Appendix F: GIS Inventory

Freedom’s Way GIS Inventory

Freedom’s Way National Heritage Area (FWNHA) is required by its enabling legislation to prepare an inventory of ‘natural, historical, and recreational resources’ within the heritage area. The application of Geographic Information Systems (GIS) software permits FWNHA to utilize pre-existing sources of information on regional resources without the expenditure of significant funding to develop an independent resource inventory database.

FWNHA covers portions of two states, New Hampshire and Massachusetts, each of which has significant state government and regional planning agencies that routinely create inventory databases on resources that are relevant to FWNHA’s mission. The heritage area also includes local political units such as towns and cities that may also create resource data layers relevant to FWNHA. In addition, the federal government maintains relevant databases on the region that are important in understanding the resources and the landscape.

During the spring and summer of 2013, Vanasse Hangen Brustlin, Inc. (VHB) prepared a GIS inventory of heritage area resources for the Freedom’s Way Heritage Association. The GIS inventory includes over 100 distinct data layers that were collected for the project from the sources noted above, including available data on surveyed historic resources and conserved lands.

In early 2014, this inventory was provided to Heritage Strategies, LLC and their GIS consultants, the Washington College GIS Program, to assist in preparation of the heritage area’s management plan. The planning team reviewed the GIS inventory and used it in its assessment of heritage area resources and context. Additional existing regional data layers, such as land use/land cover, eco-regions, and rivers and streams, were added to the inventory. The inventory of historic resources from the Massachusetts Historical Commission was updated to include inventory mapping that the agency had not completed when VHB originally assembled the data. The planning team also completed original inventories of natural, historical, and agricultural attractions and regional trails relying on multiple data sources (see Appendixes D and I). The updated GIS inventory was used in the preparation of maps to illustrate the management plan.

A list of the information included in the heritage area’s GIS inventory is provided below. Following this list is a partial catalogue of data layers in which the information is found.

Potential for Maintaining a Freedom’s Way GIS Inventory

As noted above, the Freedom’s Way GIS inventory database makes use of resource inventories developed and maintained by a variety of federal, state, and regional organizations. Due to the extensive efforts being placed on developing and maintaining resource data layers by these organizations, it does not make sense for FWNHA to create its own separate inventories replicating their efforts.

However, because these different agencies have different interests, procedures, and areas of coverage, their information is not always easily available or well coordinated. The role that FWNHA could play is as an integrator of data from the numerous disparate data sources to maintain a single GIS inventory within the heritage area boundaries. FWNHA could keep these data resources up-to-date as the data owners update and improve upon them.

FWNHA could, therefore, continue to maintain, update, and improve the GIS inventory database developed during preparation of the management plan for the landscape within its boundaries. Maintaining a single heritage area-wide GIS inventory would provide a single location where information...
on the heritage area could be accessed. The Association and its partners could more easily use the inventory in the planning and implementation of projects on an ongoing basis. New data layers of specific interest to the heritage area and its mission could be added.

FWNHA could benefit by preparation of a data management plan for to allow for the collection, dissemination, and sharing of resource data across the entire heritage area and update these data resources on a yearly basis. The data management plan would assess the various inventory and data layers maintained by existing agencies including the frequency in which they are updated. The Association would contract with a GIS specialist such as a local educational institution with a GIS program or a regional planning agency to prepare the plan, maintain and update the GIS inventory data on an ongoing basis, and provide GIS services in its use.

In addition, FWNHA could maintain a web mapping portal linked to its website for access to the GIS inventory by partners. The web mapping portal would be similar to the Heritage Landscapes Atlas maintained by the Massachusetts Department of Conservation and Recreation, but more extensive in the data layers available. A web mapping portal requires additional software so that web users can access the GIS inventory database in a user-friendly format that does not require GIS software or expertise. Inventory data could be viewed in map form or as a spreadsheet. Maps could be printed and spreadsheets could be downloaded in Excel. The web portal would enable users to view inventory information heritage area-wide or to zoom in to specific towns and locations. The Washington College GIS Program prepared such a web portal with limited functions for use by the planning team during preparation of the management plan. Such a web portal could be fully developed as an implementation action of the management plan. A separate, simplified web portal for the heritage area could also be developed for use by the general public in support of cultural heritage tourism communications initiatives described in Chapters 2 and 5.

**INFORMATION IN THE FREEDOM’S WAY GIS INVENTORY**

The following is a list of inventory information included in the current GIS inventory database for the Freedom’s Way National heritage Area. This information may be viewed in map formats or in spreadsheets. Selected information from this list was used in the development of maps for illustration of the heritage area’s management plan.

**New Hampshire & Massachusetts**
- Land Use/Land Cover
- Landforms
- Eco-Regions – Level 4
- Watersheds
- Rivers & Streams
- Interstates
- Highways
- Regional Trails

**New Hampshire**
- Named Destinations/Key Destination Points
  - Key Destination Points
  - Named Places
New Hampshire Towns

Historic Resources
- Amherst Historic Inventory
- Nashua Regional Planning Commission (NRPC) Historic Resources
- National Register of Historic Places
- Fairmount Heights District
- Nashua MFG District
- Nashua French Village District

Recreation
- Recreation Areas, Polygon
- Recreation Locations

Natural
- Water Access Sites
- Rivers & Streams
- Lake/Pond
- Surface Water

Floodplains
- 50-yr Floodplain
- 100-yr Floodplain

Wetland Resources
- Aquifer Boundary
  - Lacustrine
  - Stratified Drift
  - Stratified Drift/Lacustrine
  - Till

Transportation, New Hampshire

Railroad, New Hampshire
- Railroad
  - Abandoned, Dismantled Railroad
  - Other

Major Roads
- Freeway or Other Major Road
- Major Road Less Important than a Freeway
- Other Major Road
- Secondary Road
- Local Connecting Road
- Important Local Road

NHDOT Road Network

NH GRANIT Conserved Land Database

NRPC Conserved Land Database

Wildlife Action Plan Tiers
- Highest Ranked Habitat in NH
Highest Ranked Habitat in Biological Region
Supporting Landscape

NH Fish & Game Wildlife Action Plan Habitat Areas
Rocky Ridge or Talus Slope
Wet Meadow or Shrub Wetland
Pine Barren
Peatland
Lowland Spruce Fir
Northern Hardwood Conifer
Hemlock Hardwood Pine
Grasslands
Floodplain Forest
Appalachian Oak Pine

Massachusetts
Massachusetts Towns
Massachusetts Historical Commission (MHC) Inventory Points
National Register of Historic Places
Preservation Restriction
Local Historic District
National Register of Historic Places and Local historic districts
Inventoried Property

MHC Inventoried Areas
National Register of Historic Places
Preservation Restriction
Local Historic District
MRHP and LDH
Inventoried Area

MassDOT Roads
Limited Access Highway
Multi-lane Highway – not limited access
Other Numbered Highway
Major Road, Collector
Minor Road, Arterial
Ramp
Tunnel
Tunnel (Limited Access Hwy)
Tunnel (Multi-lane Hwy)
Tunnel (Other Numbered Hwy)

Open Space Lands
Federal
Department of Conservation and Recreation (DCR) – State Parks & Recreation
Department of Fish & Game (DFG)
DCR/DFG

DCR – Urban Parks & Recreation
DCR – Water Supply Protection
Department of Agriculture
Commonwealth of Massachusetts
County
Municipal
Public Non-Profit
Land Trust
Conservation Organization
Non-Profit
Private
Other
Unknown

Prime Forest Land
Prime 1
Prime 2
Prime 3
Statewide Importance
Local Importance
Prime 3 Wet
Statewide Importance Wet
Local Importance Wet
Unique Wet

Community Facilities
Libraries
Schools
Town Offices
Other Community Facilities

Transportation
Transportation Routemakers
Metro Boston Transit Authority (MBTA) Commuter Rail
Airports

Water
Canoe and Water Access
DEP Wetlands (1:12,000)
1:25,000 USGS/MassDEP Hydrology
FEMA Floodplains

Natural
Natural Heritage & Endangered Species Program (NHESP) Data
Areas of Critical Environmental Concern
PARTIAL CATALOGUE OF GIS INVENTORY DATA LAYERS

Imagery

*nlcd_nh_utm19.tif*
Source: Multi-Resolution Land Characteristics Consortium
File Location: Z:\Projects\Heritage\land_use_land_cover
Location: New Hampshire
Attributes: OID, Value, Count, Red, Green, Blue, Opacity, Land_cover

*nlcd_ma_utm19.tif*
Source: Multi-Resolution Land Characteristics Consortium
File Location: Z:\Projects\Heritage\land_use_land_cover
Location: Massachusetts
Attributes: OID, Value, Count, Red, Green, Blue, Opacity, Land_cover
**DEM_hillshade_test**  
Source: Created from a shaded relief that was downloaded from MassGIS  
File Location: Z:\Projects\Heritage\Transitional\HillshadeHunt.gdb  
Location: Massachusetts and New Hampshire  
Attributes: OBJECTID, Value, Count

![DEM_hillshade_test](image1)

**Shapefiles**

**Polygon**

*project_area_dissolved*  
Source: Unknown  
File Location: Z:\Projects\Heritage\FreedomsWay.gdb  
Location: Massachusetts and New Hampshire  
Attributes: OBJECTID_1, Shape, Shape_Length, Shape_Area, TotalAcres

![project_area_dissolved](image2)
**project_study_area**

Source: Unknown

File Location: Z:\Projects\Heritage\FreedomsWay.gdb

Location: Massachusetts and New Hampshire

Attributes: ObjectID, Towns_ID, Town_ID, Town, FIPS_STCO, CCD_MCD, FIPS_PLACE, POP1980, POP1990, POP2000, POPCH80_90, POPCH90_00, FOURCOLOR, TYPE, ISLAND, FIPS_MCD, FIPS_COUNT, county, AREA, PERIMETER, PBNH_, PBNH_ID, FIPS, NAME, RPA, ACRES, RPA, ACRES, NH, Shape_Length, Shape_Area

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**state_2011**

Source: ESRI

File Location: Z:\Projects\Heritage\Data2014.gdb

Location: United States

Attributes: [corrected for normal display with curvature of the earth in mapped illustrations]

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**NH2_NRPC_ConservedLand_EDIT**

Source: Unknown

File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb
Appendix F: GIS Inventory

Location: New Hampshire

**NH1_GRANIT_ConservedLand_EDIT3**
Source: Granit
File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb
Location: New Hampshire

**MA_OpenSpace_Dissolved**
Source: Unknown
File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb
Location: Massachusetts

**eco_regions_level4**
Source: EPA
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: New Hampshire and Massachusetts

**Airports**
Source: MassGIS
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: Massachusetts

**HUC10_HeritageAreaWatershedExt**
Source: USDA
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: New Hampshire and Massachusetts
**HUC12_HeritageAreaWatershedExt**
Source: USDA
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: Massachusetts and New Hampshire

**Lines**

**Interstates**
Source: ESRI
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: US
**Rivers and Streams_ESRI**
Source: ESRI
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: New Hampshire and Massachusetts

**Highways**
Source: ESRI
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: US
**TRAINS_RTE_TRAIN**
Source: MassGIS
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: Massachusetts

**Points**

**National_Register_Historic_Buildings**
Source: NRIS
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: New Hampshire and Massachusetts
**CRDistrict_pt**  
Source: NRIS  
File Location: Z:\Projects\Heritage\Data2014.gdb  
Location: New Hampshire and Massachusetts

**CRObject_pt**  
Source: NRIS  
File Location: Z:\Projects\Heritage\Data2014.gdb  
Location: New Hampshire and Massachusetts  
Note: There is only one point in the Heritage area.

**CRSite_pt**  
Source: NRIS  
File Location: Z:\Projects\Heritage\Data2014.gdb  
Location: New Hampshire and Massachusetts
CRStructure_pt
Source: NRIS
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: Massachusetts

nrpc_historicalsites_Clip1
Source: Nashua Regional Planning Commission
File Location: Z:\Projects\Heritage\FreedomsWay.gdb\NH_Towns
Location: New Hampshire
AmherstInventory
Source: GRANIT
File Location: Z:\Projects\Heritage\FreedomsWay.gdb\NH_Towns
Location: New Hampshire
**MHCinvPoints**
Source: MassGIS
File Location: Z:\Projects\Heritage\FreedomsWay.gdb\MA_Towns
Location: Massachusetts

**State_Capitals**
Source: ESRI
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: US
Note: This data set shows the state capitals for New York, Massachusetts, Rhode Island, Connecticut, New Hampshire, Vermont and Maine.

**TRAINS_NODE**
Source: MassGIS
File Location: Z:\Projects\Heritage\Data2014.gdb
Location: Massachusetts