Executive Summary

The Berkshire Ecoregions (Berkshire-Vermont Upland, Hudson Highlands, Southern Green Mountains, Southern Vermont Piedmont, and Taconoic Mountains) cover approximately 1,134,011acres in western Massachusetts. Combined, these five ecoregions represent 22% of the Commonwealth's total land area. Two of the ecoregions each contain two separate Land Type Associations ("Hudson Highlands" – Berkshire Transition and Western New England Marble Valley Associations and "Taconic Mountains" – Taconic Highlands and Western New England Marble Valley Associations). Parts or all of 70 communities, four counties, and six major river basins comprise the five ecoregions.

The Berkshire Ecoregions are split between two Provinces: the "Eastern Broadleaf Forest (Oceanic)" and the "Adirondack-New England Mixed Forest-Coniferous Forest-Alpine Meadow". In the Eastern Broadleaf Forest (Oceanic) Province it is comprised of mostly hilly, costal plain landforms, with elevations ranging from 180 to 1,800 feet. Soil types are characteristically Alfisiols (clay and nutrient-enriched subsoil). Vegetation is made up of temperate deciduous forests. Precipitation ranges between 35 – 60 inches/year with an average annual temperature ranging from 40 to 60^{0} F. The Adirondack-New England Mixed Forest-Coniferous Forest-Alpine Meadow Province is comprised mostly of subdued glaciated mountains and maturely dissected plateaus, underlain by granite and metamorphic rock and thinly mantled by glacial till, of mountainous topography, with valleys containing glacial deposits and numerous swamps and lakes. Elevations range from 500 to 4,000 feet. The vegetation is characterized as a transition zone between boreal spruce-fir in the north and deciduous forest to the south. Precipitation averages 35 inches/year with temperatures ranging from 37 to 52^{0} F.

The Berkshire Ecoregions are largely rural, with almost 80% of its land area classified as forest. From 1985 to 1999 the Berkshire Ecoregions experienced no significant loss in forest cover. However, there has been a 7.4% decrease in agricultural/open land and a 17.2% increase in the amount of developed land over the same 14 year period.

Presently, 25% of the Berkshire Ecoregions land area is in some form of "protected" status, although not all of this is permanently protected. State-owned properties amount to almost 180,000 acres. The Berkshire Ecoregions contain significant acreages of land considered to be of high biodiversity value (e.g., areas identified by the BioMap and Living Waters assessments). With its extensive tracts of forest and abundant water resources, theses ecoregions contain significant resources including abundant fish and wildlife habitats.

Large blocks of relatively contiguous forest cover still occur in many parts of the Berkshire Ecoregions, due in large part to the relatively rural nature of the region, plus the large parcels of state-owned lands. Even so, with the existing developed land, the many roads, rail lines, and transmission lines the largest contiguous tract is just 8,500 acres.

Modern forest conditions are strongly influenced by past land use (particularly agricultural use dating from colonial times and subsequent farm abandonment), and a regional disturbance regime that is characterized by an intermediate to high occurrence of fire and hurricane winds. Presently, the majority (74.2%) of the forest in the Berkshire Ecoregions is classified as sawtimber, 22% poletimber, while only 3.8% is in seedlings/saplings, indicating a "Mature" forest. Such conditions influence habitat conditions and the relative biodiversity of the ecoregions.

Hardwoods dominate the Berkshire Ecoregions, accounting for 61% of the total sawtimber volumes (39% softwoods) and 68% of the total number of trees (32% softwood). The

maple / beech / birch type accounts for 68% of the total timberland area by forest type group for all size classes.

Dominant species include eastern hemlock and eastern white pine which combined account for 91%of the softwood sawtimber volume (48.6% and 42.3% respectively), and red maple (23%), northern red oak (14%), black cherry and sugar maple (12% each), white ash (10%) of the hardwood sawtimber volume.

Eastern hemlock and eastern white pine combined account for 90%of the softwood growing stock volume (60% and 30% respectively), and red maple (22%), black cherry (19%), northern red oak (12%), sugar maple (2%) of the hardwood growing stock volume.

When the forest data for number of all live trees is analyzed by diameter class (5.0" - 8.9" DBH), several trends are evident. First, eastern hemlock and red maple dominate the smaller diameter classes (24% and 17% respectively). American beech (9.6%) and sugar maple (8%) are both at some distance behind. Red oak represents only 3% of the smaller diameter classes. White pine (28.6%) dominates the larger diameter classes (19.0" – 29.0"+) by far. Eastern hemlock and red maple each account for about 13%.

Disturbance agents regularly impact forest conditions in the Berkshire ecoregions, as in other parts of the state. In addition to harvesting activity, other agents include storm events, insects, and diseases. Gypsy moth damage has been locally severe in the past. More recently, the hemlock wooly adelgid has the potential of substantially altering forest and habitat conditions in the ecoregion.

There are 594 public water supplies, 115,406 acres of outstanding resource waters, 2, 582 acres of high yield aquifers in the 5 ecoregions. A little over one percent of the ecoregions are underlain by high or medium yield aquifers and due to the relative rural character of the ecoregions, only 2% is impervious.

The estimated 2000 population of the Berkshire ecoregions is ~300,000 people. Half the communities (35) have populations less than 1,500. Many (57) have populations of less than 5,000. The highest populations occur in the 4 cities (Pittsfield, Westfield, Northampton, and North Adams). Build-out statistics indicate that the population in the 70 cities and towns in the Berkshire ecoregions could more than triple if all available buildable land was developed.

Development pressures are being felt in portions of these ecoregions as evidenced by the 17.2 % increase in developed land from 1985 - 1999. With only a 1.2% increase in population during the same time period, the Berkshire Ecoregions have apparently not escaped the issue of sprawl. And with the potential build-out of these five ecoregions is likely that accelerated landscape fragmentation and associated loss of wildlife habitat will become a more serious issue in the future.

Residential development in most of the towns is dispersed across the landscape, meaning that many residents live in close proximity to the forest. It also means that new development will further subdivide larger forested parcels into more, smaller ones. Still, with such a high percentage of the Berkshire ecoregions undeveloped, forest-based outdoor recreation and forest-based businesses are important activities.

Archeological information on Native American activity is limited in the Berkshire ecoregions, but it is likely that the region was occupied throughout prehistory i.e., from

Paleo Indian times 12,000 years ago to early historic times only 450 years ago. While it is doubtful that Native American populations in the hills of the Berkshires ever approached the numbers of those in the eastern part of the state, particularly in the coastal and estuarine zones, or the nearby Connecticut River Valley, the existing archaeological record must be considered artificially low. A total of 181 prehistoric archaeological sites are recorded within the five Berkshire Ecoregions. Interestingly, in some places there are thousands of acres where not a single prehistoric site is recorded i.e., the four contiguous USGS Quadrangle Maps of South Sandisfield, Otis, Blandford, and Tolland Center are completely void of recorded prehistoric archaeological sites. The five ecoregions wealth of waterways, including six major river systems, provided local prehistoric populations with ample subsistence resources. Within the 70 communities in the Berkshire ecoregions, there are 236 listings on the State Register of Historic Places, representing more than 13,803 individual properties.

Based on the assessment of ecological and sociological conditions in the Berkshire ecoregions, a number of issues were identified, from which management goals and recommendations were developed. These will help guide the development of future forest and land management plans for specific state-owned properties in the ecoregion. The main management goals for the Berkshire ecoregions, by general category, include:

Conservation of Biological Diversity:

- Protect rare species and protect and enhance their habitats.
- Enhance and expand the occurrence of contiguous blocks of early successional habitats within the Ecoregions.
- Establish a network of Forest Reserves in the Berkshire Ecoregions that provides a wide range of ecological and social benefits that enhances and expands the occurrence of contiguous blocks of late successional habitats within the Ecoregions.
- Prevent new occurrences of non-native, invasive plant species. Identify and control existing non-native invasive threats to native species.

The Working Forest:

- Maintain Berkshire Ecoregions working forest management philosophy in an ecologically sound, and economically sustainable and socially responsible manner exceeding legal requirements and serving as a model for forest management for the regions.

Fragmentation

- Focus protection efforts on protecting the largest, most intact and threatened forest blocks in the Berkshire Ecoregions.

Forest Conditions, Health, and Productivity

- Maintain and enhance the species at risk such as oak, ash, sugar maple, and hemlock across the Berkshire Ecoregions.
- Reduce the practice of high-grading to less than 10% of harvests. It should be noted that state-wide long-term management is practiced on approximately 70% of lands harvested under a Forest Cutting Practices Act “Cutting Plan.” Therefore, approximately 30% of the landowners are managing their lands under short-term management objectives which are subject to high-grading.
- Promote and manage forest that are well stocked, of good quality, composed of indigenous species, and appropriate for site conditions.

- Provide awareness of the long-term impacts of acid rain on forest.
- Utilize prescribe fire where it is ecologically, silviculturally, economically sound designed to restore, enhance and maintain biodiversity and desirable forest composition and structure.

Soil and Water Conservation:

- Enhance the protection of the ecoregions water supplies via improved land conservation and forest management. Maintain soil productivity.

Socio-Economic Factors:

- Provide access to public lands that meets administrative and public's needs, and is safe and environmentally sound.
- Reduce damage resulting from ORV/ATV unauthorized/unregulated activities within the ecoregions**.**
- Promote the construction of forest biomass to bioenergy facilities and the sustainable use of local forest biomass.
- Provide more equitable compensation to rural municipalities for the costs of having state-owned lands within their communities.
- Strengthen the regional forest product economy by creating a more consistent and predictable flow of forest products to local forest industries.
- Assure the long-term protection of cultural resources in the Berkshire Ecoregions.

State, Regional and Global Issues:

- Increase the private landowner participation in protecting open space.
- Expand public input and awareness of the ecoregional and site level planning processes across the state.
- Maintain landowners right to harvest according to the Forest Cutting practice Act.
- Fire management activities are appropriate planned and implemented in consideration of ecological, social, and economic factors.
- State lands have resource management plans that include financial business plans that provide the finances for appropriate sustainable forest management, recreation, etc. uses and activities according to "green certification" standards in an affordable manner.

Another benefit of an ecoregion-based planning process is increased communication, coordination, and consistency among the three principle land management divisions within the Executive Office of Environmental Affairs. Representatives from the three divisions have worked together to assemble this assessment and to identify the issues, goals, and recommendations for the Berkshire Ecoregions. Further, this document includes a "framework" for planning and implementing forest management on state lands within the Berkshire Ecoregions. That framework includes: 1) regulatory standards that apply to forest management activities in Massachusetts; 2) general guidelines on the development of management plans; 3) silvicultural standards that will guide forest management on state properties; and 4) contractual standards that apply to private loggers and other operators working on state lands.