



CHAPTER 3

OPEN SPACE & NATURAL RESOURCES ELEMENT

When Princeton residents describe their town's most cherished qualities, they speak of its natural resources and open space. At a community meeting for this Master Plan, one resident said it best when he described Princeton as a place with "plenty of elbow room." There is no question that open space is Princeton's signature feature. For visitors, newcomers and long-time residents, Princeton's image is shaped by a peerless collection of working landscapes, open fields, dense forests, and the formal public spaces found in the Town Center. Each of these settings contributes to Princeton's visual character and provides important context for its historic buildings and structures.



Massachusetts Audubon Society, Wachusett Meadows Wildlife Sanctuary. (Photo by Community Opportunities Group, Inc.)

Wachusett Mountain, the Stillwater River, numerous brooks and ponds, meadows and vast woodlands define Princeton's beauty, but they also are part of an intricate network that provides endangered wildlife and plant habitat and supplies drinking water to more than 2.5 million people. However, an incipient pattern of suburban development has begun to threaten Princeton's rural character and abundant, largely unaltered natural resources. The same pattern has accelerated the loss of forests and farms and contributed to inefficient land use in countless small towns.

Despite the fondness that residents express for Princeton's natural beauty, the town has found it difficult to support and implement techniques to protect its natural resources. Princeton also seems to have struggled with a conflict that occurs in many towns: residents yearn to protect land from development and they expect local government to "do something" about growth, yet they

do not want local officials to go "too far." For many residents, living in Princeton means more than owning a home. It also means owning land, whether for farming, forestry, asset wealth or estate purposes.

Princeton residents do not always agree about the public interests that open space should serve. For example, the town's undeveloped land provides scenic views and outdoor recreation opportunities, supports wildlife habitat, forestry and farming, and protects regional water supplies. A large percentage of Princeton's land is protected in perpetuity, yet the same protected land is often heavily restricted land. As unrestricted vacant land continues to decline, interests such as hunting, farming, horseback riding, or wood lots will become increasingly difficult to accommodate.

EXISTING CONDITIONS

Geology, Soils and Topography

Princeton's diverse topography was formed primarily during late Wisconsin glaciation, when the Laurentide Ice Sheet descended from Canada into New England about 25,000 years ago. The glacier shaped a variety of geologic features including **glacial erratics**, or bedrock boulders such as Balance Rock; **drumlins**, or the smaller egg-shaped hills found in southern Princeton; and **eskers**, such as the long ridges found south of the Highway Department on Route 31.

The receding of the ice sheet ca. 15,000 years ago resulted in the formation of a knob and kettle landscape in which melting boulders of ice formed **kettle holes** that are fed by fresh water springs. Crows Hill Pond and Paradise Pond are examples of kettle holes. **Roche moutonnee** (sheep rocks), or outcrops of bedrock with a gentle slope on the upstream side of the ice and a steep rough slope on the downstream side, include Redemption Rock and the southwest side of Little Wachusett Mountain. In Princeton, an obvious product of deglaciation is the presence of three **monadnocks** – Wachusett Mountain, Little Wachusett Mountain and Pine Hill – made of metamorphic gneiss that was more resistant to the scouring of the glacier. The monadnocks stand tall in the surrounding landscape; in fact, Wachusett Mountain is the state's tallest landscape feature (2,006 feet) east of the Berkshires.

As the glacier receded from New England, it left behind a deposit of **glacial till** that is not well suited for agriculture. Princeton's landscape and its underlying soil structure are composed of clays, sands, silts and gravel, all covering pre-glacial (Paleozoic Era) bedrock. Most of the town's surficial geology is glacial till and bedrock, with small sand and gravel deposits that follow the East Branch of the Ware River, South Wachusett Brook, East Wachusett Brook and Keyes Brook (Map 3-1).



Impressions of Princeton's diverse landscape and forested hills
(Mary Pratt, local artist).

The Natural Resource Conservation Service (NRCS) has identified thirty-four soil types or associations that include five primary soil series. These five soil groups comprise 61% of the soils in Princeton: Woodbridge-Paxton, Peru-Marlow, Montauk-Scituate-Canton, Ridgebury-Whitman and Bucksport-Wonsqueak. Woodbridge-Paxton is deep, well-drained stony soil and Peru-Marlow is a strong, moderately steep, moderately well-drained soil, both underlain by hardpan. Montauk-Scituate-Canton and Ridgebury-Whitman are rolling, steep, rocky soils. Ridgebury-Whitman is poorly drained, and Bucksport-Wonsqueak is a mucky, hydric soil. All have development limitations due to hardpan layers, rockiness, slope or drainage. More than 70% of the town consists of steep to very steep slopes which, along with hydric soils and hardpans, are not conducive to conventional on-site septic systems (Map 3-2).

In addition, the NRCS has classified the soils on about 4,000 acres in Princeton as highly suitable for agriculture, including 1,500 acres of prime farmland, 1,300 acres of farmland of statewide importance, and 1,200 acres of farmland of unique importance (Map 3-3). Together, these areas represent more than 17% of the town.¹

Water Resources

Over 10% of Princeton's landscape consists of open water and wetlands (Map 3-4). Ponds, rivers

¹ Natural Resource Conservation Service (NRCS), "Official Soil Series Descriptions" and "Soils Data Mart," <<http://www.nrcs.usda.gov/>>, and Mass-GIS, <<http://www.mass.gov/mgis/>>.

and wetlands contribute to the town's beauty and provide habitat for a rich array of plants and animals. Recreational activities are restricted on most of the state-owned reservoirs due to regulations affecting Princeton and other communities in the watersheds that supply drinking water to the Massachusetts Water Resources Authority (MWRA). There is no public water supply in Princeton, so residents rely on private wells for their drinking water.

Watersheds. A watershed is an area of land in which all surface and ground water drains to a common river, stream, pond, lake, or coastal water body. Since water flowing over land picks up dissolved materials, land use and development regulations within a watershed affect the quality of the water supply. Nearly all of Princeton (86%) lies within the Nashua River Watershed, which encompasses 538 square miles in 31 communities in north central Massachusetts and southern New Hampshire. The western corner of Princeton around the East Branch of the Ware River and the area around Bickford Pond and West Wachusett Brook lie in the Chicopee River Watershed, which covers 721 square miles in 32 cities and towns.

These watershed lands flow into four Class A public water supplies: the Quabbin Reservoir, the Wachusett Reservoir, the Quinapoxet Reservoir and the Fitchburg Reservoir. The Wachusett Reservoir is part of the storage system for the Quabbin Reservoir, which supplies water to more than 2.5 million people in the MWRA region. The Stillwater River and East Wachusett Brook drain the eastern half of Princeton and supply approximately 30% of the water in the Wachusett Reservoir. The Ware River drains a small portion of western Princeton to the Quabbin Reservoir. The rest of western Princeton drains to the Quinapoxet Reservoir, the water supply for the City of Worcester. The northern part of Princeton drains to the Fitchburg Reservoir.

Nearly all of Princeton is subject to the **Watershed Protection Act** (WsPA), which regulates

land use and development in 22 towns located in the watersheds of the Quabbin Reservoir, Ware River and Wachusett Reservoir. Also known as the "Cohen Bill," the WsPA was passed in 1992 and is currently administered by the Massachusetts Department of Conservation and Recreation (DCR).

The WsPA establishes two protection zones: the **Primary Protection Zone** and the **Secondary Protection Zone**. Within the Primary Protection Zone, or land within 400 feet of reservoirs and 200 feet of tributaries and surface waters, any land alteration and activities that result in the storage or production of pollutants are prohibited.² The Secondary Protection Zone includes land within 200 and 400 feet of tributaries and surface waters, land in flood plains and above certain aquifers, and bordering vegetated wetlands. Several types of activities are prohibited in the Secondary Zone: the storage, disposal or use of toxic, hazardous, and certain other materials; alteration of bordering vegetated wetlands; certain types of development; and other activities.

The WsPA exempts uses and structures existing as of July 1, 1992, the construction of a single-family dwelling on an existing vacant lot, and minor changes to an existing structure. Owners of property located wholly or partially in a WsPA protection zone received written notification of their status when the law went into effect. Today, property owners can check the location of their parcel relative to WsPA protection zones on maps available at Princeton Town Hall and DCR offices. DCR personnel provide technical assistance to landowners in order to ensure that projects comply with WsPA regulations. In addition, DCR monitors development by attending municipal board meetings, reviewing legal advertisements in local newspapers, and conducting periodic wind-shield surveys. When violations are identified, DCR notifies property owners and works with the Department of Environmental Protection (DEP)

² "Alteration" includes a variety of activities, such as construction, excavation, grading, paving, and dumping.

to secure enforcement when necessary.

Floodplains. Princeton's numerous rivers, streams, and brooks act as a constraint to development because of the flooding risks they pose. The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM) show that Princeton contains several Special Flood Hazard Areas (SFHA), or areas within the 100-year floodplain, defined as an area that would most likely be inundated by a flood having a 1% chance of occurring in any given year, or a "1-percent annual chance flood." The term "100-year flood" does not refer to a flood that will occur once every 100 years; in fact, it could occur more often. Statistically, a structure located within a mapped SFHA has a 26% chance of experiencing flood damage during the term of a 30-year mortgage. The National Flood Insurance Program uses the 100-year flood standard for floodplain management and for determining the need for flood insurance.³

In Princeton, SFHAs include land around the Stillwater River, Paradise Pond and its tributaries, the East Branch of the Ware River, Bickford Pond, the Quinapoxet Reservoir, and Keyes, Justice, Stream Hill, East Wachusett, West Wachusett, South Wachusett, Babcock, and Governor Brooks. Princeton also has areas within the 500-year floodplain, or areas having a 0.2% chance of flooding in any given year. Development may take place within a mapped SFHA provided that it complies with local floodplain management ordinances or bylaws, which in turn must meet minimum federal requirements.

Princeton does not have a zoning or general bylaw to control development within an SFHA. When communities have a floodplain bylaw, landowners within an SFHA can obtain federally backed



Keyes Brook in East Princeton. (Photo by Joyce Anderson, Princeton Historical Commission.)

flood insurance. Flood insurance is required for insurable structures within the SFHA to protect federally funded investments and assistance in communities participating in the National Flood Insurance Program.

Surface Water. Paradise Pond, Snow Pond, Glutner Pond and the "Onion Patch" are the largest named ponds lying entirely within Princeton. The town also contains portions of Bickford Pond, Crow Hill Pond, the Quinapoxet Reservoir and Wachusett Lake, along with numerous small, unnamed ponds. In addition, rivers, small streams and brooks course through every part of Princeton. The largest of these is the Stillwater River in eastern Princeton. Other streams and brooks include the East Branch of the Ware River, Babcock Brook, Cobb Brook, Cold Brook, East Wachusett Brook, Governor Brook, Justice Brook, Keyes Brook, South Wachusett Brook, Steam Mill Brook, West Wachusett Brook and many more unnamed small tributaries.

Wetlands. Approximately 200 acres of Princeton's total land area is comprised of wetlands. "Wetlands" generally include marshes, wet meadows, bogs, and swamps: resource areas with vegetation and soil characteristics indicating the presence of water at or just below the surface of the ground.

³ Federal Emergency Management Agency (FEMA), Frequently Asked Questions [online], <http://www.fema.gov/fhm/fq_term.shtm>.

Small patches of wooded swamp and shrub swamp can be seen throughout Princeton. West Princeton in particular has many small wetlands, and there is a significant wooded swamp around Governor's Brook on the town's border with Holden. In Princeton, the only large block of upland that is not punctuated by small wetlands runs between Wachusett Mountain State Reservation and the Leominster State Forest.

The Wetlands Protection Act, M.G.L. c.131, Section 40, gives local conservation commissions the authority to review and impose conditions on activities in or within 100 feet of wetlands adjacent to lakes and ponds, rivers, streams or coastal waters, or land under water bodies, waterways, coastal wetlands and the 100-year floodplain. In 1996, the Rivers Protection Act (RPA) added riverfront areas to the list of resources covered by the Wetlands Protection Act. A riverfront area is a 200-foot wide corridor on each side of a perennial river or stream. Conservation commissions are required to review proposed projects in a riverfront area for consistency with statutory requirements and Department of Environmental Protection (DEP) regulations. Although the RPA does not prohibit development in the riverfront area and some projects are exempt, applicants must demonstrate that their plans have no practical alternatives and will have no significant adverse impacts on riverfront resources.

Many communities supplement these state laws with bylaws or ordinances that make wetlands permits subject to local regulation. In addition, local bylaws sometimes expand a conservation commission's purview to regulate resource areas that are not explicitly protected by state law, or to require a buffer zone exceeding 100 feet. Princeton does not have a local wetlands bylaw.

Vernal Pools. According to the Massachusetts Natural Heritage and Endangered Species Program (NHESP), there are twelve certified vernal

pools and approximately 75 potential vernal pools in Princeton.⁴⁵ A vernal pool is a contained, seasonal wetland that provides critical habitat for certain invertebrates and amphibians, such as the wood frog, fairy shrimp and mole salamander. Vernal pools range in size from a large mud puddle to an acre of swamp-land, and they may be very shallow or up to three feet deep. The same vernal pool can be the size of a mud puddle or dry out completely in summer and be swamp-sized in spring. It is easy to observe vernal pools along roadsides in many parts of Princeton.

Aquifers. Like many small towns, Princeton does not have a public water system. Instead, residents and businesses rely on private wells for drinking water. The current average daily demand for water is approximately 0.25 mgd. In a study of future development potential (buildout) released four years ago, the Executive Office of Environmental Affairs (EOEA) predicted that Princeton's average daily water demand could reach 0.96 mgd at full buildout. The mapped aquifers in this part of the state are generally low-yield and not favorable for public drinking water supplies. Aquifer data available from MassGIS indicate the presence of a small > 300gpm aquifer below Crow Hill Pond and a sliver of 100-300 gpm aquifer near Steam Mill Brook. A more recent EOEA Water Assets Study Community Report does not report any aquifers in the town.⁵

Vegetation

Woodlands. Princeton's visual character and rural image are inextricably linked to its forests. Forest cover is a critical component of watershed management and a defining feature of Princeton's open space and rural roads. In fact, 82% of the town is forested and approximately 14,680 acres (64%) of Princeton's total area is composed of

⁴ MassGIS Statewide Vector Data, filename "CVP2003.dbf," updated July 2003 and "pvp.dbf," updated December 2000.

⁵ Earth Tech, EOEA Water Assets Study: Community Report Town of Princeton (June 2004), 3, 5.

prime forest land (Map 3-5).⁶ According to aerial photography interpreted in 1999 by the University of Massachusetts Resource Mapping Project (RMP), Princeton lost about 1,200 acres of forest to new development between 1971 and 1999.⁷

The forests in Princeton have all of the characteristics of the southern New England hardwood (or mixed deciduous) forest. Upland forests are predominantly hardwood – northern red oak, shagbark hickory, beech, red maple and birch – with small stands of softwood hemlock and white pine. Red and silver maple, speckled alder, white oaks, pin oaks, hemlock, sweet pepperbush, witch hazel and highbush blueberry are common in swampy, wet areas. In 1996, researchers at Harvard University documented the presence of four stands of old growth forest on Wachusett Mountain. The forest is comprised of red maples, sugar maples, yellow birch, beech, red oak and hemlock that are between 100-350 years old.⁸ This old growth forest is part of a “Core Habitat” area in Princeton, described as a “Circumneutral Talus Forest” that develops below cliffs on boulder-strewn slopes.⁹

Plants. Wildflowers abound in Princeton. A local naturalist has kept a wildflower inventory of Wachusett Mountain and the surrounding towns since 1971. Wachusett Mountain State Reservation posts this historic inventory as part of its interpretive display, and reports the data to the Massachusetts Division of Conservation and Recreation. In addition, NHESP has documented



Iron Horse Farm, Gregory Road (Photo supplied by Master Plan Steering Committee).

nine species of endangered or threatened vascular plants in Princeton: Back's Sedge, Mountain Cranberry, Spiked False Oats and Wild Senna are listed as state-endangered species and Adder's-tongue Fern, Bartram's Shadbark, Great Laurel and Woodland Millet, threatened species.¹⁰

Agriculture

Agricultural land is important for economic potential and aesthetic qualities. During the 19th century, much of the forested land in Princeton was converted to agricultural use. Historic photographs show that farming once played a major role in Princeton's economy and way of life. When agriculture declined after 1900, the town's farmland gradually reverted to forests and over time, Princeton became more residential. By 1999, agricultural lands comprised about five percent of the town's total area. Aerial photographs show that the total amount of agricultural land in Princeton has decreased by 18% since 1971, but nearly all of the loss occurred after 1985. Today, the seven dairy farms that once operated in Princeton no longer exist, and the town's remaining farmland is used mainly for raising crops such as hay, and the keeping of horses. Only 212 acres of agricultural

⁶ MassGIS, “Prime Forest,” June 2007.

⁷ See Land Use Element, Table 2.3: Land Use Change, 1971-1999.

⁸ Charles Cogbill, et al. “Dynamics of Old-Growth Forests on Wachusett Mountain (Princeton, MA)” [online], <<http://harvardforest.fas.harvard.edu/data/p01/hf016/hf016.html>>.

⁹ Massachusetts Natural Heritage and Endangered Species Program, BioMap and Living Waters: Core Habitats of Princeton (2004), 7.

¹⁰ Massachusetts Natural Heritage Endangered Species Program, “Rare Species Occurrence List by Town” [online] <<http://www.mass.gov/dfwele/dfw/nhesp/townp.htm>>.

land in Princeton are protected in perpetuity by a conservation restriction or an Agricultural Preservation Restriction (APR).

Fisheries and Wildlife

Princeton's most recent Open Space and Recreation Plan (2000) identifies bass, pan fish, pickerel and trout as species that are tracked and fished locally, but it does not include an inventory of common reptiles, amphibians, mammals and birds. A comprehensive fisheries and wildlife inventory is invaluable for open space planning because it is important to preserve habitat for common as well as rare species. Further, consideration should be given to interactions between humans and other species both for safety and species welfare. Documenting habitat for the town's moose, bear, fisher, birds of prey, water birds, reptiles and amphibians will help to guide protection priorities and land use decisions.

There is an 11-mile trail network and a 200-acre beaver pond on Massachusetts Audubon Society's 1,200-acre Wachusett Meadow Wildlife Sanctuary at the foot of Wachusett Mountain. Beavers, mink, otters, wood ducks, and herons have been observed at the beaver pond.¹¹ Deer, coyotes, bluebirds, and bobolinks also inhabit the preserve, and in late spring and early autumn, large numbers of hawks flock to the site. Princeton also has two recreational fish and gun clubs that manage a combined total of about 750 acres of land. The Nimrod League has recorded observations of several species including deer, turkey, fox, coyote, moose, bobcat, hare, grouse and pheasant.¹²

Birding is popular at Wachusett Mountain and Wachusett Meadow, and around the ponds. Numerous websites report bird sightings and bird

counts in and around the town. Naturalists at the Massachusetts Audubon Society and Wachusett Mountain State Reservation keep annual inventories of birds seen and heard on their properties.

NHESP has documented 13 species that are endangered, threatened or of special concern in Princeton.¹³ They include the endangered Henslow's Sparrow, Sedge Wren and Upland Sandpiper; Blanding's Turtle and Marbled Salamander, state threatened; and Bridle Shiner, Chain Dot Geometer, Common Loon, Elderberry Longhorn Beetle, Four-Toed Salamander, Spotted Turtle, Spring Salamander and Water Shrew, all species of special concern. The 2000 Open Space and Recreation Plan also lists the American Bittern (endangered), Marbled Salamander (state threatened), and Cooper's Hawk, Eastern Box Turtle, Ostrich Fern Borer, Rock Shrew, Sharp Shinned Hawk, Southern Bog Lemming and Wood Turtle (species of concern).

Biodiversity. According to a statewide biodiversity analysis developed by NHESP, Princeton has eight BioMap Core Habitat and Living Waters areas.¹⁴ In Massachusetts, the 92 exemplary natural communities within Core Habitat areas support numerous rare species, including 246 vascular plants, 21 birds, 11 reptiles, 6 amphibians, 4 mammals, 52 moths and butterflies,

¹³ Massachusetts Natural Heritage Endangered Species Program, "Rare Species Occurrence List by Town" [online], <<http://www.mass.gov/dfwele/dfw/nhesp/townp.htm>>.

¹⁴ According to NHESP, BioMap Core Habitats are the state's most critical sites for biodiversity conservation. They provide habitat for the state's most viable populations of rare plants and animals and include natural communities and aquatic habitats for protecting endangered and threatened species. These are areas most in need of conservation. For more information, see Massachusetts Natural Heritage and Endangered Species Program, BioMap and Living Waters: Core Habitats of Princeton (2004); MassGIS Statewide Vector Data, filename "Biocore.dbf," updated 2005; and The Conservation Fund, Green Infrastructure – Linking Lands for Nature and People (January 2006).

¹¹ Massachusetts Audubon Society, "Wachusett Meadow Preserve" [online], <http://www.massaudubon.org/Nature_Connection/Sanctuaries/Wachusett_Meadow/index.php>.

¹² Nimrod League [online], <<http://www.nimrodleague.org>>.

25 dragonflies and damselflies and 10 beetles. Approximately 60-65% of all land in Princeton qualifies as Core Habitat or Living Waters and Supporting Natural Landscape. Routes 62, 31 and 140 and adjacent lands are excluded because the open space is already fragmented by roads, but they are the only parts of Princeton not designated as significant natural habitat areas (Map 3-6).

Not surprisingly, Wachusett Mountain serves as a Core Habitat area. It hosts the old-growth forest, a hemlock ravine community and the endangered Back's Sedge plant. Wachusett Meadow, another Core Habitat, consists of a square mile of mixed forest, wooded swamp and two miles of riparian habitat for the headwaters of Wachusett Brook. Four-toed salamanders and the water shrew reside here. The Keyes Brook Core Habitat connects Keyes Brook and the Stillwater River to the Wachusett Reservoir. Rare turtles, the Dwarf Mistletoe and a unique Level Bog community are all present. Bickford Pond and its shoreline in Hubbardston and Princeton provide breeding habitat for Common Loons.

Three small, unique areas of Core Habitat lie just northeast of Wachusett Meadow. A rare example of mature Hickory-Hop-Hornbeam Forest is located within a 500-acre mixed-deciduous forest. Nearby, there is a large patch of Oak-Hickory Forest and a small habitat that supports a rare plant.¹⁵ A small Core Habitat for another rare plant is located between the Wachusett Mountain and Keyes Brook. "Living Waters," or the riparian and aquatic equivalent of Core Habitat, support 23 aquatic vascular plants, 11 fish, 7 mussels and 23 aquatic invertebrates in Princeton.

NHESP also classifies a large portion of the land in Princeton as BioMap Supporting Natural Landscape. Composed of large, contiguous naturally

vegetated areas, a Supporting Natural Landscape links Core Habitats, such as the connection of Keyes Brook to Bartlett Swamp, Wachusett Mountain, Leominster State Forest and Poutwater Wildlife Management Area, or Wachusett Meadow and Wachusett Mountain and land around the East Branch of the Ware River.

Open Space

Open space is vacant or largely undeveloped land of significant public interest because of its relationship to natural, recreational or scenic resources, its value as community space, or its customary use for farming or forest management. It may be classified on the basis of use, ownership, level of protection, degree of public access or other criteria, but for a master plan, ownership and level of protection are particularly important.

Publicly owned open space includes parcels owned by federal, state or local agencies, and privately owned open space includes parcels owned by individuals and non-profit conservation groups. Open space protected in perpetuity refers to land owned for conservation, wildlife habitat or watershed protection, usually by government agencies and non-profit land trusts, or privately owned land controlled by a conservation restriction (CR) or an Agricultural Preservation Restriction (APR). Some open space has temporary or limited protection due to a revocable restriction against a change in use or development. An example of "temporary" protection is a Chapter 61 or 61A agreement, while "limited" protection often includes public land used for purposes other than conservation, such as a school or playing fields. (Map 3-7)

Local and state records contain slightly different information about the amount of open space in Princeton, but there are approximately 9,668 acres of open space protected in perpetuity, including land owned by the Commonwealth, three units of local government (Princeton, Fitchburg and Worcester), the Trustees of Reservations, the Massachusetts Audubon Society, the Princeton Land

¹⁵ NHESP does not always report the exact location and the name of rare plant or animal species because they are particularly sensitive or threatened by collectors.

Trust, and individual property owners whose land is subject to a conservation restriction.

Partially protected open space in Princeton includes land in Chapter 61 (forest), 61A (farm) or 61B (recreation) agreements. These three state laws provide incentives to property owners to preserve their land as open space. Eligible parcels are taxed at their use value instead of market value, but if the land is sold for development or converted to another use, the property owner must pay a form of penalty tax and give the town a 120-day right of first refusal to acquire the land as open space. The town may assign its right of first refusal to a land trust.¹⁶ Princeton has about 2,661 acres of Chapter 61 land, concentrated somewhat in the eastern and central sections of town; 1,855 acres of Chapter 61A land, located mainly in the southwestern, southern and eastern sections of town; and 421 acres of Chapter 61B land, for a total of 4,937 acres. Many of these properties lie within BioMap Supporting Natural Landscape areas, yet only 286 acres of Chapter 61-61A land are protected in perpetuity.¹⁷

Outdoor Recreation

Many of Princeton's outdoor recreation areas are owned and maintained by state agencies or the town, private clubs, the Massachusetts Audubon Society or others. These organizations sponsor activities such as hiking, biking, skiing, canoeing,

hunting, camping and fishing for the general public, visitors or club members. The Massachusetts Audubon Society also offers educational programs and the Wachusett Mountain Ski Area organizes seasonal festivals. These activities generate visitors and provide support for local restaurants, bed and breakfasts, farms, local craftsmen, the Johnny Appleseed Trail Association and the Midstate Trail Association. Together, the region's visitor attractions comprise a pattern of activities, ecological tourism or commonly known as **eco-tourism**, a sector of the tourism industry that capitalizes on access to open space and natural areas.

Wachusett Mountain. Princeton's largest and best-known recreational attraction is the Wachusett Mountain State Reservation, managed by the Massachusetts Department of Conservation and Recreation (DCR). In terms of natural resources and its role in the town's economic base, Wachusett Mountain represents one of Princeton's most significant assets. It occupies 1,350 acres in the northwest corner of Princeton and includes conservation areas, hiking trails, and the ski area. Wachusett Mountain offers views of Boston as well as the adjacent rural landscape. The park has some 15 miles of hiking trails and six miles of fire roads. In addition to skiing and snowboarding, the Wachusett Mountain State Reservation offers fishing, hiking, horseback riding, hunting, and picnicking, and education programs on natural resources and local history. The most developed part of the park includes the privately operated Wachusett Mountain Ski Area.

Wachusett Meadow. The Massachusetts Audubon Society owns and manages the Wachusett Meadow Wildlife Sanctuary off Goodnow Road, just south of the Wachusett Mountain State Reservation. A 1,200-acre wildlife sanctuary and visitor's center support trails for hiking and nature viewing, and year-round educational programs for all ages.

Leominster State Forest. In addition to Wachusett Mountain, DCR owns and manages another

¹⁶ Under Chapter 61, an eligible parcel consists of ten or more acres; under Chapters 61A and 61B, an eligible parcel consists of five or more acres. Other requirements must be met in order for forestry, farm or recreation properties to qualify for Chapter 61, 61A or 61B agreements.

¹⁷ Princeton has a total of 10,800 acres of land without perpetual restrictions against development, but not all of the land is classified as open space. These 10,800± acres include 4,937 acres under Chapter 61, 61A or 61B agreements; town-owned recreational land (175 acres), the Thomas Prince School (60 acres), vacant residential land (2,700 acres) and residential parcels of more than five acres, i.e., parcels with additional development potential (3,300 acres).

3,000 acres of recreation land in Princeton. Among the largest is Leominster State Forest, a 4,300-acre expanse of woodlands in portions of Westminister, Princeton, Leominster, Fitchburg and Sterling. Princeton's section includes 1,380 acres in the northern part of town. Access to the Leominster State Forest is conveniently located off Route 2, making the park accessible to local and regional visitors. Leominster State Forest offers extensive trails that cross a wide variety of terrains, including the Midstate Trail. It also offers year-round recreational opportunities ranging from hiking, mountain biking, swimming, kayaking, and rock climbing in the summer to cross-country skiing and snowmobiling in the winter.

Midstate Trail. The Midstate Trail, a 95-mile long hiking trail extending from Rhode Island to New Hampshire, is maintained by the Midstate Trail Association with the cooperation of state agencies and private property owners. The trail passes through the Wachusett Mountain State Reservation and Leominster State Forest. Wachusett Greenways sponsors a variety of guided hikes and trail maintenance days.

In addition to these sites, the Massachusetts Division of Fisheries and Wildlife owns the Savage Hill Wildlife Management Area, which crosses the Princeton-Rutland town line and includes 370± acres in Princeton. The Princeton Land Trust also owns 95 acres of open space and the town itself, 176 acres of recreation land. Land with membership-restricted access includes 447 owned by the Nimrod League and 301 acres owned by the Norco Sports Club.

LOCAL & REGIONAL TRENDS

Aerial photographs from 1971, 1985 and 1999 document a stable but fairly slow decline in the amount of agricultural and forest-covered land in Princeton. While the loss of agricultural land accelerated from 1985-1999, this was not the case for Princeton's forests, which lost 741 acres (3.6%) from 1971-1985 and 482 acres (2.5%) from

1985-1999. Compared to other parts of Worcester County, including some adjacent towns, Princeton absorbed a lower rate of housing growth during the 1990s and reversed several decades of sustained, moderate residential development. As market pressures continue to migrate westward from the I-495 corridor, Princeton will experience a renewed demand for homes because the town is desirable and it has large amounts of vacant land, albeit difficult to develop.

Over time, Princeton's growth has extended into outlying areas, spreading along roadways in the southern half of town. This type of growth pattern results in an inefficient, costly use of infrastructure and depletes the scenic and habitat value of open space. Princeton is not alone in this regard. Particularly in small towns, the propensity to lose roadside open space to frontage lots is common throughout the state. However, even in the state's cities, notably Leominster, policies favoring larger lots have led to higher rates of land consumption per dwelling unit.

Throughout Central Massachusetts, single family home development accounts for most of the decline in forests and agricultural land that occurred after 1985. The demand for housing is intense in many parts of Worcester County, including Princeton's area, but housing development does not occur in a vacuum. Indeed, while many people will accept long commutes to the Boston area, the demand for homes in small towns around Worcester has been attended by local and regional increases in the amount of land used for commercial and industrial development.

As a percentage of total land use, commercial and industrial development is fairly small, but from 1985-1999, Central Massachusetts absorbed 18-28% increases in acres of land used for business and industry. Princeton itself has seen very little change in commercial and industrial activity due to its location and zoning, but the amount of new business development in communities nearby, such as Sterling and Westminister, supplies rein-

TABLE 3.1: REGIONAL CHANGE IN PROPORTION OF OPEN LAND, 1971-1999²¹

Community	Open Land	Residential Uses	Commercial or Industrial Uses	Open Water	All Other Uses	Open Land % Total
1971 Conditions						
Fitchburg	12,552.0	3,216.1	859.5	253.6	1,117.6	69.7%
Gardner	10,967.5	1,864.7	407.8	569.4	922.0	74.4%
Holden	19,072.0	2,654.1	191.6	811.5	520.7	82.0%
Hubbardston	24,913.5	509.7	73.6	751.0	581.2	92.9%
Leominster	12,999.1	3,463.5	779.6	594.9	1,157.0	68.4%
Paxton	8,174.5	936.2	15.3	505.1	272.6	82.5%
PRINCETON	21,443.8	863.4	21.9	316.6	287.8	93.5%
Rutland	21,296.4	841.5	37.9	588.0	403.7	91.9%
Sterling	16,851.9	1,458.5	76.3	805.8	1,039.0	83.3%
Westminster	19,919.6	1,685.4	105.1	1,268.7	881.5	83.5%
Worcester	8,047.7	9,572.2	2,821.3	647.1	3,511.7	32.7%
Total	176,238.0	27,065.4	5,390.0	7,111.6	10,694.8	77.8%
1999 Conditions						
Fitchburg	11,659.9	3,704.0	1,132.1	262.7	1,240.2	64.8%
Gardner	9,848.9	2,421.4	604.5	579.2	1,277.4	66.9%
Holden	17,715.5	3,591.9	256.1	814.7	871.7	76.2%
Hubbardston	23,296.6	1,519.9	114.3	729.2	1,169.0	86.8%
Leominster	10,887.4	5,043.5	1,193.0	591.3	1,278.8	57.3%
Paxton	7,629.5	1,495.2	19.9	505.1	254.2	77.0%
PRINCETON	20,153.4	1,976.4	39.5	421.1	343.0	87.9%
Rutland	20,100.8	1,798.2	48.3	573.4	646.6	86.8%
Sterling	14,505.1	3,041.7	224.8	808.9	1,651.0	71.7%
Westminster	18,498.9	2,716.3	246.7	1,270.0	1,128.5	77.5%
Worcester	6,481.5	10,664.2	3,301.2	644.0	3,509.2	26.3%

Source: MassGIS. Photo interpretation by U-Mass Amherst Resource Mapping Project; statistics by author.

forcing evidence of the growth pressures affecting northern Worcester County.¹⁸

PAST PLANS & STUDIES

Princeton's first master plan was completed in 1970 and subsequently updated in 1975, 1980, and the late 1980s. All of the plans present

goals and recommendations for open space and recreation, such as establishing a fund for purchasing conservation land, providing land for recreational use, and preserving open space. As early as 1980, Princeton's planning studies recommended cluster zoning and cluster development as a tool to save open space. In 1991, Princeton retained Central Massachusetts Regional Planning Commission (CMRPC) for a Land Use Development Plan. The town's most recent Open Space and Recreation Plan was completed in 2000.

¹⁸ Central Massachusetts Regional Planning Commission (CMRPC), 2020 Growth Strategy for Central Massachusetts-Update 2004 (December 2004), 3-4, 6-8.

Land Use Plan (1991)

For the Land Use Development Plan (1991), Princeton commissioned a comprehensive analysis of development patterns under existing zoning. As part of this process, the town polled local residents about future growth and development. When asked what is desirable about living in Princeton, 86% of the survey respondents cited Princeton's rural nature, 66% cited scenic views, and 64% cited open space. The responses to questions about Princeton's zoning controls were particularly telling: only 27% thought the zoning bylaw, subdivision regulations, and Board of Health regulations were sufficient to manage growth, and nearly half favored stricter wetlands and septic system regulations than those in force at the state level.¹⁹

The 1991 plan recommended cluster zoning, a local wetlands bylaw, and a local scenic rivers bylaw to limit activity along tributaries of the Stillwater River in order to protect water quality and preserve wildlife corridors. It also recommended zoning within flood hazard areas in order to minimize flood damage. The State Building Code requires that the lowest floor of residential buildings be elevated to or above the 100-year floodplain, and that non-residential buildings be similarly elevated or flood-proofed up to the base flood level, with plans certified by a professional engineer or architect for compliance with accepted standards.

For basic floodplain regulations, the 1991 plan suggested that Princeton establish more restrictive elevation criteria and require a special permit for any development in the floodplain district. The plan also recommended that Princeton prohibit filling, dredging or dumping in the floodplain, and to prohibit land uses that would become hazardous if flooded. Finally it advised the town to adopt local standards for repairs to structures within a floodplain because the State Building Code does not require property owners to comply

with floodplain construction standards unless the cost of repairs exceeds 50% of the market value of the structure.

These and other proposals have not been implemented.

Open Space and Recreation Plan (2000)

Princeton published its most recent Open Space and Recreation Plan in May 2000. Consistent with state requirements, the plan included an inventory of Princeton's natural resources, scenic, cultural and historic areas and conservation and recreational sites, and a public participation process. This information was used to analyze Princeton's resource protection, recreational and land management needs, prepare open space and recreational goals and objectives, and develop a Five-Year Action Plan to address as many needs as possible. A few of the Five-Year Action Plan steps have been implemented, notably the construction of Krashes Field and creation of a small community skating rink. The Open Space Committee is currently updating the 2000 plan for submission to the Division of Conservation Services (DCS).

ISSUES, CHALLENGES & OPPORTUNITIES

Local Capacity

Although residents invariably cite open space and scenic views as Princeton's greatest assets, the town does not have enough tools to protect these resources. A comprehensive resource protection strategy is crucial in small towns, for even the most affluent communities do not have the funds to buy all of the land they would like to save. Princeton's past ambivalence about growth management, open space and environmental regulatory proposals raises important questions about the town's perception of its role in guiding development. Possibly residents have found it difficult to envision a future in which many of their town's revered qualities have all but disappeared.

¹⁹ CMPRC, Land Use Development Plan (1991), 4.

OPEN SPACE & RECREATION PLAN 2000 – HIGHLIGHTS

Resource Protection & Recreation Needs

- Preservation of rural character.
- Creation of trail connections.
- Identification and preservation of wildlife corridors.
- Protection and maintenance of hunting and fishing areas.
- Maintenance of quality of groundwater drinking supplies.
- Implementation and enforcement of Wetlands Protection Act and Rivers Protection Act.
- Maintenance of historic and cultural sites.
- Provision of additional playing fields for organized youth sports.

Goals and Objectives

- Protection and enhancement of the natural environment.
- Protection/preservation of scenic landscapes, open meadows, and agricultural fields.
- Preservation of existing open space areas and areas of outstanding natural beauty.

- Quality recreational facilities and adequate recreational opportunities for all Princeton residents.
- Maintenance of existing recreational fields as well as future facilities.
- Maintain and enhance fish and wildlife habitats.

Five-Year Action Plan

- Develop and maintain additional recreational fields for baseball/softball and soccer.
- Develop and maintain trails for a variety of users.
- Preserve open fields, meadows and agricultural lands, and preserve forested lands and encourage use of Chapter 61, 61A and 61B for wildlife habitat, biking, hunting, and fishing.
- Identify wildlife corridors and greenways and work with landowners to protect these areas.
- Establish new forms of community recreation, such as a community skating rink or perhaps a town pool.
- Organize and host public information sessions which reach out and provide landowners with options for conserving their land.
- Establish a permanent Open Space and Recreation Implementation Committee.

Arguably, Princeton could continue to evolve from a rural enclave to low-density suburb in ways unnoticed by current residents. Many towns east of Worcester also had trouble adopting and implementing strategies to protect open space and natural resources until they faced an urgent problem: the sale of a Chapter 61A farm, an application for a large comprehensive permit, the discovery of contaminated water supplies, or the arrival of big-box development. These challenges may seem remote to people in Princeton today, and since the town has so much protected land it is deceptively simple to think of Princeton's beauty as timeless. In fact, the threats to Princeton's character have far less to do with large projects than the incremental loss of open land, a condition that gradually reduces access to open space, creates traffic and

circulation conflicts, and replaces wildlife habitat with low-density housing.

Another challenge for small towns is that often, major planning initiatives attract more newcomers than long-time residents. As a result, policy proposals appearing to have broad support may actually express the views of a small, cohesive group that does not represent the population as a whole. For open space and resource protection, the risk of narrow support can become very problematic if the proposals seem to threaten the interests of large land owners with historic ties to the town. Princeton's fairly slow growth during the 1990s masks the fact that in 2000, more than 30% of its households had moved into town since 1995.

Physical Features and Development Constraints

Princeton has severe development constraints and they contribute to a view that Princeton's risk of unwanted change is very low. For example, most of the soil types found in Princeton pose limitations for development due to hardpan layers, rockiness, excessively steep slopes or drainage. The town would benefit from a parcel-based inventory of land containing soils suitable for septic systems, a task that will be much easier to complete with GIS technology, an accurate, current digitized assessor's map, and digitized soil maps.

In addition, at least 10% of Princeton's total land area is comprised of wetlands. While federal and state laws help to protect these resources, local bylaws and regulations usually support a more comprehensive approach and provide additional (often more effective) means of enforcement. To date, Princeton has not established the basic environmental regulatory powers that come with a local wetlands bylaw or a floodplain bylaw to control development within the 100-year floodplain.

Most of Princeton falls under the jurisdiction of the Watershed Protection Act, which limits land uses and development around tributaries and surface waters. While the WsPA affects development in many parts of town, it does not preclude development on most of Princeton's vacant land. Since there is no public water supply in Princeton, townspeople rely on private wells for their drinking water, unlike residents of many Eastern Massachusetts communities that obtain their water from the MWRA, i.e., water transmitted from Princeton's region. From the town's point of view, the absence of a public drinking water system may seem advantageous for long-term growth control, but the same condition limits Princeton's flexibility to plan for future growth.

Open Space Use Conflicts

Despite Princeton's vast open space, not all residents think of "open space" the same way, and not

everyone thinks the town should save open space for the same reasons. In public meetings and focus groups for this Master Plan, some residents noted that restrictions on the use of watershed and wildlife holdings limit public enjoyment of open land by "privileging" natural resource interests over outdoor recreation interests. A good example is the prohibition against dogs in a wildlife sanctuary; the restriction serves valid conservation interests, yet those who enjoy walking through woodlands and fields often like to take their dogs on the same excursion. Horseback riding is also restricted or prohibited on some types of open space, such as watershed lands.

People living in rural areas often enjoy hunting, in fact some would argue that hunting is essential to a rural way of life. For public safety reasons, however, hunting is often limited or simply banned in state parks and forests, water supply areas, and local conservation land. When allowed in wildlife management areas, hunting is usually subject to seasonal limits and other regulations, but today, newly acquired open space often comes with explicit prohibitions against hunting. The same applies to off-road or all-terrain vehicles, which are popular in some areas but incompatible with the interests of protecting wildlife habitat. Finally, while the general public appreciates working landscapes and many would support protecting farmland, farmers do not always benefit from agricultural restrictions because the prohibitions against future development are so broad.

Balancing open space conservation and recreation interests is difficult, but it is made even more difficult by constraints associated with acquisition financing and land ownership. For example, communities throughout Massachusetts rely heavily on the Self-Help Program, a grant source administered by the Division of Conservation Services (DCS). State regulations restrict property acquired with Self-Help funds to conservation and passive recreation uses. Similar requirements govern the Conservation Partnership Program, which helps small non-profit organizations protect

Competing demands for open space and recreation areas are not unique to Princeton. In the statewide conservation and recreation plan, **Massachusetts Outdoors 2000!**, one of the subcommittees that helped to develop the five-year plan had this to say:

...Because so many recreation activities occur within or depend upon natural areas, some of which are quite sensitive to human activity, the [subcommittee] report stressed the importance of striking a balance between resource protection and recreation use...

Multiple uses of land and resources is a worthy goal and a common characteristic of many recreation areas. When multiple use places heavy demand on

a resource, however, an action plan must be in place to mitigate adverse impacts to the resource and avoid user conflicts.

The compatibility between recreation uses and the recreation carrying capacity of multiple use resources should be evaluated. This evaluation can be accomplished by determining the range of recreation uses for a site, the extent of demand for each use and compatibility between these uses. It is important to remember that although certain uses may be compatible with one another, their cumulative impacts may be unacceptable. [Massachusetts Outdoors 2000!, Statewide Comprehensive Outdoor Recreation Plan (2001), 102.]

open space in their towns. In exchange for state funds, the non-profit must convey a conservation restriction to the community in which the land is located or an approved state agency. The impact of ownership on open space use is best illustrated by the different rules that apply on Massachusetts Audubon Society's Wachusett Meadows and wildlife management areas controlled by the Division of Fisheries & Wildlife (now MassWildlife).

Habitat Protection

A comprehensive fisheries and wildlife inventory improves the quality and effectiveness of an open space and recreation plan because it is important to preserve habitat both for common and rare species. Documenting the habitat for moose, bear, fisher, birds of prey, water birds, reptiles and amphibians would help to set land protection priorities and guide land use decisions.

Zoning Challenges

Princeton has three zoning districts, but the town has effectively zoned all of its land for single-family residential development. Even in the commercial and industrial districts, single-family homes are a permitted use and as a result, usable land zoned for business and industry has often been developed for housing. Moreover, the entire

town is zoned for two-acre lots, which invites a suburban growth pattern. Existing policies do not promote resource protection by designating areas for compact development or supplying the Planning Board with regulations to encourage or require open space in new residential developments. Without these types of regulations, Princeton's rural ambience will gradually erode as multiple divisions of land produce fragmented open space and a rise in residential land consumption. "Rural" does not mean uniformly spread out development.

Agricultural, Forest and Recreation Land

Princeton has about 85 properties (including contiguous parcels under the same ownership) in Chapter 61, 61A and 61B status, representing a combined total of 4,937 acres of land. However, only 286 acres are protected from development through conservation or farmland restrictions held by public agencies or non-profit organizations.

In many cases, these properties are located in areas classified as Supporting Natural Landscape because they connect and buffer Core Habitat Areas. Since they have only temporary protection from a change in use, it is important to develop a strategy to protect the most significant parcels and guide the development of others with sensitive zoning

that saves open space by design. Unfortunately, small towns in the state's high-growth regions have found that when a strong housing market drives up the value of land, farm and forest landowners have little incentive to make permanent fixed investments that might increase the productivity of traditional rural land uses but add no market value for potential future development. For these and other reasons, Chapter 61 and 61A land is particularly vulnerable to development.

Recreation and Eco-Tourism

Efforts to protect the region's open space and recreational areas by promoting eco-tourism have been fairly successful, but eco-tourism is difficult to develop. Hospitality and recreation industry statistics show that overall, day trips to mountains, wildlife areas and agricultural lands rank fairly low among the recreational opportunities that exist across the state, and while visitors are likely to seek overnight accommodations near mountain resorts, open space such as wildlife areas, farms and trailways produce very few overnight stays.²⁰

The challenge is to combine and promote activities that serve many interests and have the effect of protecting ecologically significant areas. For Princeton and neighboring towns, water-based recreation – the state's most popular attractions, whether coastal or inland waters – may always be limited by the constraints against swimming that come with strict watershed laws. Swimming, walking and sightseeing lead the list of most popular recreational activities in Central Massachusetts, followed by hiking, fishing, picnicking, playground visits, wildlife and nature study, and golf.²¹ Under existing conditions, Princeton fits within this picture, though only in part.

²⁰ Massachusetts Outdoors 2000!, 21-37 *passim*.

²¹ *Ibid*, 63-67.

Environmental Concerns

East Wachusett Brook provides high-quality habitat that has little disturbance, but according to the Massachusetts Department of Environmental Protection, the headwaters northeast of Little Wachusett Mountain are impaired due to high fecal coliform bacteria.²² As a result, East Wachusett Brook is classified as "Category 5" water on the state's list of impaired waters, which means it requires a Total Maximum Daily Load (TMDL) or environmental remediation plan.

The TMDL is a provision of the U.S. Clean Water Act that requires pollution control plans for certain impaired waters. These plans establish pollutant reduction goals and set an enforceable maximum quantity of pollutants that a waterbody can receive and still meet basic water quality standards. Remediation is important because even though the Stillwater River itself is only a "Category 2" at present, degradation of the headwaters could lead to impairment further downstream. (Category 2 includes waters found to support the uses for which they were assessed, such as primary- or secondary-contact recreation, or aquatic life, but other uses have not been assessed.)

DEP has classified five of Princeton's ponds as "Category 2" waters: Bickford Pond, Lower Crow Hill Pond, the Quinapoxet Reservoir and Wachusett Lake.²³ Paradise Pond is classified as Category

²² Nashua River Watershed Association (NRWA), "5-Year Action Plan 2003-2007" [cited 15 August 2005], at <http://www.nashuariverwatershed.org/5yr_plan/subbasins/stillwater.htm>.

²³ Department of Environmental Protection (DEP), "Proposed Massachusetts Year 2004 Integrated List of Waters (CWA Sections 305b and 303d)" [cited 15 August 2005], at <<http://www.state.ma.us/dep/brp/wm/tmdls.htm>>. The Massachusetts Year 2004 Integrated List of Waters was developed to comply with reporting requirements of both Section 305(b) ("Water Quality Inventory") and Section 303(d) ("List of Impaired Waters") of the Clean Water Act (CWA). The integrated list format provides the status of all

3, which means attainable uses have not yet been assessed. Still, it is important to note that the sample data used to prepare water quality inventories and classify waters by degree of impairment do not always reflect average water quality conditions within a watershed or in a particular tributary. As a result, the state's classification of water bodies in Princeton may not be fully accurate.²⁴

Land Protection Priorities

The town, state agencies, local land trusts and environmental organizations express strong support purchasing and protecting more open space, but there does not appear to be a shared set of priorities for land acquisitions or maintenance. Criteria to guide acquisition choices and other protection strategies would help to assure that limited resources will be used to meet the most important open space needs. The same criteria could support a framework for identifying areas that can accommodate development with limited or no adverse impacts on natural resources.



Open fields and woodlands that contribute to the town's rural image should be important preservation priorities in Princeton. (Photo by Community Opportunities Group, Inc.)

assessed waters in a single multi-part list. Category 5 of the Integrated List constitutes the "Section 303(d) List" of waters that are impaired for one or more designated uses and require the development of total maximum daily loads (TMDL).

²⁴ Sampling stations are sometimes located in areas with known water quality issues, and results can be skewed by sampling methodology or factors that existed when the samples were drawn, such as storm flows. In addition, bacteria detected upstream of a drinking water reservoir can dissipate during travel time. For additional information, see Department of Conservation and Recreation (DCR), Division of Water Supply Protection, Bureau of Watershed Management, Watershed Protection Plan Update, Wachusett Reservoir Watershed (2003), 4, 7, at <<http://www.mass.gov/mdc/2003wachwpp.htm>> and Water Quality Report 2004: Wachusett Reservoir and Watershed (March 2004), 9-25 passim, at <<http://www.mass.gov/dcr/waterSupply/watershed/water.htm>> select "Water Quality."

OPEN SPACE AND NATURAL RESOURCE RECOMMENDATIONS

Priority Matrix & Vision Plan

Princeton needs a comprehensive strategy to protect large tracts of land, but it is also important to assess the needs that open space should meet and to resolve use conflicts in advance. A system for ranking priority open space, an open space vision plan and a shared approach to use planning and land management would help the town, state agencies, land trusts and other organizations work together to protect Princeton's land and water resources. This effort needs to begin with establishing criteria to evaluate private land for its open space significance and suitability for various protection strategies. While acquisition is the most effective way to protect land, it is not the only way. Moreover, it is unrealistic to think that Princeton can buy all of the land that residents may want to protect from development.

The Open Space Committee, Planning Board, Conservation Commission and Select Board should jointly lead a process to develop open space evaluation criteria. Joint leadership is important because each board has a role to play in shaping Princeton's open space future, and each board represents different interests. The process should include other local officials, private property owners and state agencies or non-profit land trusts that own land in Princeton, and residents interested in open space as well as other municipal needs. The criteria they agree to should be ranked, weighted, arranged in a matrix and field-tested on a selection of properties in order to determine whether the criteria make sense "on the ground." Once the criteria (or weights) have been adjusted and refined, the Open Space Committee could apply the criteria to other privately owned, unrestricted land with known or perceived conservation value. The result would be a list of potential candidates for land acquisition, grouped into categories of relative importance to the town as a whole.

An open space vision plan, guided by the land evaluation matrix, would help to promote coordinated planning and provide a framework for evaluating priority open space parcels. It also would help the Planning Board work with developers of sites that neither the town nor other organizations had the resources to acquire, and it would help developers design projects on land with known conservation or recreation value. Of course, developers will not be able to use the vision plan effectively unless Princeton adopts more flexible zoning.

Conservation Fund

Assets such as Wachusett Mountain and the Wachusett Reservoir have led to major open space investments by state agencies and non-profit conservation organizations. As a result, Princeton has an inventory of protected land that most communities in Massachusetts will never be able to assemble. However, the same condition means

that in the past, Princeton did not have to work as hard as many other towns to save its open space.

Princeton's first master plan (1970) urged the town to establish a conservation fund so that resources would be available when owners decided to sell their land. A conservation fund is similar to a stabilization fund but with a restricted purpose: land acquisition. Towns with successful track records in open space protection almost always have a conservation fund that can be tapped for small-parcel purchases by the Conservation Commission or as a source to leverage grants from agencies such as the Division of Conservation Services. For example, communities applying for Self-Help grants have to obtain an appraisal of the land they intend to buy, and a conservation fund gives them a ready resource to pay for appraisal services, surveys and so forth. A conservation fund may also be used for land management.

Residents have said repeatedly that Princeton needs to become more pro-active about acquiring open space, yet the town does not have a clear plan to do so. Regular annual appropriations to a conservation fund – even in small amounts – would make open space a visible part of town government's agenda and help Princeton take a more disciplined approach to open space. In towns with a long-standing commitment to acquiring open space, appropriations to the conservation fund have become "housekeeping" measures at town meeting each year.

Princeton also could consider petitioning the legislature for authority to place "rollback" taxes from the sale of Chapter 61, 61A or 61B land into a conservation fund. By law, these receipts are General Fund revenue that may be appropriated for any municipal purpose. However, the legislature has already allowed at least one town to restrict the use of rollback taxes for open space.

Community Preservation Act

Princeton needs to consider adopting the Community Preservation Act (CPA), M.G.L. c.44B, which the legislature enacted in September 2000 to address three statewide needs: open space, historic preservation and affordable housing. Currently 119 cities and towns have adopted CPA, and six others have scheduled referendum votes in the spring (2007). Neighboring Hubbardston just adopted CPA in November 2006, and three more north-central towns are on the list for spring ballot votes: West Boylston, Lunenburg and Phillipston. In contrast, Paxton recently rejected a proposal to adopt CPA.

Communities that adopt CPA have authority to impose a surcharge on their property tax bills. The surcharge is set locally, not to exceed 3%. Surcharge revenue may be used to address any of the statutory purposes of CPA as long as each purpose receives at least 10% of the revenue per year. In turn, the state provides matching funds from fees paid for transactions recorded at the registry of deeds. The actual amount of the state match depends on the community's own local effort (the surcharge percent) as well as the state trust fund's available balance. As more towns adopt CPA, the state's contribution will decline because monies in the trust fund will have to be divided among a larger pool of participating communities. Still, access to the state share means that a town could carry out more CPA-funded projects because the funds available for CPA activities are not limited to the local surcharge.

In very small towns like Princeton, CPA will not produce much revenue. Even if Princeton approved the maximum allowable surcharge of 3% without any of the exemptions allowed by law, the revenue generated locally (excluding state matching funds) would be about \$183,000. Although this is not enough to pay for an important parcel of open space, it could be enough to support all or a large portion of the debt service on a bond issuance to buy open space.



Mature trees and stone walls define the roadside just about everywhere in Princeton. (Photo supplied by Master Plan Steering Committee.)

Trails Inventory

Princeton should have a town-wide plan for open space trails. Residents appreciate the trails that exist in Princeton today, and they are concerned about losing access to trails as new development occurs. There are active trail organizations in Princeton's area, notably Wachusett Greenways and the Mid-State Trail Association, and the Central Massachusetts Regional Planning Commission (CMRPC) has prepared several regional trails plans, including the North Suburban Inter-Community Trail Connection Feasibility Study (2002).

The first step in developing any trails plan is to document existing trails. The Open Space Committee or Planning Board could seek help from regional or local organizations to identify and map the approximate location of these trails, ideally working with existing data and a GPS unit. GPS data can be used in any GIS application, and

Princeton will soon have GIS capability at town hall or through a contract with CM-RPC.

Scenic Roads

In Massachusetts, local authority to protect trees is governed by two state laws: the **Scenic Roads Act**, M.G.L. c.40, Section 15C, and the **Shade Tree Act**, M.G.L. c.87. The Scenic Roads Act is voluntary on the part of cities and towns, but the Shade Tree Act imposes certain requirements on a community's tree warden. Also, the scope of the Scenic Roads Act includes stone walls, but the Shade Tree Act does not.

Princeton has found it very difficult to reach consensus about the merits of adopting the Scenic Roads Act. Although scenic road regulations were recommended in Princeton's 1991 Land Use Plan and more recently in a heritage landscape report funded by DCR, town officials remain concerned that adopting the Scenic Roads Act will make it impossible for the Highway Department to maintain Princeton's roads. This is not true.

At least 50 communities in Massachusetts have adopted the Scenic Roads Act. Most are small towns, like Princeton, that value their rural design characteristics. By adopting the Scenic Roads Act, they gained authority to classify roads or portions thereof as "scenic roads" and regulate tree or stone wall removal along designated ways. Scenic roads must be designated by town meeting, based on nominations made by the Planning Board, Historical Commission or Conservation Commission. The law exempts numbered routes unless the route is located entirely within the boundaries of the city or town and no part of it is owned by the state.

The Scenic Roads Act provides that "any repair, maintenance, reconstruction, or paving work... shall not involve or include the cutting or removal



The image of rural living makes Princeton very attractive to local residents. It also could be used to lure visitors and make farming, land conservation and cultural activities vital elements of the local economy. (Master Plan Committee)

of trees, or the tearing down or destruction of stone walls, or portions thereof..." until the Planning Board has held a public hearing. Communities that have adopted the Scenic Roads Act also have a local bylaw and regulations to implement it; through the local bylaw, they may impose a fine for violating the state law. The regulations establish review criteria for proposals to remove trees or stone walls located within a public right of way. Many bylaws also include procedures for emergency removal of trees posing an imminent public safety hazard.

The Shade Tree Act defines a public shade tree as any tree within the boundaries of a public right-of-way. Removal of a shade tree requires a public hearing and issuance of a permit by the Tree Warden. The law also provides that if anyone objects to cutting down or removal of a shade tree, the Tree Warden is prohibited from issuing a permit unless the Board of Selectmen approves the tree removal. Some types of activity are exempt, such as removing trees with a diameter of less than 1.5" one foot from the ground, or brush/shrubs, and the law explicitly exempts removal of trees that endanger the traveling public. When a shade tree also falls under the jurisdiction of the Planning Board via the Scenic Roads Act, the Planning

Board and Tree Warden conduct a joint public hearing.

Local Wetlands Bylaw

A local wetlands protection bylaw would help the Princeton Conservation Commission work as effectively as possible to assure that development does not harm the town's wetlands. More than half of the Commonwealth's communities have adopted a local wetlands bylaw and administrative regulations that supplement their authority under the state Wetlands Protection Act, M.G.L. c.131, Section 40. In fact, Princeton and Rutland are the only towns in the immediate area that have not adopted a local wetlands bylaw. By adopting a local counterpart to the state law, communities have expanded the purview of their Conservation Commissions and imposed more stringent standards than the requirements found in state law.

Eco-Tourism




Princeton could use its abundant resources to greater economic advantage by collaborating with businesses, institutions and state agencies with ties to eco-tourism. Aside from Wachusett Mountain, the Mid-State Trail or the Wachusett Meadows Wildlife Sanctuary – all resources with an established place in regional tourism – the town's Wind Farm is an intriguing resource of interest to environmental organizations across the country. It has received widespread attention in renewable energy circles and it is an unusual attraction in its own right.

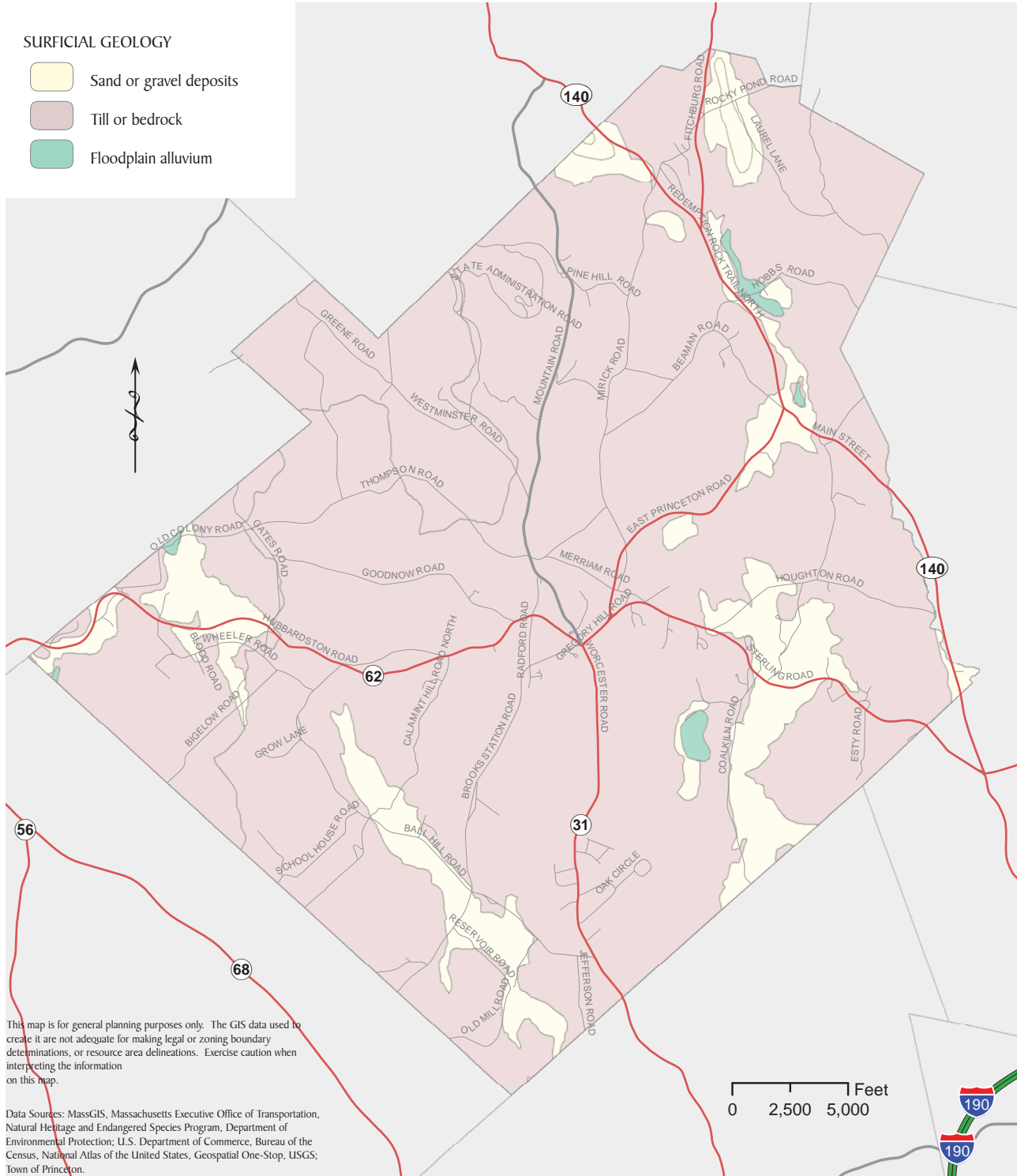
Improved coordination of eco-tourism initiatives and joint planning, land conservation and resource management could create new ways to protect natural resources and rural landscapes. For example:

- Identify and protect land that offer opportunities for resource protection, open space and recreation activities.
- Establish local and regional multi-use recreational trail connections, map them, and make trail maps available at town hall or the library and through local businesses.
- Provide meaningful public access to all town parks, hiking trails, and ponds.
- Establish or strengthen local ties to regional organizations engaged in eco-tourism or agri-tourism planning and development.
- Encourage compatible activities in the local economy: artists and art festivals, cottage industries, shops for local crafts, farm stores, bed-and-breakfast establishments.
- Develop and implement land management strategies.

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SURFICIAL GEOLOGY

-  Sand or gravel deposits
-  Till or bedrock
-  Floodplain alluvium



Town of Princeton, Massachusetts

MASTER PLAN

3.1 SURFICIAL GEOLOGY

April 2007



Princeton Master Plan Steering Committee

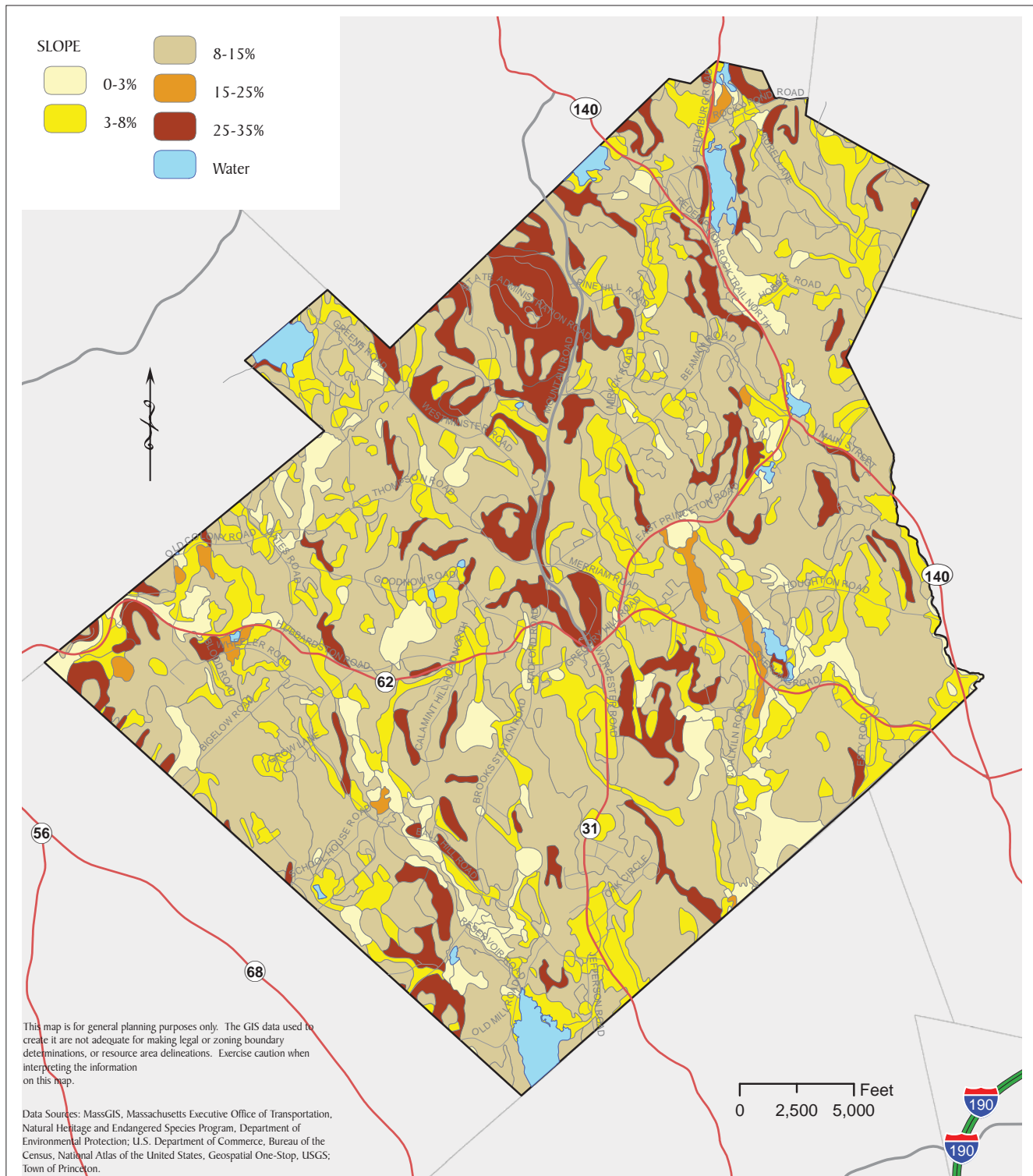
Consulting Team:

COMMUNITY OPPORTUNITIES GROUP, INC.

Larry Koff & Associates

Howard/Stein-Hudson Associates, inc.

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Town of Princeton, Massachusetts

MASTER PLAN

3.2 SOILS

June 2007



Princeton Master Plan Steering Committee

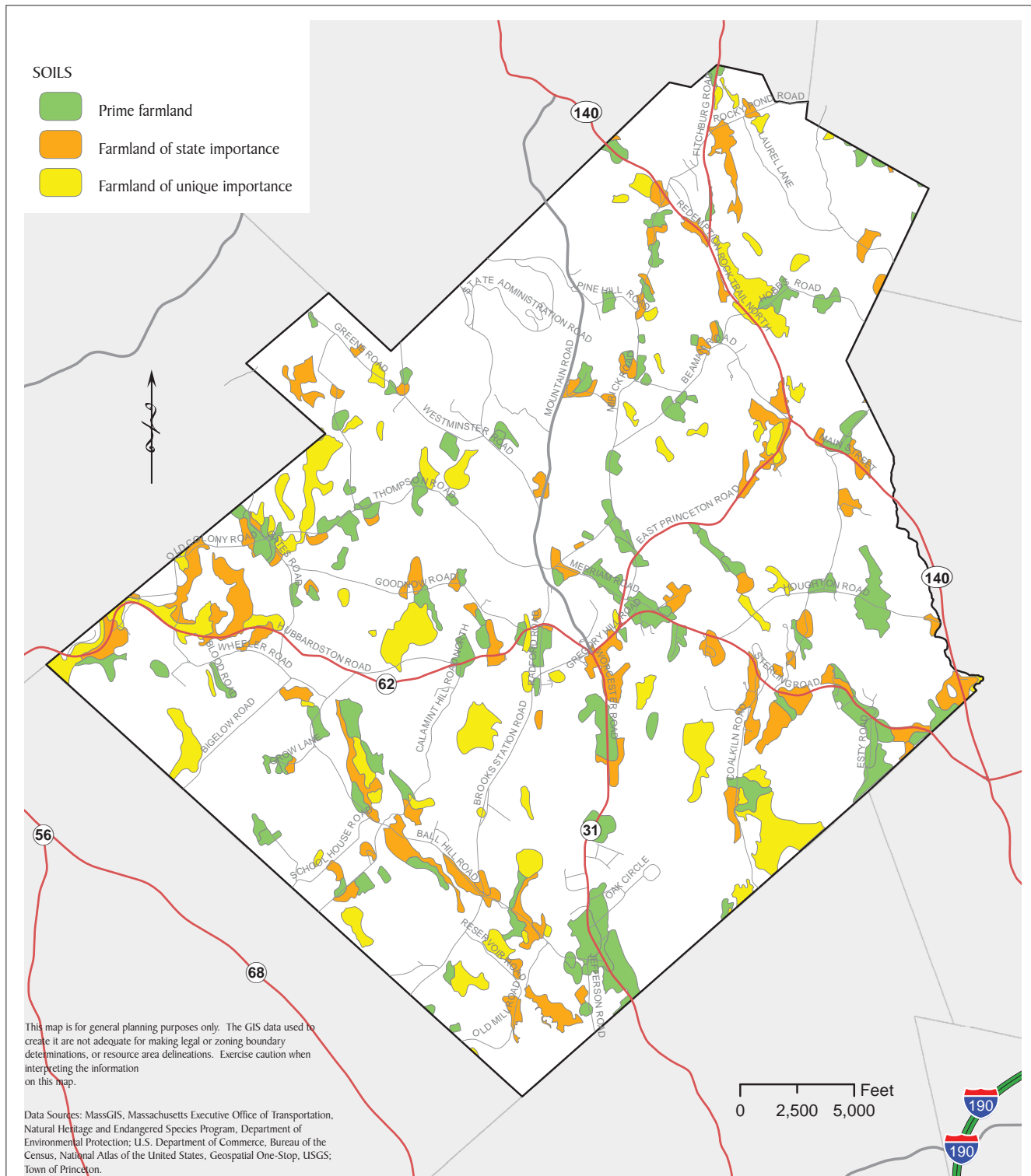
Consulting Team:

COMMUNITY OPPORTUNITIES GROUP, INC.

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Town of Princeton, Massachusetts

MASTER PLAN

3.3 FARMLAND SOILS

April 2007












Princeton Master Plan Steering Committee

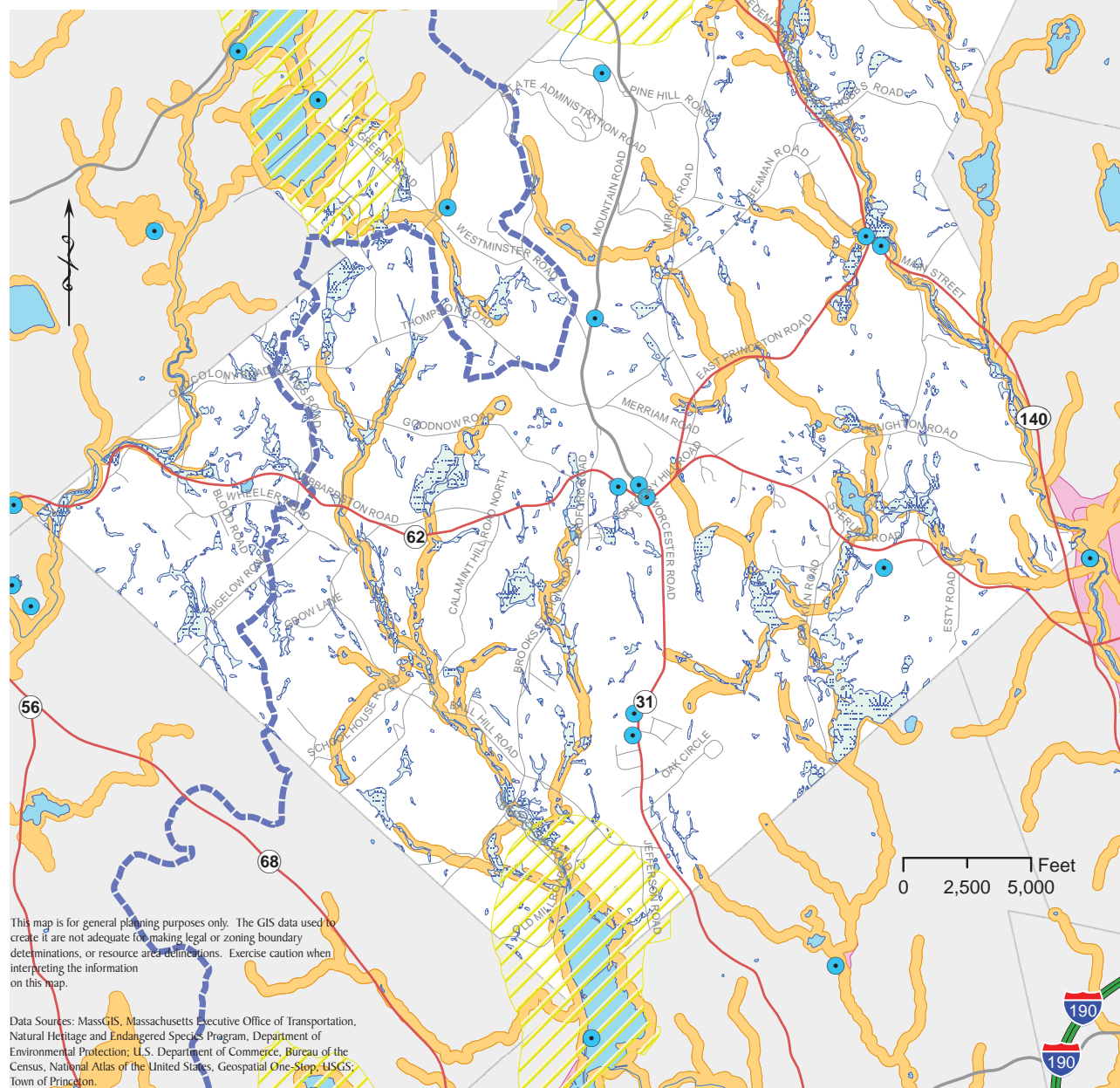
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WETLAND & WATER RESOURCES

-  Open Water
-  Aquifers
-  Marsh, Swamp, Bog
-  Watershed Boundary
-  Rivers and Streams
-  DEP Drinking Water Supplies
-  Aquifers
-  Surface Water Protection Areas
-  Zone A
-  Zone B



Town of Princeton, Massachusetts

MASTER PLAN

3.4 WATER RESOURCES

April 2007



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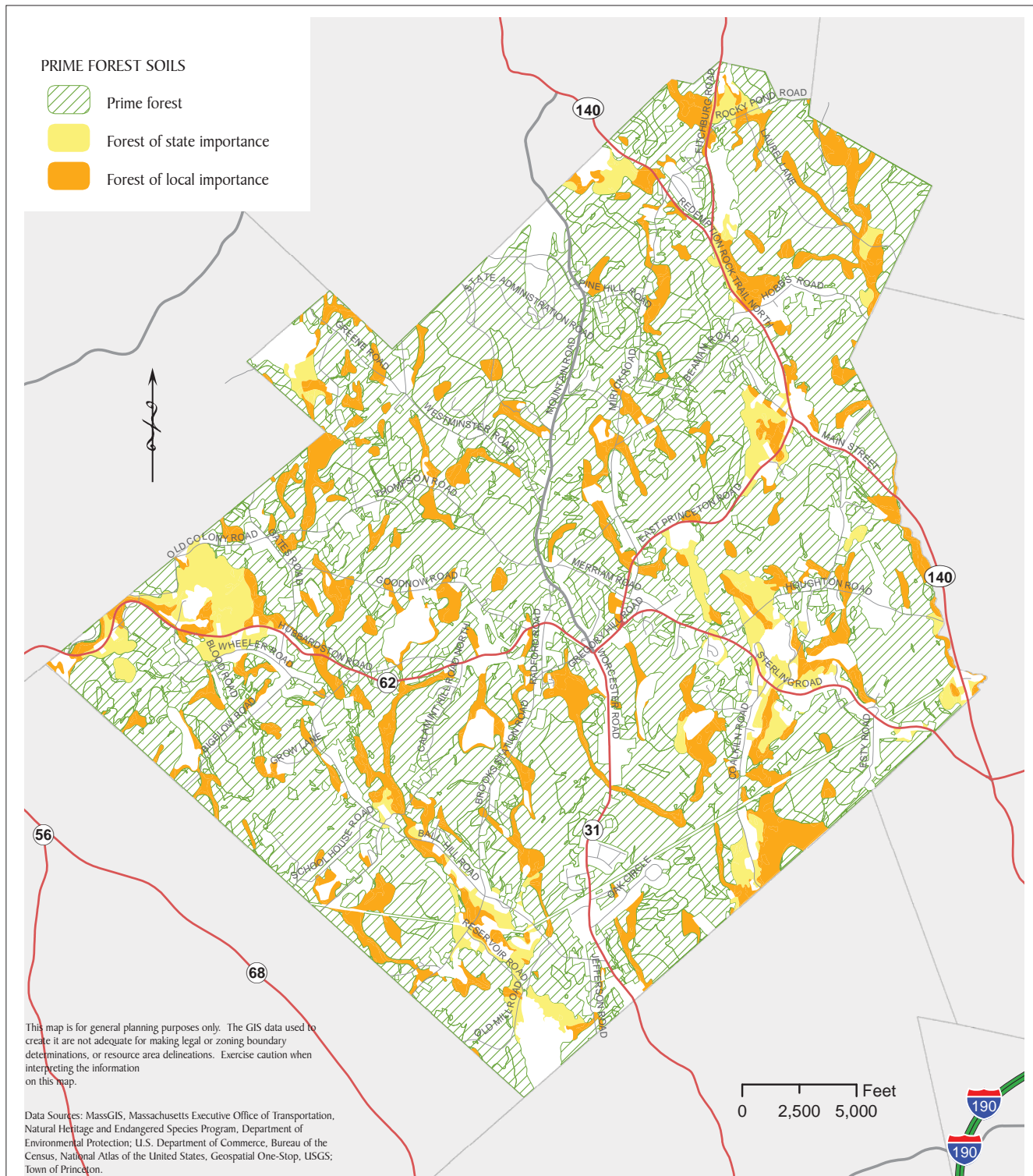
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Town of Princeton, Massachusetts
MASTER PLAN

3.5 PRIME FOREST

April 2007



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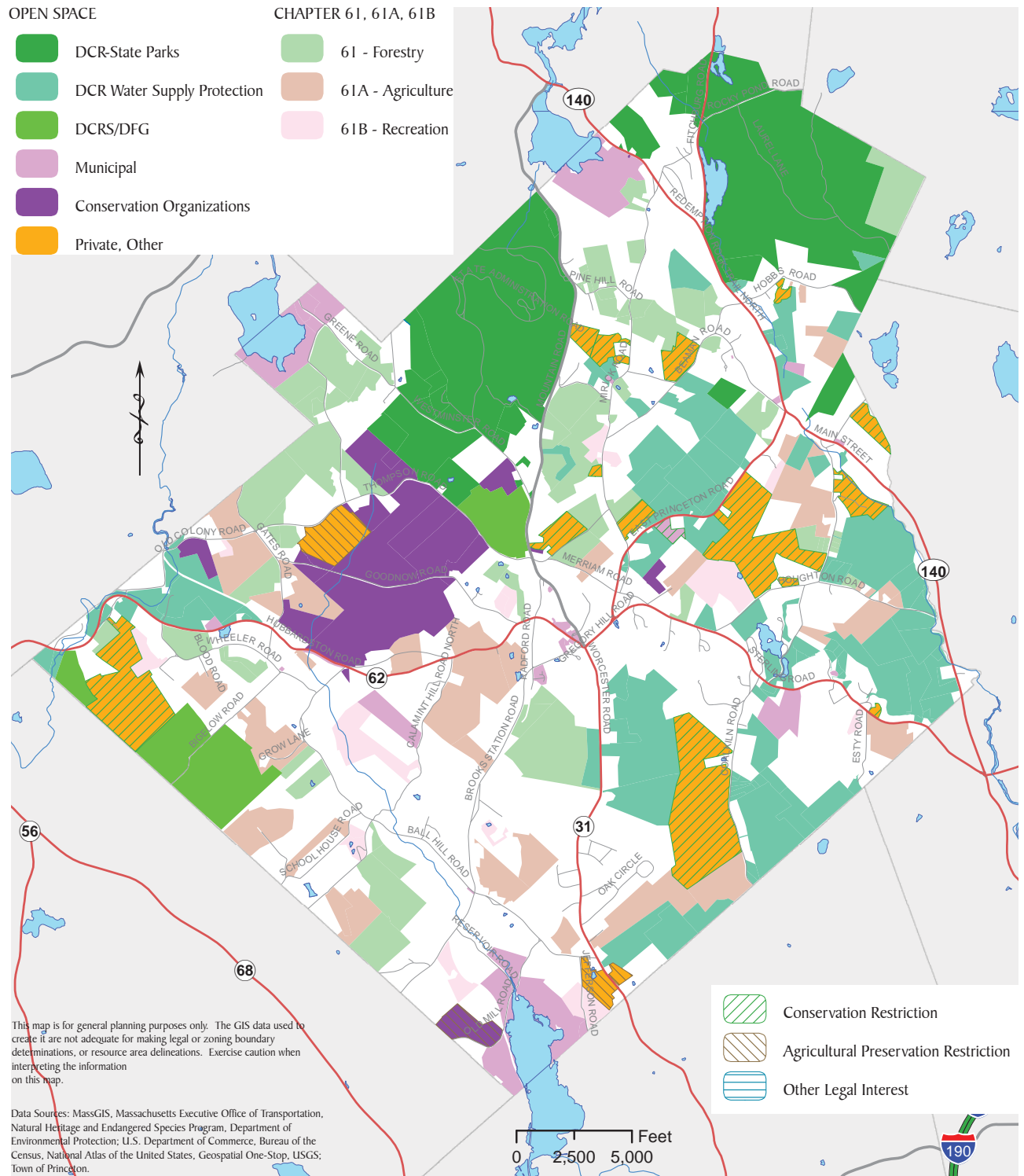
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Town of Princeton, Massachusetts

MASTER PLAN

3.7 OPEN SPACE

April 2007



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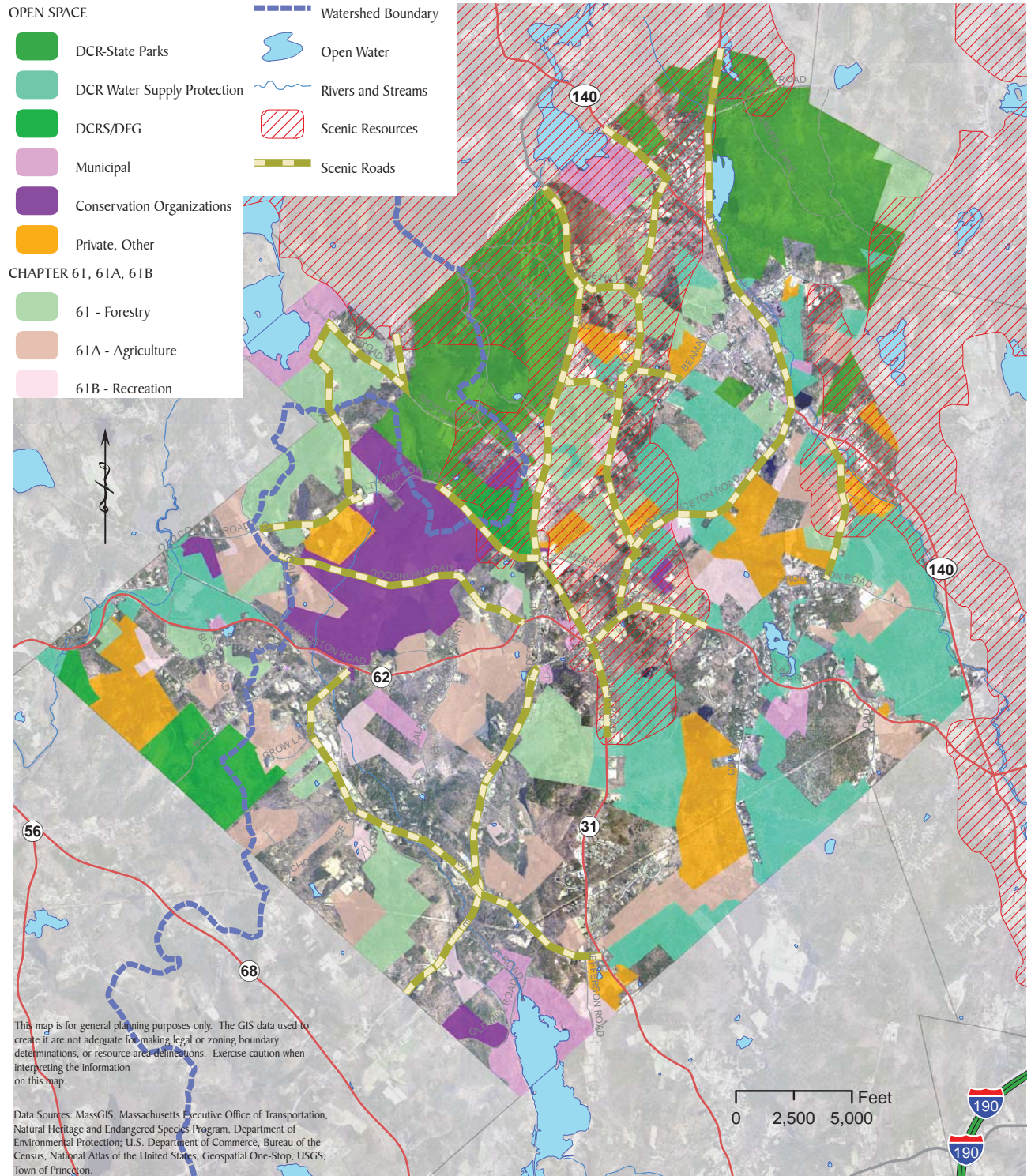
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Town of Princeton, Massachusetts

MASTER PLAN

3.8 RESOURCE OVERLAYS

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