Narrative Final Report Format (Attachment C)

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Heritage Landscape Atlas

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Executive Summary

The Massachusetts Department of Conservation and Recreation (DCR) has launched the Heritage Landscape Atlas, one of the first online viewers for cultural landscape information and a valuable tool for the protection of Massachusetts heritage. DCR achieved its goals of:

- Delivering information in a free, online format that is easy to navigate and understand
- Integrating the display of heritage landscapes with other land use data, elevating the value of cultural landscapes for regional planning and local preservation initiatives
- Sharing information on heritage landscapes beyond municipal boundaries, fostering a shared sense of stewardship and fostering cooperation

From 2001 to 2009, DCR's Heritage Landscape Inventory Program amassed data on historic landscapes in 108 municipalities across the Commonwealth. The Program engaged communities to identify heritage landscapes – special places that help define the character of a community and reflect its past – and to plan for their protection. The HLI Program produced online narrative reports and a map for each community.

Recognizing the need to increase data access and empower citizens toward action, DCR developed the **Heritage Landscape Atlas**, an interactive, web-based mapping tool that allows for landscape-specific analysis, and regional or statewide comparisons of heritage landscapes. The Atlas displays the 600+ priority heritage landscapes identified through the HLI and includes:

- Statewide data on heritage landscape types
- Statewide datalayers such as protected open space, water resources, roads, habitat, and the State Register of Historic Places
- Town data including demographic information, status of common preservation bylaws, and information about the local and regional partners
- Landscape level data such as landscape name, types and subtype, historic designation and ownership, recommendations, and a place to track actions taken.
- Extensive hyperlinks to a program Glossary, defining all terms and linking to internal and external resources

Truly interactive, the Atlas allows users to zoom to various levels of detail, turn layers on and off, and connect to other resources to aid in their preservation planning.

The Atlas is web-based, running in a regular browser without additional software. It is based on the OpenLayers JavaScript library, with a GeoServer engine serving the map and data. DCR's Heritage Landscape Atlas was conceptualized and developed using in-house staff. NCPTT grant funding supported data management and the creation of an educational curriculum to guide public workshops carried out in June 2012. DCR views the Atlas as a dynamic, evolving tool, with plans for enhancement under Phase II.

1. Introduction

Heritage Landscapes: special places created by human interaction with the natural environment that define the character of a community and reflect its past

Background

From 2001 through 2009, the Department of Conservation & Recreation (DCR) worked with nine regional partners to offer the Heritage Landscape Inventory (HLI) program to 108 communities in Massachusetts. Working directly with the municipal staff, active volunteers, and engaged citizens reflecting a variety of interests within each community, consultant teams comprised of planners and preservationists worked at this grassroots level to guide communities in the identification of their heritage landscapes. Participants prioritized their heritage landscapes based upon significance, level of protection, threat, and an attempt was made to capture landscapes that truly reflected the overall essence of a community. After a field assessment, the final product included a community reconnaissance report that logged all heritage landscapes identified, provided a hard copy map and some preliminary documentation of the heritage landscapes that were deemed priorities, and planning recommendations for each community to outline the steps that need to be taken to protect these places.

Communities were guided towards resources to help them take action, encouraged to develop partnerships within their communities, and to look to neighboring communities within their region that had similar issues or could provide guidance based upon their own successful examples. Regional partners were empowered with new information to assist communities, introduced to a new cadre of individuals interested in local issues, and provided with a new source of data by which to do regional analysis and comparisons. The Commonwealth benefitted from a new body of information to share among agencies and regional organizations that allowed for needs assessments and the development of technical assistance programs.

As the program evolved, additional targeted planning efforts were undertaken to start to meet some additional local and regional planning needs or addresses some common issues, with the intent that they could serve as models. Many efforts involved preparation of inventory forms for the Massachusetts Historical Commission, but other efforts include mill reuse planning studies, cemetery preservation plans, an inventory of scenic roads.

DCR recognized early on the benefits of the use of GIS, and began thinking about how useful it would be for participants and beyond if the information gathered during the HLI program could be made available digitally. During our work with communities in central Massachusetts, the consultant team working with us in this region had significant GIS experience, and as one of these additional targeted planning efforts was tasked with developing a framework for a potential database. At the same time DCR began exploring other applications and models and developing a concept for the Atlas itself.

Data Methodology

The Heritage Landscape Atlas captures data that was gathered for each community during the HLI program at a two levels:

- Communitywide Data: information relative to local planning bylaws and ordinances, local municipal and non-profit organizations, and data regarding the counts and types of the total heritage landscapes identified by the community
- Landscape Level Data: information on those landscapes identified as priority landscapes in each community, including geo-spatial data, planning recommendations made, and actions taken.

The Heritage Landscape data is presented concurrent with other readily available resource information data, allowing for analytical comparisons and strategic planning. Some data sets include protected open space, rare habitat, roads, scenic landscapes, the State Register of Historic Places, and water features.

Purpose of the Atlas

All too often planning work ends up getting lost gathering dust on office bookshelves. Given the good work of the HLI program to reach out to communities, help participants make new connections, and identify long term planning efforts, DCR's goal for the Heritage Landscape Atlas is to capture the work of the Heritage Landscape Inventory and make it readily accessible in an easy to use digital format.

The Heritage Landscape Atlas is an easy to use tool that allows users to:

- Examine prioritized heritage landscapes at a local, regional and statewide scales, identifying issues and concerns,
- Look at heritage landscapes in comparison with other resource data (such as protected open space and the State Register of Historic Places) to identify potential links to other resource types and programs.
- Envision connections among communities and foster partnerships among different interest groups. There is often a significant amount of crossover interest in protecting these landscapes – historic preservation groups, land trusts, natural resource groups, and recreational users and neighboring communities can sometimes all be interested in protecting the same place, and this is one way to help bring them together to collectively work on that shared mission.
- Finally, the Heritage Landscape reinforces the goals of the HLI program. While the HLI program is on hold the Atlas is a way for the agency and our partners to help keep the program and its guidance a vital part of local, regional and statewide planning efforts.

2. Methods and Products

From the early years of the Heritage Landscape Inventory Program, DCR had been interested in developing a GIS database. The HLI was in part an outgrowth of earlier landscape inventory work by DCR's predecessor agency, the MA Department of Environmental Management (DEM). DEM had produced the map-based Scenic Landscape Inventory in 1982, which was quickly embraced as a significant planning tool for protecting the Commonwealth's unique natural and cultural landscapes. Requests for the Scenic Landscape Inventory continued even as the HLI program began. For the evolving Heritage Landscape Inventory program, it was clear that GIS, with its combined mapping and database capabilities, would be the best platform for creating a public viewer for heritage landscapes.

One of the first steps in conceiving the Heritage Landscape Atlas was canvassing the nation for other cultural landscape viewers. None existed. In Massachusetts, there were several examples of viewers for natural resources available through the MassGIS website. At the time, the State Register of Historic Places was also available as a data layer, but access had been inconsistent. In fact, during the development of the Atlas the State Register layer was unavailable. It was only in June 2012 that the Massachusetts Historical Commission released the State Register data through a new online viewer (BETA version).

The methodology behind the Heritage Landscape Atlas is based on current web browser technologies and the familiarity and pervasiveness of the "Google map" navigation tools in many mapping applications. DCR grounded the Atlas in the familiar platform, and used free OpenLayers software to create a custom tool for the HLI program.

Products

DCR developed four primary products under the NCPTT grant, each of which was designed to promote the analysis of cultural landscapes through new technologies.

<u>Heritage Landscape Atlas</u>
The Heritage Landscape Atlas is an interactive, web-based mapping tool that allows for both landscape-specific analysis and regional and statewide comparisons. The Atlas displays the high priority heritage landscapes identified through the Heritage Landscape Inventory from 2001-2009 and includes:

- Statewide data on heritage landscape types by community
- Statewide datalayers such as protected open space, water resources, roads, habitat, and the State Register of Historic Places
- Town data including demographic information, status of common preservation bylaws, and information about the local and regional partners
- Landscape level data such as landscape name, types and subtype, historic designation and ownership, recommendations, and a place to track actions taken

The Atlas is driven by large databases of information on communities and landscapes. The Atlas is web-based, running in a regular browser without additional software. It is based on the

OpenLayers JavaScript library, with a GeoServer engine serving the map and data. DCR's Heritage Landscape Atlas runs from the server at MassGIS.

On-line training module

The NCPTT grant included the development of an online training module for the Heritage Landscape Atlas. The training module was created using the "Camtasia" software, which records a series of screen "click throughs" along with audio instruction. The animated tutorial was intended to be posted online, along with a written script for anyone unable to follow the video. A highly visual User Guide was also created. While the tutorial is complete, it will not be posted on the DCR webpage as it does not meet the requirements of the Commonwealth's web accessibility policy. (The project team was unfortunately unaware of this policy prior to the tutorial development.)

The tutorial is provided to NCPTT as a final product, but only the written overview and illustrative User Guide have been made available to the public. The tutorial is on the enclosed CD-Rom.

Workshops

Using a small amount of the NCPTT grant funding, DCR hired an educational design consultant to develop training design documents for the Heritage Landscape Atlas. The format for the workshop, integration of "pop quizzes" and evaluation techniques all derived from the instructional design work.

DCR launched the Heritage Landscape Atlas on June 28, 2012 with a series of public trainings. DCR announced the trainings through postings on the historic landscape ListServ (total reach approximately 1600 email addresses) along with postings on the statewide preservation ListServ and planners ListServ. Three training sessions were offered in a central location – 10am-12pm, 1pm-3pm, and 4pm-6pm. Forty people registered for two sessions, but the third session was cancelled due to lack of interest.

The training workshop included an overview of the Atlas, its purpose, functionality and navigation. Much of the time was dedicated to a demonstration of the Atlas, and a series of exercises to build the audience's confidence and skill in using the Atlas. Finally, the trainings included a discussion of benefits, potential application of the Atlas in planning and landscape stewardship, and ideas for Phase II improvements. Several participants requested or recommended that DCR present the Atlas at upcoming regional and statewide conferences and meetings, to spread the word about this exciting new application.

DCR views the Atlas as a dynamic tool, and we expect the input from the training sessions to help the agency refine the Atlas.

Copies of the attendee packet and PowerPoint print out are included in this final report.

White Paper
DCR is providing a short white paper outlining the technical aspects of the Heritage Landscape Atlas. It is hoped that the white paper can help other organizations and agencies create similar viewers.

3. Results and Discussion

The Heritage Landscape Atlas development process met with some challenges, and highlighted real opportunities.

Challenges

Cart before the horse – DCR accrued narrative information on hundreds of heritage landscapes over many years before building the Heritage Landscape Atlas database. While the program methodology laid out a set process, categories and subtypes for the inventory process, the primary product – the Reconnaissance Report – was not entirely database-friendly. Extensive data entry was required as well as the ability to discern the data from long narratives and tables scattered throughout the report. The report format also evolved over time, based on the growth of the program, and on the writing style of the consultants. This inconsistency was at times difficult to resolve. The communities in the southeastern pilot region received full MA Historical Commission inventory forms with 2-3 page reports. For that reason, those communities are identified as "data available soon." In other areas, additional QA/QC is needed; and those towns are shaded "draft data available."

A map by any other name – Similar to the narrative data, the mapping for the heritage landscapes was inconsistent and needed a high level of quality control/assessment. Some landscape polygons were created in GIS using orthophotos and other GIS datalayers as source layers. Others were digitized from hand-drawn field sketches. Until the polygons can be rectified, those communities will be shaded "draft data available."

Grassroots and truly local data – Driven by a "bottom up" process, the Heritage Landscape Inventory relied on the input of local residents and officials to determine which landscapes ranked as high priority heritage landscapes. Encouraging communities to think outside the box meant that some landscapes do not fall into a standard category, type or subtype. In some communities the "landscape" was the entire town, all of the scenic roads, or "ways to the water." These landscapes are nearly impossible to map and difficult to represent in a database.

Baring it all – The data amassed during the Heritage Landscape Inventory program included specific planning analysis and recommendations for high priority landscapes, but it also included the longer list of places that communities named in their local identification meetings. These lists of "nominees" were narrowed down to the priorities for the purposes of the program, but they are nonetheless significant to the character of those cities and towns. Including the non-priority landscapes in the Atlas was challenging from a data entry standpoint. But the ability to represent all of the landscapes to some degree in the final viewer was important for maintaining the program objectives. DCR solved the problem by displaying high priority heritage landscapes as polygons, with full data, and adding the total landscape count to the notecard, by type.

Opportunities

Freedom - Without an existing model to work from, DCR was at liberty to create an entirely new web viewer for heritage landscapes, one that met the agency's needs and delivered a tool for public use. DCR's Atlas team identified free OpenSource software and adopted the familiar navigation tools from Google to create the web viewer.

Data access – The DCR Atlas team recognized that the HLI data would need work to make it fit the new GIS database, so it was good to know that other data layers were readily available from MassGIS. The layers in the Atlas that users can click on/off are directly generated from MassGIS's central data sources. Protected open space, roads, scenic landscapes, all reside on the MassGIS server and are updated regularly by the managing agency. DCR does not have to refresh the data – it is automatic.

Old is new again – As DCR developed the Heritage Landscape Atlas the question arose, "How do our heritage landscapes compare to the scenic landscapes identified in DEM's Scenic Landscape Inventory? What has been lost, and what can we save?" A quick look at the GIS data for the Scenic Landscape Inventory showed major problems. Although the 1982 maps had been entered into GIS, polygons were unclear, and the designations of of "notable" and "distinctive" did not appear in the GIS layer. No metadata existed to explain the designations or the source for the data. Despite its age, the Scenic Landscape Inventory was still in active use.

DCR saw an opportunity to update the Scenic Landscape Inventory data as part of the Atlas development. GIS staff digitized all of the polygons from the paper maps in the 1982 report, added the designation notations, and wrote clear, accurate metadata for the layer. The result is a layer that is usable for the purposes of the Heritage Landscape Atlas and a more accurate layer for general GIS use.

OpenSource, open minds – The technology platform for the Heritage Landscape Atlas is completely free and adaptable to expanding needs. As the DCR GIS staff masters the software, the agency can continue to imagine new possibilities for the Atlas.

4. Conclusions

The Phase I roll out of the DCR Heritage Landscape Atlas has successfully delivered a new public planning tool for historic landscapes. The Atlas is meeting a need for accessible, map-based data on cultural landscapes that parallels the data available for protecting shoreline and rare habitat in Massachusetts. The Heritage Landscape Atlas has also created a new platform for collecting and sharing new information on heritage landscapes. Phase II of the Atlas might include expanded photos and other graphics, and the ability to "nominate" heritage landscapes for inclusion in the Atlas. With the Atlas and database in place, any data collected in the future will be both consistent with the HLI methodology and Atlas-ready.

5. Acknowledgments

The Department of Conservation and Recreation (DCR) gratefully acknowledges the support provided by the National Center for Preservation Technology and Training (NCPTT) for funding the Phase I roll out of the Heritage Landscape Atlas. DCR's Atlas team conceived, built, and developed the Atlas using in-house skills, expertise and creativity. In addition to the Principal Investigator, Wendy Pearl, the team consists of: Patrice Kish, Director of the Office of Cultural Resources, Nathanael Lloyd, Director of the GIS Office, Jessica Rowcroft, Planner and former Heritage Landscape Inventory Program Manger, and David Kimball, GIS Specialist and chief architect of the Atlas. DCR also relies on support from sister agencies. Aleda Freeman of the Massachusetts Office of Geographic Information (MassGIS) provided DCR technical support and server support. The Massachusetts Historical Commission provided their new State Register GIS data for inclusion in the Atlas.

The Atlas is a product of the former Heritage Landscape Inventory program which enjoyed support and advisement from a Steering Committee of landscape preservation specialists, regional planning organizations, and regional partners and non-profits. The Steering Committee and several Local Project Coordinators served on the Focus Group for the Atlas BETA version, providing input that helped DCR refine the Atlas.

Thanks also go to the consultants who helped develop the Atlas. Robert Ryan of the University of Massachusetts Landscape Architecture and Regional Planning program provided data entry and assessment of the BETA Atlas. The landscape architecture firm Dodson Associates laid out the preliminary table for the Atlas database as part of their contracted services in the Upper Quaboag/North Quabbin area.

6. References

DCR's Heritage Landscape Atlas
http://www.mass.gov/dcr/stewardship/histland/atlas.htm

Massachusetts Office of Geographic Information (MassGIS)
http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/

Massachusetts Historical Commission State Register of Historic Places (BETA version)
http://maps.mhc-macris.net

Ryan, Robert, "Heritage Landscape Atlas BETA Test Report," University of Massachusetts Department of Landscape Architecture and Regional Planning, prepared for the Massachusetts Department of Conservation and Recreation, June 2009.