea covered what is now the Champlain Basin. Seafloor deposits from the continental shelf became sedimentary rocks such as shale, dolostone, and limestone. As the Appalachian Mountain Chain uplifted, the shallow sea closed, and the Green Mountains formed. Limestone in the valley floor was transformed by heat and pressure into marble, and the valley's bedrock was faulted and folded. A minor ridge of this rock, subsequently worn and eroded by glaciers, became the site of Middlebury College.

The glaciers scraped the length of the ridges at Mead Chapel and Old Stone Row. In places, bedrock is still exposed today. After the glaciers retreated, soils gradually built up from erosion, deposition in post-glacial lakes, and biological activity. Although these fine-particle soils are famous for their agricultural productivity, on most of Middlebury's campus they are shallow and have been disturbed by human activities.

About half of the core campus, notably the gently sloping and level terrain where Battell Field and Main Quad are located, is composed of fine-particle, hydric soils. These



FIGURE 2
*Hydric Classification of Middlebury
Soils*

- LEGEND
- Buildings
 - Hydric Soils
 - Non-Hydric Soils
 - Unclassified Soils

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are soils that are wet for several weeks of the growing season, either because they are composed of fine-grained particles that retain a large amount of moisture, or because of seasonally perched water tables, or both. Other soils on the academic campus are generally some form of rocky silt loam. On the ridges, soils are shallow and prone to drying out.

Only two of the campus's open spaces, Battell Field and Main Quad, are generally used for formal or informal events. The soils of these spaces, and of the athletic fields, are composed mostly of clays. Due to the heavy use that

all of these spaces receive, soil compaction is a problem. These spaces tend to remain wet, to become churned up and muddy. Durable turf grass requires fast-draining (i.e. high sand content) soil so that its root system is oxygenated and develops a strong fabric-like structure. Grass growing in clay soil is easily damaged and recovers slowly.

While some of the campus's propensity for wetness and muddiness can be attributed to its soil composition, topography plays a role. The ridges at Mead Chapel, Old Stone Row, and Pearsons Hall pitch rain and meltwater toward Battell Field and the Main Quad; the wet areas