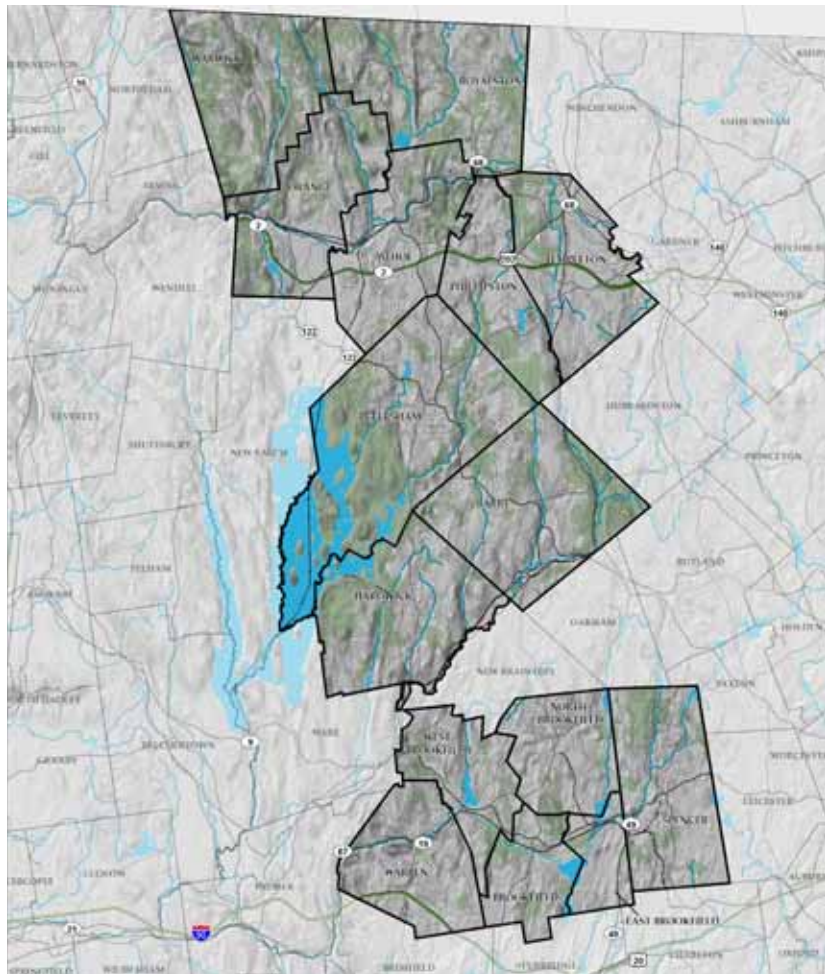




RECONNAISSANCE PHASE FINAL REPORT

UPPER QUABOAG WATERSHED AND NORTH QUABBIN REGION LANDSCAPE INVENTORY

MASSACHUSETTS HERITAGE LANDSCAPE INVENTORY PROGRAM



Massachusetts Department of Conservation and Recreation
Central Massachusetts Regional Planning Commission
North Quabbin Regional Landscape Partnership

June 30, 2008

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Other products associated with the Final Report include:

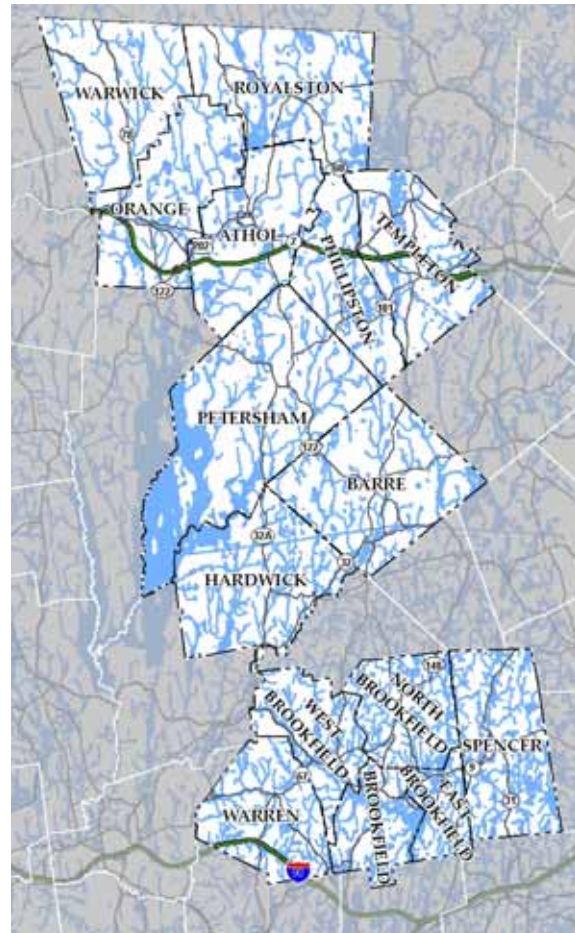
Spreadsheets – These list all 1277 heritage landscapes identified by the 15 communities that participated in this project. They are in Excel chart form and can be sorted according to community, type etc. A printout of the full list is not included here because the large amount of data is most effectively used in electronic form.

INTRODUCTION

Heritage landscapes are special places created by human interaction with the natural environment that help define the character of a community and reflect its past. They are dynamic and evolving, reflect the history of a community and provide a sense of place. They show the natural ecology that influenced land use patterns and often have scenic qualities. This wealth of landscapes is central to each community's character, yet heritage landscapes are vulnerable and ever changing. For this reason it is important to take the first step toward their preservation by identifying those landscapes that are particularly valued by the community – a favorite local farm, a distinctive neighborhood or mill village, a unique natural feature or an important river corridor.

To this end, the Massachusetts Department of Conservation and Recreation (DCR) and its regional partners, the Central Massachusetts Regional Planning Commission (CMRPC) and the North Quabbin Regional Landscape Partnership (NQRLP), have collaborated to bring the Heritage Landscape Inventory program to fifteen communities in central Massachusetts. The goals of the program are to help communities identify a wide range of landscape resources, particularly those that are significant and unprotected, and to provide communities with strategies for preserving heritage landscapes.

The communities within the Upper Quaboag Watershed and North Quabbin region of central Massachusetts share a common dispersed settlement pattern as well as an early agricultural economy and later shift into manufacturing. Developed along a series of major waterways and their tributaries, including the Millers, Quaboag and Ware Rivers, this region contains vast cultural and historic resources and uncommon natural beauty. The heritage landscapes in the participating communities reflect the agrarian and industrial past while providing recreational and educational opportunities for today. From scenic town commons and natural areas to civic buildings and burial grounds, the heritage landscapes within the region collectively tell the story of their varied and often turbulent, history.



*Upper Quaboag Watershed and North Quabbin Region
Heritage Landscape Inventory project area*

History of the Heritage Landscape Inventory Program

In 2001 the Massachusetts Department of Conservation and Recreation (then the Department of Environmental Management) initiated the Heritage Landscape Inventory pilot project to develop a methodology for documenting heritage landscapes throughout the Commonwealth. The pilot project, which included 15 communities in southeastern Massachusetts, focused on heritage landscapes that were undocumented and did not have long-term protection. During the first phase of the pilot project, a broad range of potential heritage landscapes were identified in each community and documented in a brief reconnaissance report. In the second phase, intensive survey was undertaken for 57 heritage landscapes using Massachusetts Historical Commission (MHC) methodology. *Reading the Land, A Guide to Identification and Protection of Heritage Landscapes* was also produced as part of the pilot project.

In 2004 the Department of Conservation and Recreation (DCR) partnered with the Essex National Heritage Commission (ENHC) to undertake a heritage landscape inventory in Essex County. In this project the reconnaissance phase, which was particularly useful to communities during the pilot project, was expanded, while intensive survey was more limited. Twenty-four of the 34 Essex County communities applied to the program and were selected to participate in the reconnaissance phase. A reconnaissance report was completed for each participating community. This report was an expanded version of those completed in the pilot project and included descriptions of priority heritage landscapes, planning recommendations and a master list generated by participants at the local heritage landscape identification meeting. In the intensive survey phase, ten heritage landscapes were documented using MHC methodology. These ranged in scale from a single navigational marker to a full river corridor. The reconnaissance reports are available on the DCR website.

In 2005 DCR collaborated with the Southeastern Regional Planning and Economic Development District (SRPEDD) and the Taunton Wild & Scenic River Study Committee to bring the Heritage Landscape Inventory program (HLI) to six communities along the Taunton River that had not participated in the pilot project. Here the methodology was the same as in Essex County, with expanded reconnaissance reports produced for each of the six communities. The Taunton Wild and Scenic River Study Committee supported the intensive survey phase, which included a survey plan for one town, three area forms and an archaeological survey for a property identified by two adjacent communities.

In 2006 DCR partnered with the Freedom's Way Heritage Association (FWHA) to prepare a Heritage Landscape Inventory of 22 Massachusetts cities and towns in the Freedom's way **area**

of north-central Massachusetts. Heritage Landscape identification meetings were held in each community; fieldwork was conducted; and a final reconnaissance report was written. In communities that requested it, follow-up meetings were held to discuss the recommendations contained in the reconnaissance reports and to help communities begin to implement them.

PROJECT METHODOLOGY

The methodology for the Heritage Landscape Inventory program was developed in a pilot project conducted in southeast Massachusetts. It is outlined in the DCR publication *Reading the Land*, which has provided guidance for the program since its inception. In each of the 15 towns selected to participate in HLI program, a Local Project Coordinator (LPC) was appointed to serve as a community liaison and to assist the DCR consulting team. The LPC gathered a wide range of community members from various boards and commissions, as well as representatives from local organizations and interested citizens, to participate in a heritage landscape identification meeting. At the meeting, the consulting team worked with participants to identify and prioritize the landscapes that embody the community's character and its history.

At the meeting, participants were given a brief description of the HLI methodology and examples of heritage landscapes, and were asked to identify heritage landscapes in their community. Large wall maps were supplied to help locate specific sites and areas, and a list of all possible sites was recorded on a flip chart. Once the master list was created, participants were asked to use "sticky dots" to select up to five landscapes they each considered most important. The consultants then facilitated a discussion during which five or six priority heritage landscapes were selected by the group. Many of these were areas or corridors made up of several sites identified during the initial brainstorming session.

The meeting was followed by a fieldwork session including the consulting team, the Local Project Coordinator and interested community members. This group visited each of the priority landscapes identified in the meeting and gathered information about their significance, physical characteristics and the issues confronting each one. Based on the meetings, site visits and research into local history, planning and zoning, the consultants created a Heritage Landscape Reconnaissance Report for each community. This report outlines the community's landscape history, discusses broader land planning issues identified by the community, describes the priority heritage landscapes and issues associated with them and concludes with preservation recommendations.

MAPPING THE HERITAGE LANDSCAPES

Introduction

Since its inception, the Heritage Landscape Inventory program has involved a minor mapping component, designed to record the general size and location of each of the prioritized heritage landscapes. However, the mapping process lacked a well-defined methodology, and the information was not made available for use to its full capacity. For the Upper Quaboag and North Quabbin project, much more detailed maps were prepared, and a conscious effort was made to document the methodology and look at additional ways that the mapping component could be used to further community and regional planning efforts. The impetus was a new effort to develop a Heritage Landscape Atlas, an on-line resource where communities throughout the state can go to view and download map data about their heritage landscapes.

In order to support local planning and decision making, a set of community-wide maps was prepared showing the boundary of the Priority Heritage Landscapes, based on physical landscape features identified by local participants in the meetings and fieldwork. The goal of the mapping was to locate each priority heritage landscapes in relation to others in town, identify the boundaries of each priority heritage landscape, and define the edge of the area where future changes would directly impact the priority heritage landscape resource. This is the area that must be kept largely intact in order to preserve the essential story of that place.

The Priority Heritage Landscapes – while usually just a small fraction of the whole town – do not exist in isolation; they are often surrounded by undeveloped land, and connected to each other by a network of natural and cultural features – all of which is part of the daily experience of residents and visitors. The experience of arriving at a historic town common is very different, for example, if you have to travel past miles of frontage lots, subdivisions and strip malls to get there. The value of a scenic agricultural district is likewise changed forever when the surrounding roadsides and hills are cut up for house lots. Thus it is important to plan not only for the Priority Heritage Landscapes, but also for their surrounding context. To do this, two additional landscape categories were mapped during the course of this project: Supporting and Connecting Heritage Landscapes.

Definitions and Selection Criteria

Priority Heritage Landscapes

During the HLI local identification meetings, participants first identified potential heritage landscapes by type, then designated Priority Heritage Landscapes that most embody the community's character and history and are not permanently protected. Landscapes were prioritized by the community

members based on the methodology described in Reading the Land and the experience of previous projects, and the input of local participants.

Through fieldwork and an orthophoto analysis, a map was prepared showing each individual Priority Heritage Landscape area, using the MassGIS orthophoto as a base, with bubbles and arrows overlaid to indicate the important sites and features of the priority heritage landscape as described in the report. Where multiple separate but contiguous areas or features within a single geographic area were identified and prioritized, these were merged into a single priority heritage landscape incorporating structures, roads, rivers and ponds. This was then used as the basis for identifying each Priority Heritage Landscape on the community-wide map.

Supporting Heritage Landscapes are those that may not have the same quality or number of resources as the Priority Heritage Landscapes, but which nevertheless contribute to the Priority Landscapes and buffer them from physical and visual impacts. For example, while a Priority Heritage Landscape might include an historic mill complex, with its structures, dams and sluiceways, the Supporting Landscape could include the surrounding riverbanks and hillsides. Changes to the Supporting Landscape, such as clearing or inappropriate development, do not directly change the Priority Landscape, but are likely to have an indirect impact on its visual character and historic value. Not all Priority Landscapes have a corresponding supporting landscape. They were selected based on the following criteria

- They must be contiguous to priority landscapes.
- They may have been named during the local id meeting, but not included in the Priority Landscape areas.
- They may already have an existing historic resource designation that indicates that they are significant.
- They do not directly relate to the priority landscapes, but provide a visual and/or physical buffer from nearby development or other landscape change.
- They include areas observed during the fieldwork that contain the types of historic or scenic resources identified in the local meetings that, while not included in the selected Priority Heritage Landscapes, still contribute to the character of the town as a whole.

Connecting Heritage Landscapes are corridors or parcels that link priority landscapes visually or physically and embody the historic development patterns and visual character of the community. Typically following a road, rail or river corridor, they convey the story of the town while also preserving a rich aesthetic experience. As with Supporting Landscapes, loss of their scenic or historic quality would impact the character of the town as a whole. In the case of natural landscapes,

they can be essential to preserving the viability of ecological communities. On a regional level, Connecting Heritage Landscapes help to highlight the rivers, turnpikes and railroads that were often the determining factors in the region's growth and development patterns. They also help to show opportunities for cross boundary coordination of heritage landscape protection efforts.

Connecting Heritage Landscapes were selected using the following criteria, which mirror those used in selecting the Priority Heritage Landscapes:

- **Connectivity:** They connect two or more Priority Heritage Landscapes, or are part of an historic regional transportation corridor. These included railroads, turnpikes and historic coach roads, with an emphasis on those identified by local participants.
- **Public interest:** They have historic and/or scenic value that was identified in the local meetings or field work.
- **Integrity:** They have small amount of inconsistent recent development, and retain historic roadside features such as stone walls, trees and structures.
- **Threat:** Community members felt that these particular corridors were vulnerable to future change.

Protected Open Space

The Heritage Landscape Inventory process focuses on areas that are unprotected, and thus most vulnerable to future landscape change. While Priority Heritage Landscapes sometimes extend into protected open space areas, the process of mapping and field work generally excluded sites that are already permanently protected. These areas are depicted on each community-wide map to see where there is overlap and potential links. In a few cases, local participants identified parcels of protected open space as Priority Heritage Landscapes – usually because despite being protected, the historic, scenic or ecological value of these areas is still at risk. These properties appear on the map overlaid with the protected open space layer. The area of overlap is called out with a green cross-hatching.

Mapping Methodology

The following describes the decision making process and mapping method used for establishing the boundaries of Priority, Supporting and Connecting Heritage Landscapes. In each case, clearly-defined criteria as laid out above were established to identify these landscapes, based on the input of local volunteers at the meetings and field work. Where general setbacks and buffers have been identified, these establish a distance necessary to protect a resource value, such as roadside views or ecological function, expressed by participants in each town. It should be noted that while these

criteria are designed to produce boundaries based on clear and objective standards, they are meant to be used for planning purposes only.

Areas

The boundaries of village centers and other distinct areas such as agricultural districts were based on physical features identified by participants in the local meetings and field work. These were identified on the computer, using as a base the MassGIS 2005 Orthophotos. Tracing occurred at a variety of scales, ranging from 1:2000 to 1:24,000 depending on the size and complexity of the identified landscape. The location of the boundary was set at the point of perceived landscape change, such as the edge of a meadow, hedgerow, stone wall, or the line between historic village house lots and more recent subdivision development. Where local participants identified specific properties, parcel boundaries were used as the boundary of the heritage landscape.

Roadways

Roads are part of most Priority Landscapes and many Supporting Landscapes, and are the most common type of Connecting Landscape. Local participants identified scenic value and roadside cultural features as the most important elements associated with roads. In order to capture these features on the maps, a setback of 200 feet was established from each side of the road. This setback was selected due to it providing coverage to encompass not only the public right of way, but also because this distance is most likely to include historic features that contribute to the character of the landscape, such as stone walls, trees and structures, and represents the distance that can readily be seen from the roadside. Where roadside farmland or other cleared areas allow more extensive views, the boundary was expanded to the edge of the open land use.

Railroads

As with roadways, the visual and historic resources associated with railroads tend to follow a narrow corridor. Except for areas where participants identified wider areas associated with train depots, rail corridors were mapped with a 200 foot setback.

Streams, rivers and water bodies

Like roadways, river corridors tend to gather most of their historic and scenic value within a relatively narrow setback. Participants frequently identified mills sites, dams and other industrial features, as well as walking trails – all of which tend to be close to the river bank. Towns are also very concerned about wildlife habitat and water quality, which tend to extend further from the water's edge. While wetlands and waterbodies have a 100 foot regulatory buffer under the Massachusetts Wetlands Protection Act, and the Massachusetts Rivers Protection Act protects a 200 foot setback from the riverbank, a wider buffer is often needed to ensure protection of ecosystems, water quality and cultural resources associated with the river. To incorporate these

factors a setback of 300 feet was mapped from the edge of rivers, streams and ponds identified as Priority, Supporting or Connecting Heritage Landscapes.

Scenic Vistas

In many cases, participants identified a specific view point or vista along a roadside as an important Heritage Landscape. In these cases the boundary includes both the view point and the viewshed – that is, the principal area visible from that point. Boundaries were set at the boundary of the foreground viewshed; which might be the edge of an open meadow or adjacent ridgeline. The distance included in the designated viewshed was limited to about half a mile from the viewpoint, which includes the area where aesthetic impacts are most pronounced.

Protected Open Space

The boundary of areas identified by the state as “protected in perpetuity” within the state’s protected open space layer was used as the boundary of the Priority Heritage Landscapes, as well as when establishing the boundaries of the Supporting and Connecting landscapes.

Edge Complexity

As Priority and Supporting Heritage Landscapes were mapped, small leftover areas were sometimes created that would not be considered important, but which are largely surrounded by Heritage Landscapes. Unless these small islands and narrow strips were clearly incompatible, they were incorporated into the Heritage Landscape surrounding them. Similarly, the boundary of Heritage Landscapes is sometimes dissected by short jogs and changes in the overall land cover. Again, unless these were clearly incompatible, the edge was simplified to incorporate small areas that might otherwise not be designated as Heritage Landscapes.

Conclusions: Mapping Cultural Ecosystems

Maps showing the boundaries of the Priority Heritage Landscapes have been included in the reconnaissance report for each community. Priority, Supporting and Connecting landscapes have also been compiled into a single regional map (Figure 1). This map illustrates one of the key goals of the mapping process, which was to demonstrate how towns can use the process of inventorying and mapping heritage landscapes to guide conservation of the larger landscape systems upon which the character of the town depends.

This approach is commonly used by Biologists in planning for conservation of rare species of plants and animals. Like historic resources, the occurrence of rare species is often marked by a single point on a map. Natural resource managers have learned, however, that maintaining rare

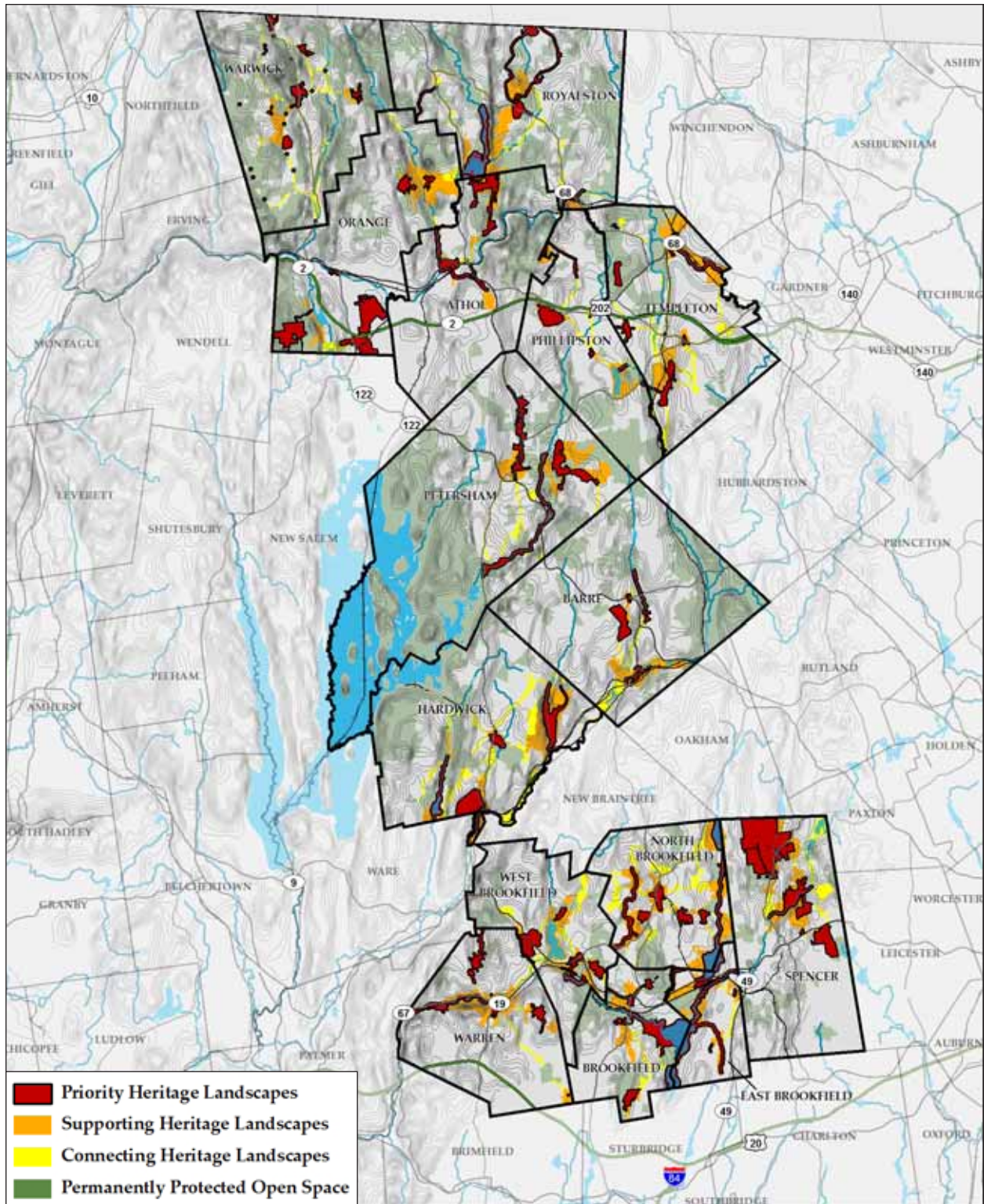


Figure 1. Priority, Supporting and Connecting Heritage Landscapes

species populations means protecting the habitat upon which they depend for their survival. The immediate habitat, moreover, can be affected by changes in surrounding land use. To help identify these areas, the Massachusetts BioMap program has mapped out “Core Habitat” and “Supporting Natural Landscapes” throughout the state. Core Habitat is that area that a particular species lives in, and which must be protected largely intact if that species is to survive. Supporting Natural Landscapes, as the name implies, buffer the Core Habitat areas, and while not as directly important, provide critical food, water and movement corridors that are essential to long-term survival of the population.

Using natural ecosystems as a model or analogue, it is useful to think of Heritage Landscapes as “cultural ecosystems,” which must be preserved as intact, functioning landscapes. Like natural ecosystems, if you preserve just the most important part of the Heritage Landscape but allow other elements to be lost, the core will start to die. This is easiest to see in working agricultural landscapes, where farming depends on constant inflow of energy, water, nutrients, and a supporting infrastructure of equipment, supplies, and access to markets. If one part of the system breaks down, farming can cease to be viable.

“Rural Character” – often mentioned in town plans, but rarely defined – can also be seen as a kind of cultural ecosystem, for it is based on functional relationships and energy flows. These can still be active, as in the case of working farm landscapes. More often, rural character resides in the physical remains of past working landscapes. Villages, farms, forests, road networks, rivers and mill sites were once all part of a well-organized functional system. While no longer functioning as such in many of our small towns, the physical structure of the system remains. The result is a landscape of great visual variety, with an underlying structure that ties everything together into a single composition. This composition unfolds as we travel around the town, revealing both a narrative of that place as well as an experience of rich aesthetic impact. In other words, by preserving the cultural ecosystem intact, we preserve the story of that place, as well as an experience that is beautiful on its own terms.

The mapping system developed for the Upper Quaboag Watershed and North Quabbin Region Heritage Landscape Inventory is designed to identify, as far as possible, the cultural ecosystem of each town. Boundaries for the Priority and Supporting Heritage Landscapes have been established according to a simple methodology, following the overall idea of identifying the minimum area that must be considered in planning for the conservation of that place. As in any mapping process, this requires certain choices and assumptions to be made that reduce what may be a complex situation to a simple line on the ground – so we have tried to make the process as transparent as possible. We offer the results as a demonstration of the technique as much as a finished product, and welcome suggestions for improvement.

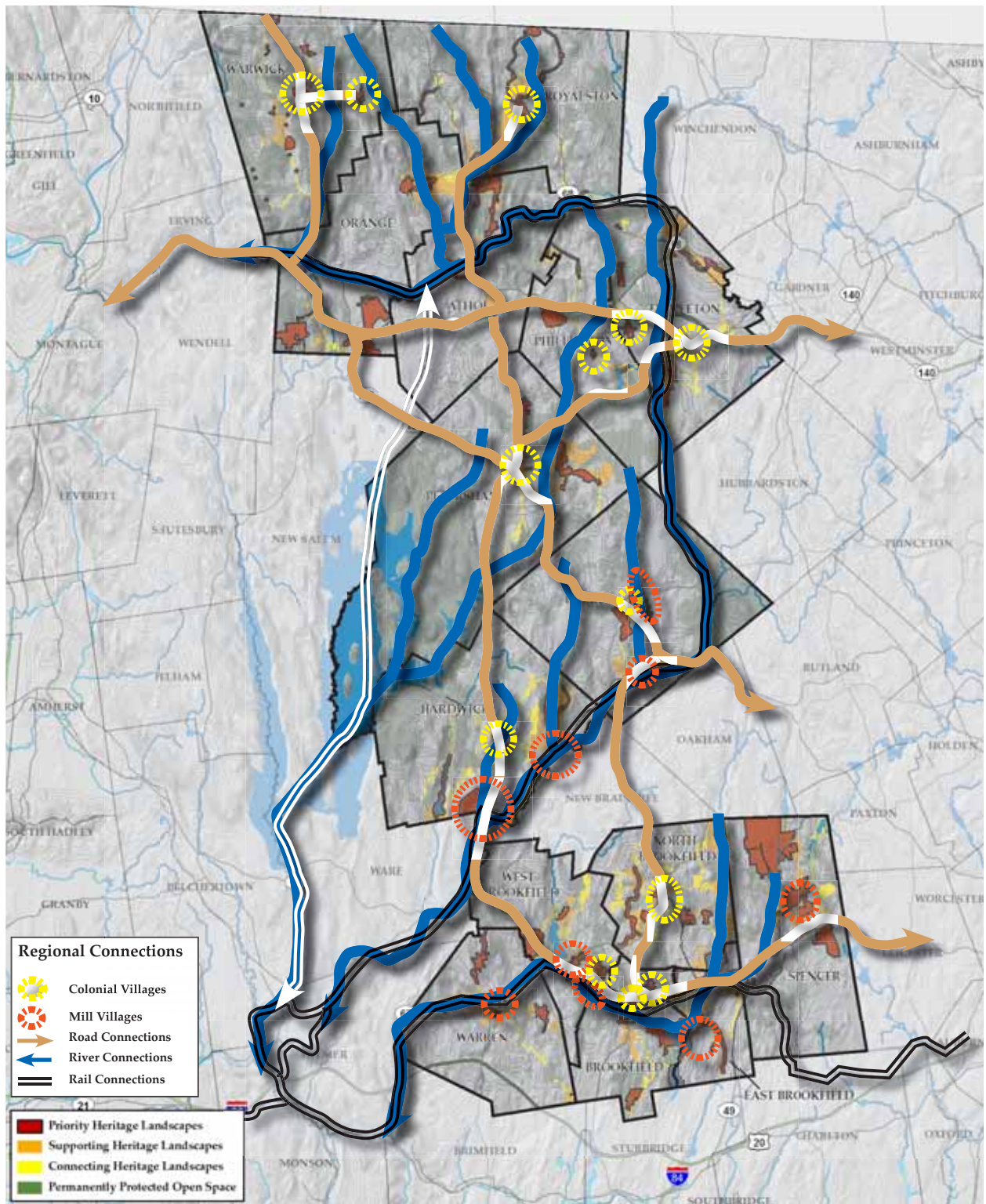


Figure 2. Regional Heritage Landscape Systems

The interaction of these varied heritage landscapes is illustrated in Figure 2. These regional heritage landscape systems help to explain the cultural ecology which was responsible for the region's settlement patterns, and which continues to provide the visual structure underlying the landscape. Rivers, together with the topography of hills and valleys, were among the strongest determinants of settlement and landuse patterns. Road connections, which originally followed the ridgelines, connected the colonial hilltop villages that were the first centers of commerce and industry. Early turnpikes were a boon for some villages, while bypassing others. Through the 19th century, mill villages grew up around sources of water power, flourishing most often where rivers and regional roads intersected. Finally, the railroads came through, mostly following the river corridors, where they reinforced the mill villages that they connected, and threw those they bypassed into decline. As a result, the growth and survival of almost every settlement in the region can be traced to this functional network of transportation and water power. You cannot fully understand, preserve and interpret the history of any one place without doing the same for the cultural ecosystem that ties the region together.

GENERAL FINDINGS

The total number of heritage landscapes identified in the 15 participating communities was 1116. The number per community ranged from 56 in East Brookfield to 99 in Spencer. In all cases they included diverse landscape types ranging from farms to village centers to cemeteries and river corridors. They also represented a range of scales, from monuments and mile markers to hilltops and extensive agricultural districts. Many of the landscapes identified were scenic, but there were also former industrial landscapes and archaeological sites with few visible features. In some cases communities identified a category of landscapes, such as scenic roads, stone walls and burial grounds, to be designated as a single heritage landscape priority. A summary of the heritage landscapes identified during the project is shown in Table 1.

As described by Table 1, nearly every town had at least one example of every landscape type in the initial listing. As Priority Heritage Landscapes were selected, each was assigned a primary landscape type. Figure 3 illustrates the results. Each town had examples of multiple types. Not surprisingly, the most common were agricultural landscapes, followed by civic, archaeological, natural, open space & recreation, industrial, and burial. Residential, commercial, institutional, and military landscapes were limited to five landscapes in all the towns, perhaps because these features are often part of civic landscapes.

Town	Priority Landscapes Identified	Total Heritage Landscapes Identified	Agricultural	Archaeological	Burial	Civic	Industrial	Institutional	Military	Natural	Open Space/ Recreation	Residential	Transportation
Athol	5	76	5	7	9	6	4	9	4	10	6	9	7
Barre	5	92	16	7	8	10	8	11	8	8	9	3	4
Brookfield	5	78	7	5	1	11	6	5	0	6	15	16	6
East Brookfield	5	56	6	8	4	8	4	3	0	7	2	6	8
Hardwick	5	75	8	5	5	5	4	12	5	10	11	3	7
North Brookfield	7	69	8	7	6	7	3	7	5	11	2	9	4
Orange	6	65	5	7	4	10	5	8	3	9	5	7	2
Petersham	5	88	6	9	7	2	2	16	2	11	13	15	5
Phillipston	6	67	11	9	6	8	0	3	2	11	6	8	3
Royalston	5	63	7	10	6	4	2	5	1	8	5	3	12
Spencer	5	99	16	3	6	8	9	8	4	7	16	8	14
Templeton	5	88	9	12	5	6	7	10	0	7	11	13	8
Warren	6	58	3	2	4	8	2	9	6	5	3	11	5
Warwick	7	80	8	15	6	3	2	5	3	15	14	6	3
West Brookfield	7	62	7	8	4	6	5	6	5	7	1	7	6
TOTALS	84	1116	122	114	81	102	63	117	48	132	119	124	94

Table 1. Heritage Landscapes by Community and Type

For each town’s Reconnaissance Report, a spreadsheet was prepared listing each of the Upper Quaboag and North Quabbin (UQNQ) heritage landscapes identified during this project. These tables can be found as Appendix A in each town’s report. It should be noted that some heritage landscapes were identified as more than one landscape type, and though noted in the town’s chart, each heritage landscape was only counted as one, primary landscape type in Table 1 above. In many instances, townwide priority landscapes also made regional connections, and certain heritage landscapes types were repeatedly selected by each town as a priority landscape (for example, most towns identified their town common).

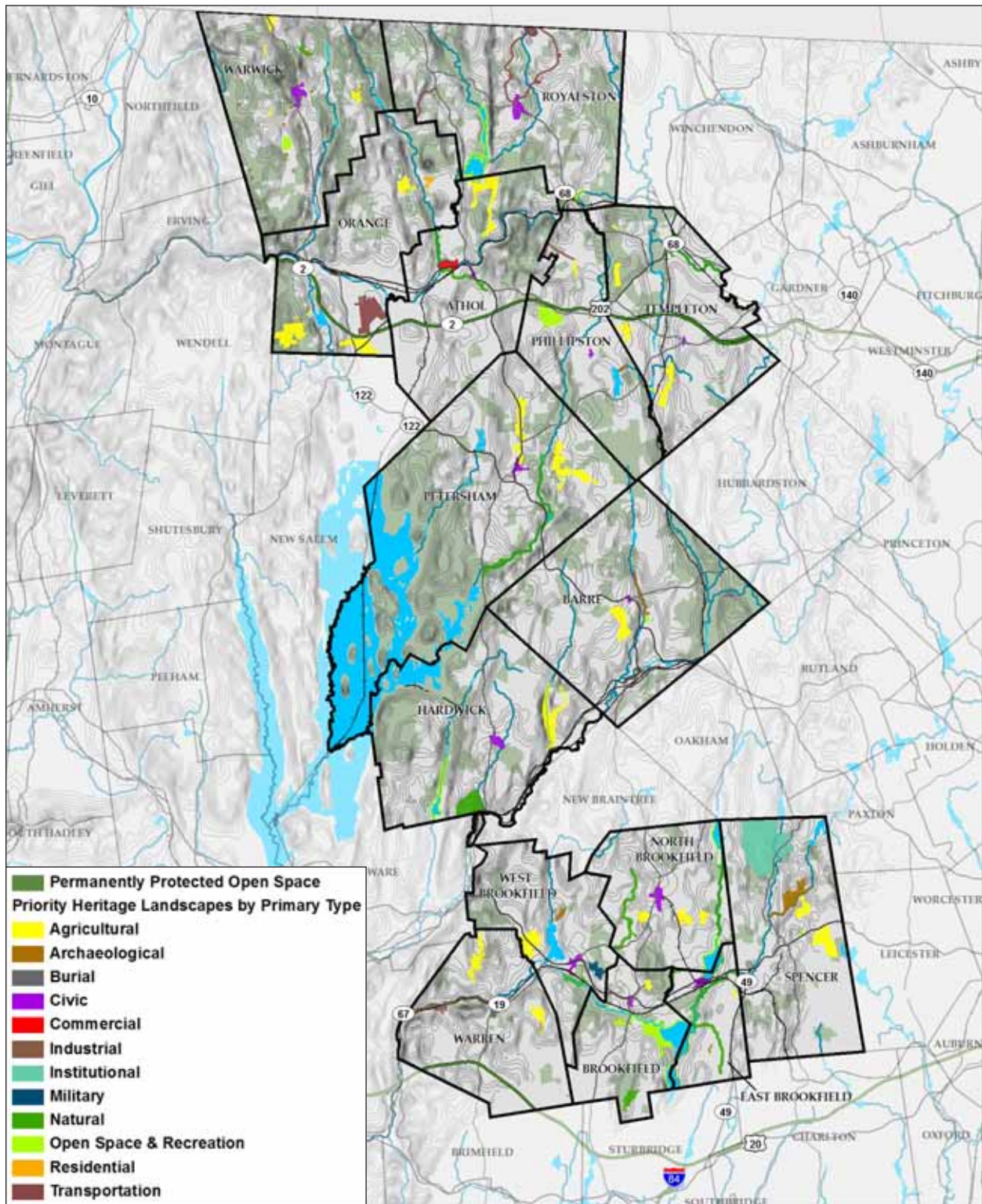


Figure 3. Priority Heritage Landscapes Categorized by Type

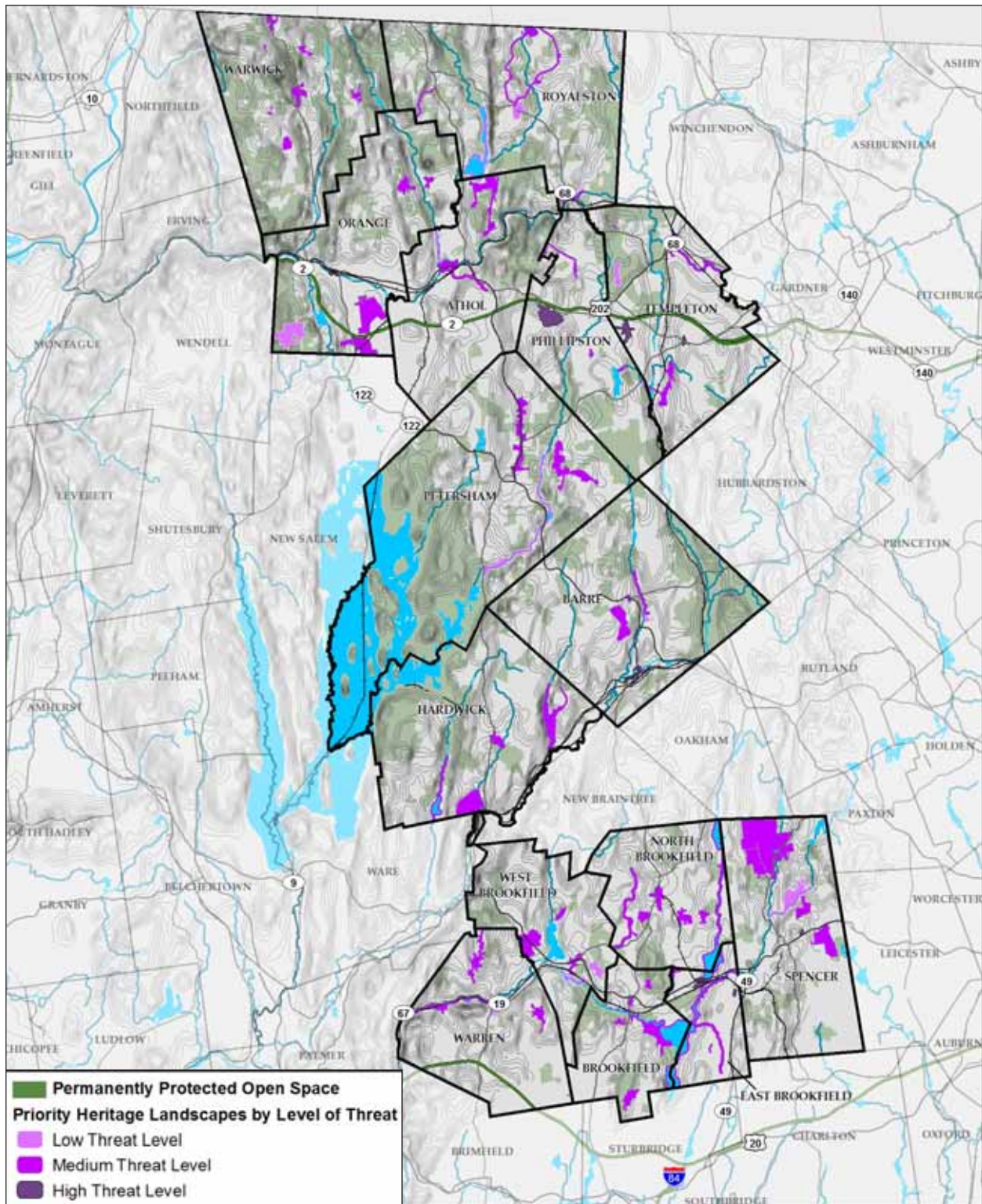


Figure 4. Priority Heritage Landscapes Categorized by Level of Threat

Level of Threat Analysis

As a final part of the mapping process, each Priority Heritage Landscape was assigned a level of threat, based on a scoring system for five key factors: level of protection; development pressure; redevelopment limitations; condition and ownership (Figure 4, also see appendix III). Each factor was given a ranking of either 1-3 or 0-3, with the highest numbers representing the highest perceived levels of threat to the Priority Heritage Landscape and its resources. Possible cumulative scores for each Priority Heritage Landscape ranged from 3, representing the lowest possible score and lowest level of threat, to 15, which is the highest possible score and greatest level of threat.

Common Themes and Strategies

The following summary may help municipalities to plan for the preservation of heritage landscapes:

Common themes related to heritage landscapes include:

- Many towns stressed the archaeological as well as natural importance of rivers and streams throughout the region. Especially the Quaboag River and its tributaries, Prince River Corridor, and Millers River and its tributaries. Archaeological remains are being lost to the elements and neglect, and the health of the larger water bodies are being compromised due to runoff and development.
- Agricultural land reflects the early settlement pattern and economy of the region. Some communities have larger agricultural areas remaining, but most are dwindling due to development pressure or other economic stresses felt by local farmers.
- Portions of historic roadways still exist throughout UQNQ communities. Some are intact, as dirt roads with historic views and/or Benjamin Franklin road markers, while others have been upgraded to modern standards. Some heritage landscapes, such as inns and toll houses, were built as a direct result of these regional connectors. These historic roads, including the Old Boston Post Road and the Fifth Massachusetts Turnpike, are important historic links that help to tell the story of these communities.
- Many of the communities contain both their original settlement, as well as the industrial centers which came as a result of harnessing water power on the larger rivers in the 19th century. In most cases, the original settlement is feeling residential growth pressure that could deplete the integrity of that historic area, while the industrial centers are experiencing difficulty filling vacant space.
- Most every community retains a portion, if not all of their original town common. Many remain the primary gathering place and focal point of the community. In many cases, these areas have been cut into pieces by new roads to enhance traffic flow, are changing due to

years of erosion or aging vegetation, and are feeling general development pressure in their surrounding context.

Common strategies can be applied to all heritage landscapes within UQNQ. There are a number of tools available to towns that can help protect these important resources. Each community has been inventoried as to its current zoning bylaws and planning documents in the Reconnaissance Reports. Each has also been provided a number of recommended actions for the future. The following strategies came up in most towns:

- Document important resources on MHC inventory forms.
- List property on National Register if determined eligible.
- Pass municipal bylaws and ordinances that support preservation including: historic district designation (either local historic districts or neighborhood architectural conservation districts), demolition delay, and zoning changes.
- Adopt the Community Preservation Act.
- Create partnerships (particularly public-private) to pool financial resources, share technical advice, and pass necessary regulations.
- Prepare or update town Master Plans and Open Space and Recreation Plans.
- Prepare preservation master plans and maintenance plans.

These strategies are most successful when implemented together and can affect many types of landscapes. Plans will guide future boards, commissions and organizations towards preservation. Partnerships will be necessary to build constituencies for the heritage landscapes that will help to raise funds, seek innovative programs and pass regulations to preserve them.

Recommended next steps for all communities include:

- Establish a heritage landscape committee.
- Publicize the local heritage landscape reconnaissance report.
- Plan follow-up with priority given to landscapes that are unprotected, vulnerable and have a high degree of integrity.
- Consider publicizing critical sites through a most-endangered list and news articles.
- Investigate potential funding sources.

The Heritage Landscape Committee is a first step towards forming the partnerships necessary to preserve heritage landscapes. It should thus be diverse in interests and expertise. Representation of land use boards and commissions – historical and historic district commissions, conservation commissions, open space committees, planning boards, master plan committees – and land trust members, historical society members and interested residents is critical.

Publicity of the heritage landscape program, the reconnaissance reports and any future work should include copies to chief elected officials, various land-use boards, societies, schools and local newspapers and websites. Communication with neighboring communities to share experiences and efforts, particularly for those landscapes that cross municipal boundaries, is also recommended. Finally stay in touch with DCR to learn about on-going and future programs that may assist communities in preserving irreplaceable heritage landscapes.

The next section of the report looks at each of the land use categories in more detail, identifying the sub-types within each category, the issues raised and typical planning recommendations.

AGRICULTURE

All of the participating communities identified agricultural areas as heritage landscapes. A total of 122 agricultural landscapes were identified, 23 of which were priority landscapes. Many farms are still actively farmed, while others exist only as open space connected to residential uses. Each community noted the value of these landscapes for their scenic quality and contribution to the town's sense of place. Many communities placed particular value on active farms, noting that availability of local food products was an important advantage to living in the community. The types of agricultural landscapes identified by UQNQ residents ranged from individual farmsteads with farmhouse, out-buildings (such as barns and silos) and fields, to large agricultural districts with multiple properties.

- Dairy – While dairy farming is vastly reduced from its 19th century heyday, milking continues in several agricultural areas.
- Hay Fields – Many farms that used to be farmed more intensively are now managed as hay fields. These were found in most communities.
- Horse – Horse farms, or horse farming within mixed agricultural areas, is increasing in the region.
- Market Farming – Examples were found throughout the UQNQ area. Some are small family businesses while others are larger operations that offer a range of products and services. Many have popular farm stands.
- Nursery – The nursery business, including flowers, shrubs and trees, is a form of less intensive farming that appears to be becoming more prevalent.
- Orchards – Numerous orchards were found throughout the UQNQ area, many with farm stands and pick-your-own operations, such as Red Apple Farm in Phillipston, or Pease Orchard in Templeton.
- Specialty – Specialty farming is a growing niche. Examples include Valley View Farm in Templeton, combining mixed crops and livestock with agri-tourism.



View from Maple Lane, Petersham

Similar issues and concerns were voiced by many communities:

- Development Pressures – Farmers are under serious pressure to develop their land, due to the value of land in Massachusetts and the high cost and low return of farming.
- Neighbors – Many farmers are pressured by neighbors who complain about noise and odors associated with farming. This is particularly true where new houses are built in close proximity to existing farms.
- Regulations – Farmers are subject to a variety of regulations that may be confusing and contradictory and add to the cost of running a farm.
- Economic Pressure – the cost of fuel, feed and other materials continues to rise faster than the increase in the value of farm products.

Recommendations were geared towards preserving farming activity wherever possible. When that was not feasible, the goal was to preserve the character defining features of a farm. Recommendations included:

- Acquisition of Farm Land
- Agricultural Commissions
- Agricultural Preservation Restrictions
- Creative Production and Marketing
- Chapter 61 Tax Status
- Right-to-farm Bylaws

ARCHAEOLOGICAL

Archaeological resources were identified by all 15 participating communities with a total of 114 heritage landscapes, eight of which were priority landscapes. Sites were generally identified by land use type rather than by historic period.

- Agriculture – Resources associated with former farming activity were identified in only a few communities. These included stone walls and poor farms.
- Industrial – Industrial sites were typically mill sites, some including remnants of a dam, spillway, towpath, millpond and/or mill buildings. They were the most common type of archaeological sites identified, found in many UQNQ communities.
- Native American –Native American sites were identified in some communities, although some were only potential sites that had not been confirmed. They included caves, possible grinding stones, burial grounds and sites likely to have high concentrations of artifacts such as riverbanks and ponds.
- Residential – Cellar holes were identified in several communities.

Issues included:

- Lack of Documentation and Awareness – Most communities felt they had relatively little information about archaeological resources. Related to this was a lack of public awareness.
- Lack of Protection Tools – Many communities felt that they had few tools for protecting archaeological resources.
- Loss to the Elements – many communities were concerned about deteriorating resources on public and private land.
- “Mining” – stones are increasingly being taken from walls on private property to be used elsewhere.



Cascade at mill remnants on Burnshirt Road on the Phillipston/Templeton town line

Typical recommendations included:

- Communitywide Archaeological Survey
- Archaeological Protection Overlay District, or other zoning changes to address the protection of these resources.
- Acquisition of Key Sites, either outright or through Preservation Restrictions or easements
- Public outreach and education regarding the town's industrial history.
- Create partnerships with DCR and other public landholders to create interpretive programs and signage.



Pine Grove Cemetery in Warren.

BURIAL GROUNDS

Burial grounds and cemeteries were identified by all 15 participating communities, with a total of 81 heritage landscapes, though Town of Warren was the only community to address the issue as a priority. Cemeteries throughout UQNQ communities often contained a wealth of information about local history. They ranged from a single grave to large designed cemeteries. There were many colonial burial grounds, town or religious

cemeteries, as well as old family burial sites and tombs. Cemeteries and burial grounds reflect a variety of styles, spatial arrangements, plantings, types of markers and other features such as walls and iron fencing.

Burial ground issues were similar throughout the 15 communities. They include:

- Poor Documentation – Many communities found that burial ground records were poor, particularly for early burial grounds and small privately-owned ones. Related to this was lack of community awareness of burial grounds.
- Lack of Funding/Maintenance – There was a general lack of funds for maintaining town owned burial grounds.
- Stone Conservation – The most pressing problem at most burial grounds was stone conservation and the related issue of lack of technical knowledge.

Recommendations include:

- Documentation on MHC inventory forms
- National Register listing if eligible
- Use of DCR publication Preservation Guidelines for Municipally Owned
- Create a Cemetery Committee
- Preparation of preservation and maintenance plans
- Use of Community Preservation funds for burial ground preservation or Preservation Restrictions for old family burial grounds or single gravesites on private property.

CIVIC

Civic landscapes were identified by 13 of the 15 participating communities with a total of 102 heritage landscapes, 15 of which were priority landscapes. These landscapes serve as focal points within the community.



Templeton Center

- Town Center – these landscapes can include civic, commercial, Institutional and residential functions. Some towns contained more than one center; the original colonial village and later industrial and/or commercial centers. Many of the centers are listed with the National Register of Historic Places. Most town centers include at least some of the following land types.
- Town Common – Thirteen communities listed their town common as heritage landscapes, most of these were also selected for study as part of a priority landscape. Some of the commons contain bandstands and/or war memorials.
- Town Hall – Many communities expressed particular pride in their town halls, some of which had recently been restored. Other communities had adapted inactive schools as municipal offices.
- Post Office, Fire Station, Community/Senior Center – These are typically municipally owned properties serving the public. Some are historic locations for these uses, while others have adapted other historic structures for their current use.

- Old Schoolhouses – Many of the town’s original district schoolhouses remain; some house Historical Societies but many remain vacant or are used for storage.
- Town Pound – These are stone enclosures historically used for stray animals. They are relatively rare and those that remain are valued as a remnant of the early history of the community. They were identified in Brookfield, North Brookfield, Orange, and Phillipston.
- Commercial Buildings – These landscape types were identified specifically in only a few towns, though many town centers include commercial properties. These buildings were typically historic commercial blocks, inns and taverns and, in Warren, a gas station.

Some common themes and issues associated with civic features included:

- Sense of Place – The focus of center issues was the sense of place that is established by this type of heritage landscape whether it be a classic New England village center, a mill town or a multi-purpose district.
- Current Zoning – Often the historic arrangement of resources is not supported by current land use regulations so that infill construction may not be consistent with the historic patterns already established.
- Traffic and Parking – Traffic and parking can have negative impacts on centers, as can other streetscape infrastructure such as sidewalks, lighting, street furniture and fencing.
- Lack of Knowledge or Awareness – Many older buildings are considered obsolete and are vulnerable to demolition, yet there are many successful examples of adaptive reuse of historic buildings.
- Lack of Funds – Another issue was lack of funding for civic features that do not serve a current function.
- Economy – Many of the businesses in these communities face challenges associated with their rural location. While some communities have taken steps to direct commercial activity to their centers, there is stiff competition from suburban malls and big box stores, as well as constraints posed by a downtown location.

Recommendations include:

- Survey
- National Register nomination
- Local historic district or neighborhood architectural conservation district designation.
- Zoning change consistent with village development.
- Commercial district master plans, Sign Bylaws and/or Façade Programs – CDBG or other grant programs.
- Community Preservation funds were recommended as a valuable source for improvements to civic features.

INDUSTRIAL

There were 63 industrial landscapes identified, including 7 priority landscapes. There were also industrial sites that are listed under archaeology where only remnants still exist. The UQNQ area's industrial impact reached well beyond Massachusetts, producing shoes, textiles, wood products and other goods for use throughout the country. The changing economy and evolving manufacturing technology have led owners to search for new uses for industrial buildings, many of which are no longer economically viable and are in a state of disrepair. The primary sub-types were:

- Dams and Related Structures – Refers to dams, raceways and other features used in hydro-powered mill sites. These were sometimes the only remaining evidence of an industrial site and sometimes found in conjunction with an extant mill building.
- Factory – Refers to a building other than a mill in which production takes or took place such as shoe or glass or woodworking factory. For example, Athol's downtown district contains the former C.M. Lee Shoe Company complex, now housing workshop space for the Woodland Casket Company and storage space for the Plotkin Furniture Company.
- Mill – Refers to a site or building that originally used waterpower for production, such as a saw, grist or textile mill. Many of the industrial sites were mill-related, at times including features associated with hydro-power operations as well as mill buildings. They ranged from the vacant Gilbertville Mills in Hardwick to the active Seaman Paper Company in Templeton, both of which were identified within priority landscapes.
- Quarry – Several communities had quarries. Most were inactive.



Former New Home Sewing Co. Buildings and dam in Orange.

Recommendations for these heritage landscapes center on reuse studies for buildings that no longer are used for their original purposes. Other recommendations include:

- Documentation on MHC inventory forms and NRHP listings.
- Zoning changes to help facilitate reuse of underutilized buildings
- Adoption of a Demolition Delay bylaw

INSTITUTIONAL

Institutional landscapes, with 117 identified and three priority landscapes, are found in town centers, on former estates or on their own campuses built for the institution.



St. Joseph's Abby in Spencer

Types of institutions included:

- Camps – Typically summer camps for children.
- Club – Civic clubs such as the Grange or Lion's Club.
- Library – Often prominent public buildings as well as important community institutions.
- Medical – These included state medical facilities, such as the Templeton Developmental Center, as well as active medical facilities with a distinctive character.
- Religious – Churches were identified by all communities, others also contain religious orders such as St. Joseph's Abby in Spencer and the St. Scholastica Priory and St. Mary's Monastery in Petersham.
- School – Many schools were identified as heritage landscapes, both active and inactive ones, some of which have been converted to new uses and others which remain vacant.

Many of the institutions provide a special character or scenic views to the community which also necessitate protection. Institutional landscapes are often threatened when the institution closes and no longer uses the resource. In many instances when there is a change in use, zoning does not support preservation of the landscape and development pressures prevail.

Recommendations to preserve institutional resources include:

- Identification of a new use
- Preparation of a feasibility study or preservation plan
- Adoption of zoning tools to preserve the character of the landscape, including scenic overlay districts and cluster zoning, which would allow multi-units in a large institutional building
- Adoption of a master plan that articulates the various tools and recommends the most appropriate strategies for a given property
- Acquisition of, or Preservation/Conservation Restrictions obtained for portions of a property.

MILITARY

There were 48 military sites identified as heritage landscapes, most of which were memorials. Only one community identified this type of landscape as a priority. Military landscapes were divided into subtypes including:

- Memorials – most communities identified parks, buildings, monuments, and other sites dedicated to wars and those who fought in them.
- Military Sites – These include encampments and drill fields, along with several properties identified as locations of Revolutionary War forts and historic massacres.
- Routes - some old military trails exist throughout the UQNQ region, for example the Knox Trail still exists on rural roads in Phillipston exhibiting cart paths and stone walls.
- Buildings - such as an Armory or American Legion.

Issues regarding military facilities relate to abandonment due to an obsolete use, deterioration as a result of abandonment of use, and lack of understanding of the significance of these resources. Military landscapes were often grouped with other heritage landscape types such as agricultural or civic landscapes.



Foster Hill in West Brookfield is the site of the region's first settlement, Quaboag Plantation. The settlement was burned in 1675 by Native Americans during King Phillip's War.

NATURAL

Natural features were identified in all of the 15 communities, with a total of 132 resources; the most commonly identified of all of the landscape types. All of the towns identified at least one of these landscapes as a priority, typically as a river or brook corridor. This category includes all natural features, and often times, their associated scenic qualities.

- Bogs, Swamps and Wetlands – These are all distinctive natural features that are fragile and vulnerable to change.
- Geologic – Many of the natural features identified by participants were geologic features including cascades, caves and other rock formations, hills, eskers, drumlins and mountain ranges.

- Vegetation – Plantings were identified by a few communities, including State Heritage trees and distinctive woodlands.
- Views – Features associated with wildlife included a salamander crossing, a heron rookery and several areas of critical environmental concern.
- Waterbodies – This category includes entire watersheds, lakes and ponds, reservoirs, rivers, brooks and streams.
- Wildlife – Features associated with wildlife included a salamander crossing, a heron rookery and several areas of critical environmental concern.



Quaboag River in Brookfield

Natural heritage landscapes are integral to the quality of life – the very essence of community character that is so easily eroded due to economic pressures or lack of appreciation. Many sites are visually accessed as one travels through town, and loss of these sites would be detrimental to that character. Physical access is another key issue, whether too much or too little.

Recommendations include:

- Conservation restrictions to permanently protect such places
- Management plans for municipally owned natural resources
- Adopting zoning tools to help direct growth compatible with these resources, including Wetland Protection Bylaws, Open Space Development and Scenic Overlay Districts or easements.
- Public outreach to raise awareness about these rich yet fragile resources

OPEN SPACE AND RECREATION



View looking east across Moores Pond in Warwick.

Open space and recreational landscapes were found in every community and included 119 resources. Eleven landscapes were identified as priorities.

- Conservation – Conservation land was identified in most communities.
- Forest – Forest areas were identified by many communities. In some cases these were town forests and in other cases they were private.
- Park – This sub-category included everything from small parks to state reservations.
- Recreation – Recreation facilities included golf courses, summer camps, school fields, sportsmen’s clubs, as well as trails and overlooks within natural areas.

Open space and recreation issues revolve around ownership, funding, vulnerability to change and access to certain areas. Stewardship of these resources and inadequate maintenance funding are also concerns. Privately owned open spaces that are taken for granted, such as golf courses, may be vulnerable to change. Publicly protected lands are safe from development, but it doesn’t always guarantee protection of heritage landscapes within the bounds of that land.

Recommendations for the preservation of open space and recreational property are bolstered by a preservation master plan after resources are fully documented. Such planning will make applications for funding more viable. Other strategies for preserving open space are:

- Zoning mechanisms that favor open space
- Conservation restrictions to permanently protect these landscapes
- Open space and recreation plans that clearly lay out priorities for land acquisition and identify opportunities for public-private partnerships
- Local and regional partnerships to pursue recreational access along rivers or other natural features.

RESIDENTIAL

All of the 15 communities identified residential heritage landscapes for a total of 124. Though none were specifically called out as a priority landscape, many were studied as part of civic or agricultural landscapes. This category included individual properties as well as residential neighborhoods. Chronologically they ranged from First Period houses to early modern. They included high style, cottage communities and worker's housing.

Neighborhood issues are related to their ever-changing nature in part due to constant turnover of owners, potential loss of architectural and street character, loss of important civic institutions (such as churches and schools) that are considered anchors in neighborhoods, and loss of ethnic identity in some instances.

Recommendations for preservation of individual homes and neighborhoods have also been addressed in the civic landscape category. Specific importance should be stressed on documentation, followed by:

- Increase public awareness through public information such as walking tours
- Develop rehabilitation guidelines
- Adopt zoning bylaws to designate local historic and/or neighborhood architectural conservation districts and delay demolition.

Zoning changes and historic district designation will be easier once public interest has been generated, as each type of strategy needs full support at town meeting or a city council.



Highland District in Athol

TRANSPORTATION

Transportation-related heritage landscapes also were noted in all communities with 94 examples. Five of these were priority landscapes.

- Airport – The Orange Airport was built in 1929 and services the entire region, including Greenfield, Amherst and Northampton.
- Bridge – Bridges were of particular interest and included a remarkable range of resources – from small wooden bridges to massive stone-arch railroad bridges. They contribute to the character of a roadway and often serve as gateways to a community.
- Railroad – Interest in railroads included active railroads; railroads that have been converted to rail trails; depots and railroad related artifacts.
- Road – Scenic roads were one of the most highly valued sub-categories of resources, identified by most communities. Nearly all of the towns stated that the scenic quality of rural roads is a critical component of community character. Stone walls and trees, agricultural scenery and long vistas contribute to these scenic views. Some roads contain original Benjamin Franklin mile markers, from when he served as Postmaster General. Old routes, such as the Fifth Massachusetts Turnpike and Old Boston Post Road, create historic links between communities and often have scenic qualities as well.

Transportation issues were related in large part to regulations and standards, specifically road reconstruction which is often not consistent with preservation of rural roads. In addition, land use regulations for abutting land can be in conflict with maintaining a transportation landscape's scenic character. Abandonment and deterioration of some of these resources also threaten these landscapes. Funding, maintenance and unauthorized encroachment on public space are other challenges.



Stockwell Road in Royalston.

Recommendations include:

- Adoption of various regulatory mechanisms such as: Scenic Roads Bylaw, Scenic Overlay Districts and a Shade Tree Act
- Employing Preservation Restrictions to protect important historic road corridors and markers, railroad depots and bridges.
- Public outreach and interpretive programs to provide education about the history of these landscapes

Developing a master plan for preservation of transportation-related heritage landscapes is an important first step and can facilitate funding applications to state agencies and private foundations for the development and maintenance of trails as well as advocating for the retention of road character during road reconstruction projects.

APPENDIX I - PRIORITY LANDSCAPES BY COMMUNITY

ATHOL

Downtown Commercial District
Cass Meadow and Tully Brook
Mill Brook Corridor
Highland District
Chestnut Hill and Tully Lake Area

BARRE

South Barre
Barre Common
Prince River Corridor
Felton Field
South Street Corridor

BROOKFIELD

Quaboag River and Lake Road Context
Old Boston Post Road Corridor
Elm Hill Farm Complex
Brookfield Common Historic District
Wolf Swamp

EAST BROOKFIELD

Hodgkin's School and Context
Depot Square
Silliman's Farm
Grey Ledge
Water Systems

HARDWICK

Village of Gilbertville
Hardwick Pond
Dougal Range
Hardwick Village Historic District
Moose Brook Corridor

NORTH BROOKFIELD

Downtown District
Bates Street Farm Area
Coys Brook Corridor
Bates Observatory
Brookfield Orchard and Surroundings
Kiminski Farm
Five Mile River Corridor

ORANGE

North Orange
Tully Village
Hunt Farm
Orange Municipal Airport
Chestnut Hill
Downtown Industrial Areas along the Millers
River
Scenic Roads

PETERSHAM

Petersham Common and Center Village
Nichewaug Inn and Academy
North Main Street Corridor
Nichewaug Village and the East Branch of the
Swift River
Eastern Agricultural Area

PHILLIPSTON

Phillipston Town Center
Mill Ruins
Bates Reservoir
Willis Road and Stone Bridge
Schlick's Farm
Historical Society

ROYALSTON

Royalston Center
South Royalston
Tully Lake and Context
Heritage Roads
Stone Walls and Other Stone Structures

SPENCER

Green Property and Schoolhouse #3
Sibley Farm/Wendy Warner Farm
Wilson Farm
Wire Village and Turkey Hill Brook
St. Joseph's Abbey

TEMPLETON

Templeton Center
Brooks Village
South Templeton
Otter River Corridor
Templeton Developmental Center (TDC)

WARREN

Center Village and Bacon Street
Quaboag River Mill Sites and Dams
West Warren Mill Complex
Coy Hill
Shepard's Farm
Burial Grounds

WARWICK

Warwick Village
Mount Grace Picnic Area
Kidder Falls
Moores Pond
Metacomet-Monadnock Trail
Mill Ruins
Agriculture Land

WEST BROOKFIELD

West Brookfield Center Historic District
Corset Factory
Western Railroad Depot Area
Foster Hill
Eastern Portion of the Quaboag River
Salem Cross Inn and Adjacent Farmland
Pynchon Grist Mill Site

APPENDIX II - HISTORICAL CONTEXT

Introduction

The history and landscape heritage of the Upper Quaboag and North Quabbin region is rich and varied. From its earliest settlement after the glaciers retreated more than 11,000 years ago, to modern era industrial and residential growth patterns, the central region of Massachusetts is a landscape of unique beauty and historical significance. The Native Americans first fished the streams, hunted the forests and cultivated the fields but European settlers soon followed in their footsteps.

Archeological remnants of Native American settlement are distinguishable in many communities and tell the story of the first habitation of the region. The Native American influence on the settlement patterns of the colonists is an important component of the regional landscape. The dispersed, agrarian landscape patterns that emerged from the beginning remained the backbone of the new world economy well into the early 19th century. It was not until industrialization and changes in transportation in the late 19th and 20th centuries brought a shift to the pattern of development and growth. It is this landscape that characterizes many of the towns within the region today although many retain their agricultural heritage and historical patterns and fabric.

PaleoIndian Period

12,500 - 10,000 B.P (Before Present)

The earliest evidence for the human occupation of the Quaboag drainage dates from this period and is tied to the retreat of the glaciers that had previously covered all of southern New England. Palynological research for southern New England demonstrates that tundra-like environmental conditions followed the retreat of the ice sheet as the environment underwent dramatic changes. Massive blocks of glacial ice left behind as the glaciers moved northward melted and formed lakes in deep depressions. The drainage of glacial Lake Quaboag between 13,000 and 11,000 B.P. may have opened the area to small, mobile bands of generalized hunter-gatherers who utilized a wide variety of animals and gathered numerous plant species (Kuehn 1998).

Early Archaic Period

10,000-8000 B.P.

This period was also characterized by changing environmental landscapes as sea levels rose and inundated coastal plain areas that may once have been occupied. The climate became warmer and drier and was dominated by a mixed pine-hardwood forest. Like PaleoIndian depositions, sites dating to the Early Archaic Period are also relatively rare in southern New England, and the social and technological adaptations devised by the indigenous populations of New England at the time are not well understood. Research indicates that during this period social groups moved

within established territories, practicing an increasingly generalized subsistence strategy based on river and lake systems and other physiographic zones (Nicholas 1987; Tuck 1974).

Middle Archaic Period

8000-5000 B.P.

The distribution and somewhat higher density of archeological sites from this period indicate that a multi-site seasonal settlement system had been established in central Massachusetts at this time. A preference for locally available lithic raw materials is also apparent in the chipped-stone tools found at sites in the area. In the Quaboag drainage, most of the diagnostic Neville and Stark like projectile points were manufactured from quartzites similar to those from known sources in the Quinebaug/Thames and Blackstone river drainages. Ground-stone tool technology also is believed to have been introduced during the Middle Archaic Period. Ground stone tools include net sinkers, gouges, plummets, and atlatl (spear thrower) weights (Cross 1999; Doucette and Cross 1997). Sites dating to this period appear to be clustered around lakes, ponds and associated marshes or wetlands where the exploitation of resources such as anadromous fish, waterfowl, and various plant resources could be combined with hunting and collecting of upland forest resources.

Sites associated with the Middle Archaic Period have been documented around Quaboag Pond and other large water bodies in the greater Brookfield area. Diagnostic Neville and Stark points have been collected from at least eight sites around Quaboag and South ponds. Several other sites with Middle Archaic components are located further downstream on the Quaboag in the town of Warren and it is clear that this drainage was a focus of settlement and resource procurement activity. The Fountain Site near the outlet of Wickaboag Pond appears to have had a substantial Middle Archaic component based on diagnostic projectile points in the Joseph Craig collection (Johnson and Mahlstedt 1984a). Some base camps were probably in regular seasonal use in more upland sections of the upper Quaboag river drainages (Ritchie et al. 1988).

Late Archaic Period

5000-3000 B.P.

The distribution of numerous Late Archaic sites throughout this area suggests that many environmental settings such as pond, stream and wetland margins and hilly upland terrain were used extensively (MHC 1985). Land use patterns during this period appear to reflect population increases and environmental changes, and sites have been located in almost every type of ecological niche. Seasonal and multi component campsites were used for the procurement of specific resources during the Late Archaic Period. Native American groups continued to rely on locally available lithic materials such as quartzite and quartz for the manufacture of chipped-

stone tools. There was also an increasing emphasis on non-local stone from bedrock sources in eastern Massachusetts and eastern New York.

Like most of southern New England, Late Archaic sites have been documented in many different environmental niches in the Upper Quaboag region. Sites have been identified near large ponds and along all of the major rivers in the region, near small streams and seasonal wetlands, and on upland terraces and hilly rock outcrop areas. Many rock shelter sites used for short-term camping and/or resource collection have been identified in the greater Worcester County area.

Transitional Archaic Period **3,800 to 2,500 B.P.**

This period appears to represent a time of changing cultural dynamics, and this transition is reflected in changing artifact and site types. This period marked the first use of cooking vessels made of steatite or soapstone that was cut from quarries in the Blackstone and Connecticut river drainages. The Transitional Archaic Period is also characterized by the earliest identified ritual/ceremonial sites including cremation cemetery complexes (Dincauze 1968; Leveillee 1998). While these sites are not common to southern New England, the Upper Quaboag region contains a relatively high number of documented ceremonial and burial sites. These include a burial site containing red ochre near Wickaboag Pond in West Brookfield, a cremation burial site near Quaboag Pond, and several possible burial features identified in Spencer (Dodge 1967, Ferguson 1947, Johnson and Mahlstedt 1984a, MHC site files).

The Woodland Period **3000-450 B.P.**

This was a time of continued dynamic development for local indigenous peoples. The archaeological data suggest that during this period a distinct but gradual diversification of food sources developed, along with an increased prevalence of shellfish in food refuse remains from coastal areas, the introduction of horticulture, habitation sites occupied on a semi-permanent basis, and the refinement of clay pottery manufacturing.

Settlement and land use in southern New England is generally underrepresented in the regional archaeological record. This has led some archaeologists to suggest that a population decline occurred in the region during this period. Many of the tool types associated with the Late and Transitional Archaic Periods have been located at radiocarbon-dated Early Woodland sites, suggesting that it may be difficult to recognize site from this period based on artifacts alone. Diagnostic projectile points and pottery have been identified at nearly a dozen sites in the region, including several sites around the shores of Quaboag Pond, in Hardwick, Petersham, and Barre (MHC 1985).

A limited number of sites and components from the Middle Woodland Period have been documented in the upper Quaboag drainage in Warren, West Brookfield, and Brookfield. Site distribution and frequency appear similar to that known for the Early Woodland Period with a focus on riverine and pond-side locations. The Cutler Farm Site in Warren contained Middle Woodland Period artifacts as did several sites in the Quaboag Pond district. These components indicate some continuity in settlement patterns on pond-side locations that had been occupied on a seasonal basis since the Middle Archaic Period.

Documented sites and components from the Late Woodland Period are almost as numerous as Late Archaic Period sites. The known inventory of sites indicates that there may have been a focus of settlement around the Quaboag River flood plain and Quaboag Pond. Several of the large, multi component river and pond-side sites used continuously in the Middle and Late/Terminal Archaic periods appear to have had small Late Woodland components (Johnson and Mahlstedt 1984a and b).

It is not clear if the presence of soils suitable for horticulture was a factor for selection of settlement locations in the riverine floodplain and pond environmental zones. In other sections of the Northeast during the Late Woodland Period, changes in settlement patterns and seasonal schedules have been attributed to the growing importance of food production. Although seven Late Woodland Period sites are located around Quaboag Pond, the lack of systematically collected archaeological data from these sites makes it difficult to reconstruct possible relationships between early agriculture/horticulture and settlement in the Quaboag River core area.

Contact and First Settlement Periods

A.D. 1500–1675

These periods in southern New England are defined by the sporadic interaction of visiting Europeans with Native Americans followed by the arrival of the first permanent European settlers. The Native American population was dramatically reduced in the first decades of the seventeenth century after a devastating epidemic passed through southern New England. By the time the Massachusetts Bay Colony was established, some historians estimate that as much as ninety percent of the region's indigenous population died during this period (Cook 1976; Speiss and Speiss 1987).

While most early encounters occurred at or near the coast, direct contact between Native American groups and English and French fur traders are documented in central Massachusetts. During this period the region was occupied by the Nipmuc or Nipmuck Indians, an Algonquin-speaking group organized into smaller subgroups or bands. These subgroups occupied territories

centered in various drainage basins or around major ponds such as Quaboag in Brookfield and Chaubunagungamag in the Webster/Dudley area. The Algonquin names that are still associated with these places were also used to identify the Native inhabitants of various locales. A Contact Period village may have been located along the southeastern shore of Quaboag Pond, linked to an extensive trail network that crossed the region and had a hub at the present-day East Brookfield Center (MHC 1985).

In the mid-seventeenth century, the missionary John Eliot occasionally visited central Massachusetts in an effort to bring Christianity to the region's Native American inhabitants. The first organized Native settlement in the region was the Quaboag Plantation established in present-day East Brookfield in the 1640s (Cogley 1999; Connole 2001). While Eliot counted this place among his "Praying Indian towns" there is little evidence to suggest that the settlement changed much from its pre-contact organization around Quaboag Pond.

By 1660 the area around Quaboag Pond had been set off as a colonial grant and permanent Euro American settlers began to arrive. The early community consisted of only a few families clustered together with open fields for grain cultivation by the community. While the Native inhabitants of the area were likely displaced by the increasing number of non-Native residents, they did not "disappear" as many early twentieth century historians described. Rather, Native Americans dispersed into the expanding and increasingly mixed ethnic population to live and work among other residents. Individuals retained their cultural heritage through interaction with family and kin groups, maintaining a distinct identity as Native people that continues to the present day.

Colonial Period to the American Revolution A.D. 1675 – 1775

Although many Native Americans were now living peacefully amidst the colonists, the cultural differences between the two races continued to provoke periodic conflicts.

The most significant and damaging for both races was what became known as King Phillip's War (1675-1676). Started by Philip (Metacom), the son of Massasoit, Chief of the Wampanoags, the war was retaliation for the continued loss of land to the colonists. While the settlers had prospered in the new world, the Native Americans had declined due to diseases and being forced from their settlements.

Although starting and ending in Rhode Island, the War was fought in many of the Upper Quaboag and North Quabbin communities and greatly affected the landscape of the region. Along with the communities of Northfield and Deerfield, the Town of Brookfield was destroyed in the summer of 1675 and many other towns saw raids that produced significant losses of life and property. Throughout 1676, King Phillip traveled through the region recruiting the local

Nipmuck warriors to his cause. The War ended in Rhode Island with the capture of King Philip but ruined farms and homesteads were scattered across the landscape. With many towns in ashes and 1 of every 10 men killed, this was one of the bloodiest wars, per capita, in American history (Schultz and Tougias, 2000).

After 1676, as settlement pressed westward, during the end of the 17th and early 18th centuries, it tended to follow the valleys and waterways. Often utilizing the established paths of the Native Americans, growth pushed out and displaced the natives, and their camps and agricultural land were taken over by the colonists. Eventually the footpaths were turned into cart paths and then into roads. Additional clearing of land, building homes and fording streams were the first settlement activities and farming remained the most common land use and economic activity. The settlement pattern of these communities was generally one of dispersed agriculture with a centrally located meeting house and burial ground. Only modest manufacturing and business was occurring in the region while still under British rule and the majority were businesses based on the needs of the local community such as millers, carpenters, blacksmiths, shoemakers, and wagon/cart/carriage makers.

With the western movement and increased settlement of the region, Worcester County was eventually incorporated in 1731, comprising towns from Middlesex, Suffolk and Hampshire Counties. Several North Quabbin communities including Athol, Orange, Petersham and Warwick were all settled between 1730 and 1740. This rapid growth continued in the region and by 1790 Worcester County had exceeded Suffolk, Essex and Middlesex Counties in population and was second only to Hampshire County (Marvin, 1879). Hampshire County at this time included what are now Franklin County, Hampden and Hampshire Counties.

Revolutionary War to Industrial Revolution A.D. 1775 – 1830

Farming remained the primary land use after the end of the Revolutionary War but other businesses became more common and profitable. These included those related to the manufacturing of materials such as textiles, shoes, machinery and furniture. The rivers and streams that had powered the small grist and saw mill operations were now harnessed to power larger mills such as those in Spencer, North Brookfield and Warren. The making of palm leaf hats by colonial women in their homes was a significant cottage industry during this period. These hats were manufactured in many communities including Barre, Warwick and Brookfield and were mostly sold to the southern states.

Increased development and a different form of settlement pattern started to emerge in relationship to the economic activity of the mills. Clustered villages with support businesses

and homes for workers grew up around the mills and provided a contrast to the rural, agrarian landscape that been marked previous development. Although the turn of the 19th century was a period of significant growth with the development of more mills including paper and cotton mills in Orange and Athol, the westward movement continued. For some of the Towns within the central Massachusetts region this meant the loss of population to New York and Vermont that had become the new western frontier.

Despite the new economic independence and increased business and manufacturing, the period was not without its conflicts. The costs of the Revolutionary War left the Colonies, and specifically Massachusetts, with a significant debt. In order to alleviate this financial burden, taxes were imposed on the small farmers, many of whom couldn't afford to pay other than with the sale of their land. Faced with foreclosures and imprisonment, a group of farmers led by Captain Daniel Shays, a Revolutionary War veteran, rebelled against the Massachusetts legislature and invaded many courthouses in protest. After a notable attempt to raid the Springfield Armory, Shays and his men were eventually caught in Petersham although several escaped through Athol, Orange, Warwick and Royalston and into New Hampshire. Shay's Rebellion (1786-87) represented the rebellious spirit of early America and provided a basis for the crafting of the United States Constitution (Young, 2003).

Industrialization to World War I

A.D. 1830 – 1915

Industrialization brought a period of increased settlement and commerce. Much of this can be attributed to the construction of the railroads, specifically the Boston and Worcester Railroad which opened in 1835. The transportation of people and goods between the urban areas of Boston and Worcester to outlying communities brought increased wealth and business. In 1839 the Western Railroad connected Worcester to Springfield and additionally to Albany in 1841.

By the late 1840's these railroads had been united to form the Boston and Albany Railroad which had stops in Spencer, East Brookfield, Brookfield and West Brookfield. Several additional branches were added with service through the Swift River Valley. Additional railroads developed including the Vermont and Massachusetts Railroad which had service between Boston and Athol starting in 1848 and the Fitchburg to Boston which connected through the towns of Royalston, Athol, and Orange (Marvin, 1879).

Smaller mills became lost to large-scale production operations particularly along the rail corridors, and major manufacturing intensified along the Millers River in the towns of Orange and Athol. In communities such as these, the population jumped with an increase in immigrants from Europe and Canada working in the factories. Many of the rural, agrarian communities

however, lost residents to the more urban areas and reforestation began to claim abandoned farmland. This shift in the economic base of the region led to an increase in forestry as an industry. The significant Eastern White Pine forests were cut for boxboard and many forests were logged for cordwood, construction materials and wood pulp for paper.

World War I through World War II

A.D. 1915 – 1945

In 1919 the Metropolitan District Water Supply Commission (MDC) was created to study the central Massachusetts region for a suitable location for a reservoir to serve Boston's water supply needs. Construction began on the Quabbin Reservoir in 1927 and four communities (Dana, Prescott, Enfield and Greenwich) were submerged and lost to history. A portion of the Town of Dana remains above the water line in the southwestern portion of present-day Petersham. The original town common can still be seen within MDC lands (Tougias, 2002). The Quabbin was completed in 1939 and remains an important natural, historical, scenic and recreational feature of the regional landscape.

In 1938 a devastating natural event occurred that dramatically altered the landscape of the Eastern Seaboard. On September 21st, a hurricane hit the east coast that would go down in history as one of worst natural disasters in North America. Although inland areas were not as hard hit as the coast, over 600,000 acres of forest in central Massachusetts were damaged by the storm. The New England Timber Salvage Administration was formed to try to manage the devastation and camps were set up in Petersham, Royalston and Warwick for workers (Young, 2003).

After the storm, the timber industry remained a staple of the economy until many of the most valuable trees had been harvested. This led to a relatively quiet period for many communities with the loss of farmland and many men in the two World Wars. What little development that was occurring in the region was removed from the core villages. With the advent of more automobile use, residential areas were starting to expand in many communities.

Suburbanization

A.D. 1945 – Present

The end of WWII and the continuing growth of auto use within the general population created a residential boom for the region and the beginnings of commuter and bedroom communities. Also, the influx of soldiers returning from the War and starting families necessitated the need for additional housing. Suburban subdivisions, constructed on former farmland, became the common form of housing development and the population of many towns boomed.

The late 20th and early 21st century brought a revival of the forestry industry with timber cut and sold for construction, cordwood and wood chips for use at local saw mills/ lumber yards or to be sent to Canada. Also during this time, the Massachusetts Legislature created a program to provide tax rebates to landowners with large tracts of farm and forest land (M.G.L. Chapter 61). Many landowners have taken advantage of the program and thousands of acres in the region are now under this form of limited protection.

Large-scale manufacturing continued along the Route 2/Millers River corridor in towns such as Orange and Athol that had become known for furniture, wood products, tools and plastics. Starting in the late 19th and early 20th century, tourism became a profitable industry in the Quabbin region with the beautiful scenery, natural features and recreational activities attracting visitors. With increased tourism, many communities created increased services and amenities to enhance the visitor experience. This included lodging and restaurants within the town centers and natural and recreational attractions along the scenic river corridors and rolling hills.

In more recent times, tens of thousands of acres of the regional landscape have been protected by local land trusts including but not limited to, the Mount Grace Land Conservation and Trust, The Trustees of Reservations, Massachusetts Audubon Society, New England Forestry Foundation and the Harvard Forest. In 1997 the North Quabbin Regional Landscape Partnership brought these together to provide a regional approach to land conservation and the protection of the region's valuable landscape heritage. Each community has significant resources that contribute to the story of the region's historic settlement patterns, industrial growth and place in the history of the birth of the American nation.

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APPENDIX III - LEVEL OF THREAT ANALYSIS

There are five separate grading criteria in the Levels of Threat Analysis – each of which requires a ranking of either 1-3 or 0-3, with the highest numbers representing the highest perceived levels of threat to the Priority Heritage Landscape and its resources. Possible cumulative scores for each Priority Heritage Landscape will range from 3 representing the lowest possible score and lowest level of threat to 15, which is the highest possible score and greatest level of threat.

Grading Criteria:

<i>Level of Protection</i>	<i>Score</i>	<i>Description</i>
None	(score 3)	No protections in place
Temporary	(score 2)	Temporary protections – Chapter 61
Permanent	(score 1)	PR, APR, CR, LHD, NACD

Development Pressure – on open space resources such as agricultural land

Threat of development pressure is assessed based on perceptions of residents and project team participants, specificity of existing zoning, and proximity to major roads. Lack of specific zoning or position within a particular zone that does not discourage building, along with major roads in the vicinity will increase the threat ranking for development pressure.

High	(score 3)	Perceived threat due to development pressure Lack of zoning protections On a major road or one iteration from a major road
Medium	(score 2)	One or two threats of development pressure
Low	(score 1)	Low perceived threat due to development pressure Protective zoning in place Not on or near a major road
N/A	(score 0)	Landscape would benefit from development

Redevelopment Limitations – on built resources such as mills and industrial sites

Assessing redevelopment limitations is based on perceptions of residents and project team participants, the presence or absence of zoning incentives for redevelopment, the presence or absence of utilities, and whether or not the site is considered a Brownfield that will require landscape rehabilitation or rejuvenation in order to be occupied.

Many	<i>(score 3) Perceived limitations to redevelopment Lack of utilities Presence of Brownfield(s)</i>
Some	<i>(score 2) Few perceived limitations to redevelopment Utilities partially available and/or require upgrade Minor clean-up of landscape may be necessary</i>
Few	<i>(score 1) No perceived limitations to redevelopment Presence of utilities No Brownfield present</i>
N/A	<i>(score 0) Landscape would benefit from lack of development</i>

Condition

Assessment made by residents and/or project team during fieldwork or some other site visit.

Poor	<i>(score 3) Requires significant rehabilitation</i>
Fair	<i>(score 2) Requires some work to rehabilitate</i>
Good	<i>(score 1) Maintains integrity in current state</i>

Ownership

Private	<i>(score 3) Privately held lands</i>
Public/Non-Preservation or Mixed	<i>(score 2) Includes all municipal land</i>
Non-profit Preservation or Conservation Entity	<i>(score 1) TTOR, land trusts, etc.</i>

Overall Level of Threat Ranking

The above assessments of threat are applied to each Priority Heritage Landscapes. A score is determined for each of the above criteria for threat. A total is generated by adding all of the individual scores for each Priority Heritage Landscape together. Levels of threat are then classified as follows:

High Level of Threat	<i>(score 12-15)</i>
Medium Level of Threat	<i>(score 7-11)</i>
Low Level of Threat	<i>(score 3-6)</i>