

APPENDIX F

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 Routemarkers
- 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



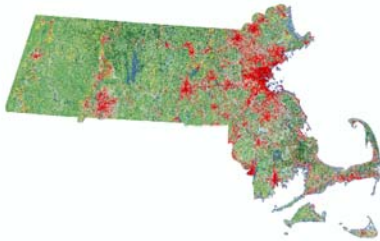
nlcd_ma_utm19.tif

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



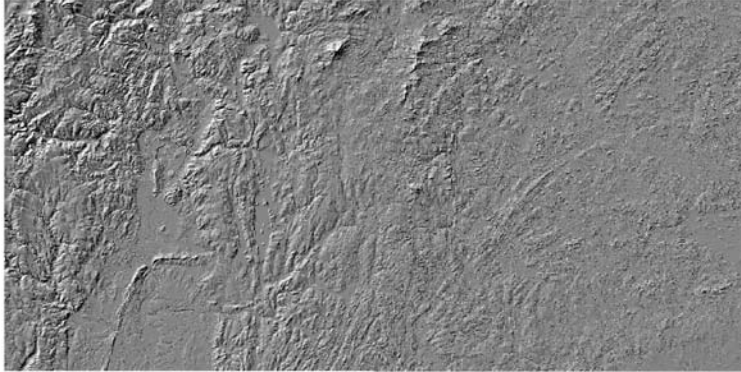
DEM_hillshade_test

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



Shapefiles

Polygon

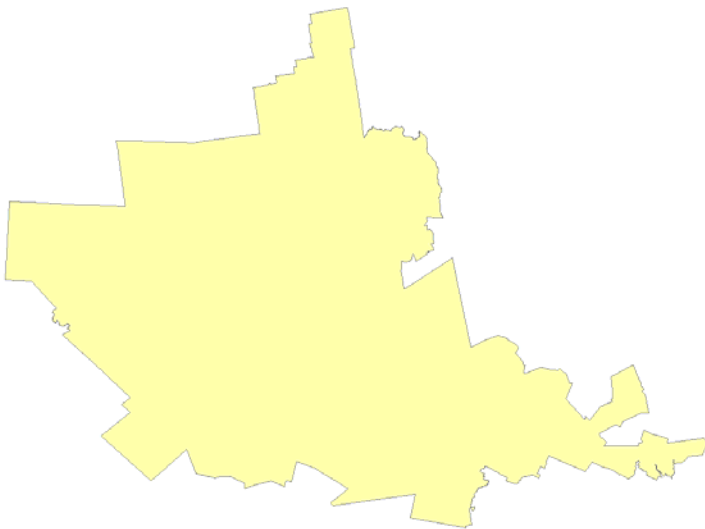
project_area_dissolved

Source:Unknown

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

Location: Massachusetts and New Hampshire

Attributes: OBJECTID_1, Shape, Shape_Length, Shape_Area, TotalAcres



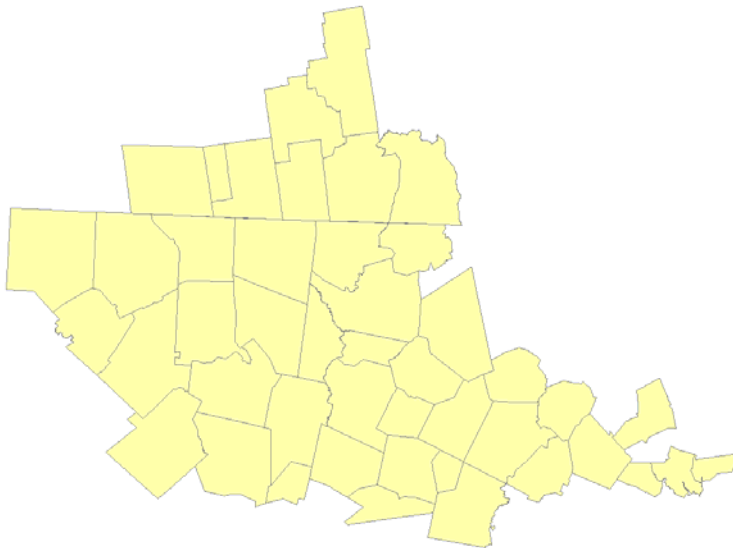
project_study_area

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



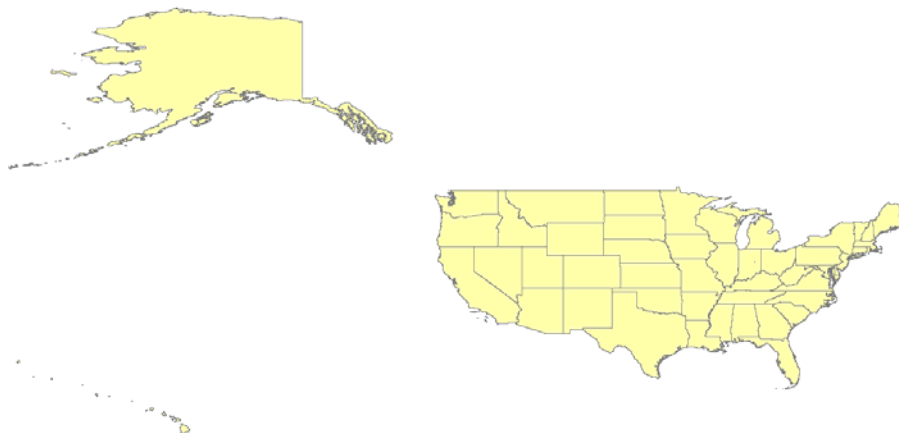
state_2011

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]

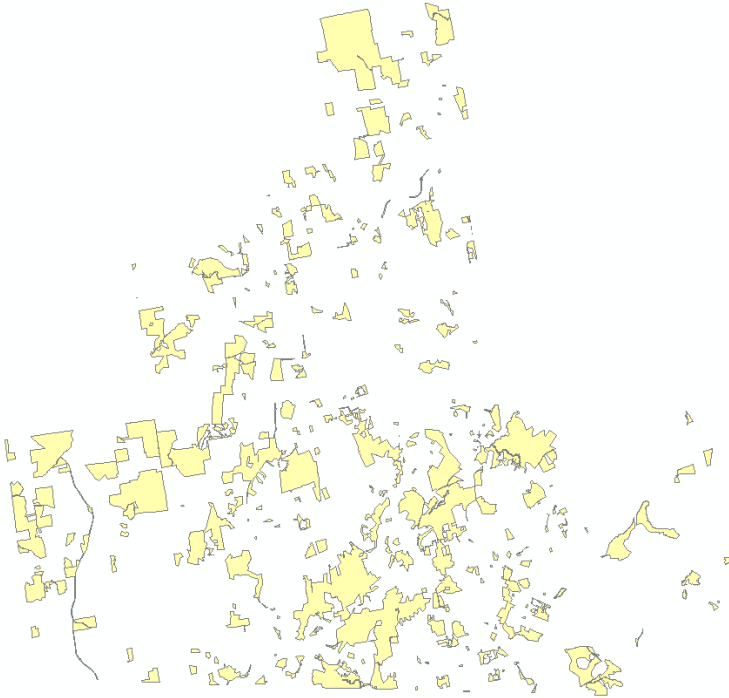


NH2_NRPC_ConservedLand_EDIT

Source: Unknown

File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb

Location: New Hampshire

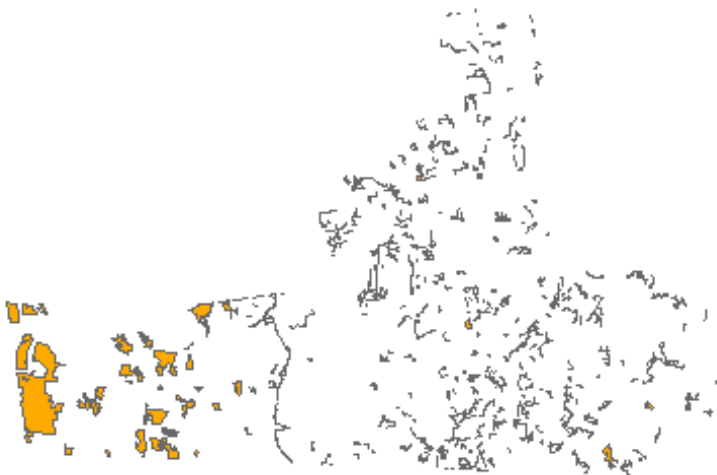


NH1_GRANIT_ConservedLand_EDIT3

Source: Granit

File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb

Location: New Hampshire

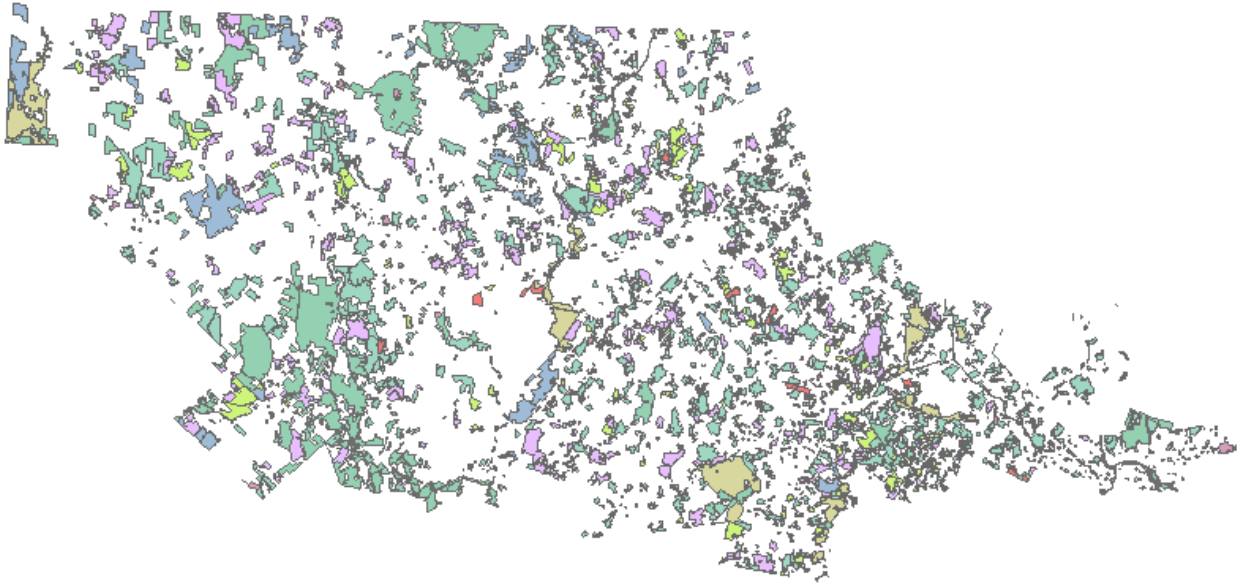


MA_OpenSpace_Dissolved

Source: Unknown

File Location: Z:\Projects\Heritage\Transitional\Temp_ConservedLandData.gdb

Location: Massachusetts

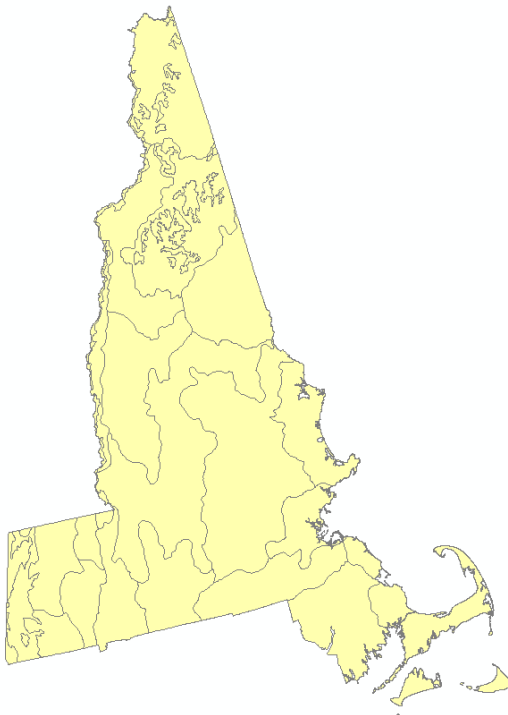


eco_regions_level4

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

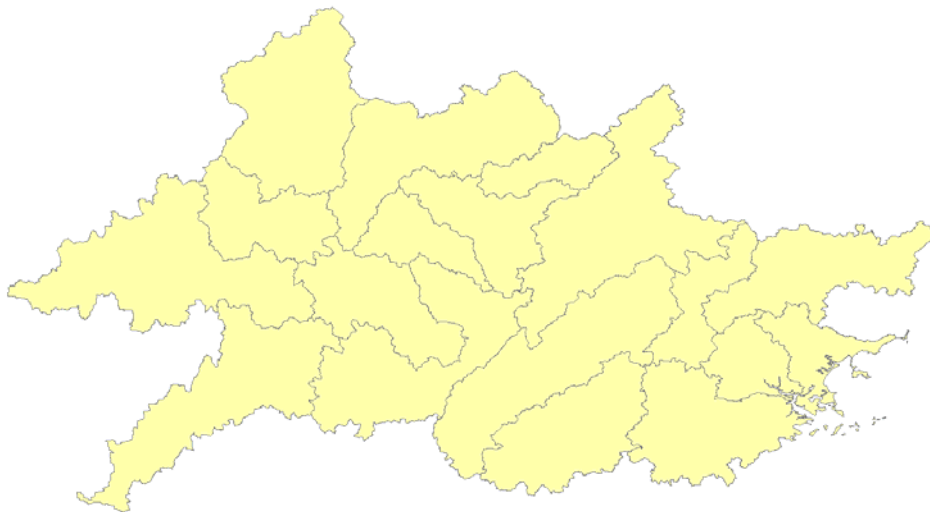


HUC10_HeritageAreaWatershedExt

Source: USDA

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

Location: New Hampshire and Massachusetts

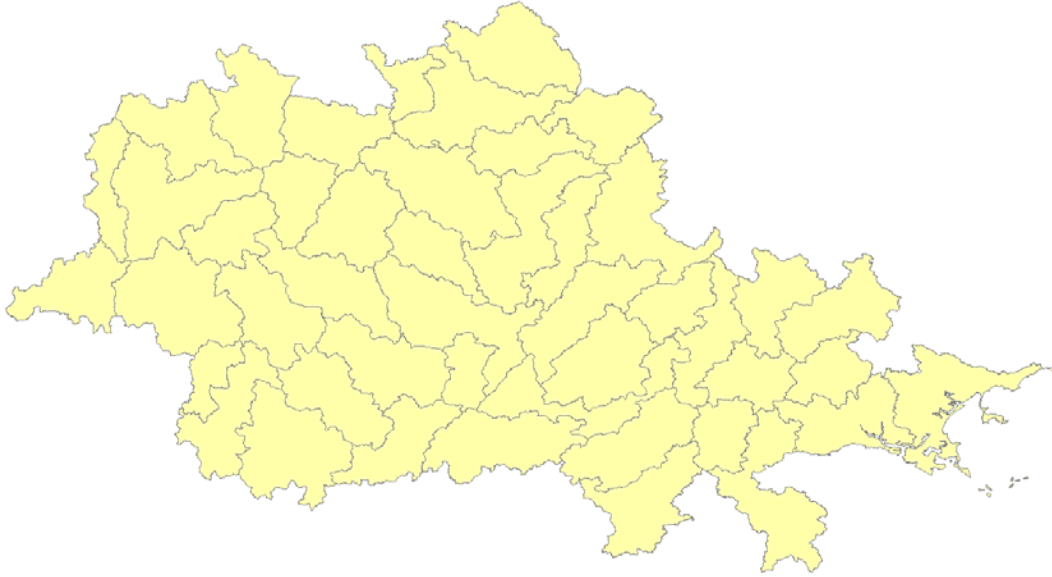


HUC12_HeritageAreaWatershedExt

Source: USDA

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

Location: Massachusetts and New Hampshire



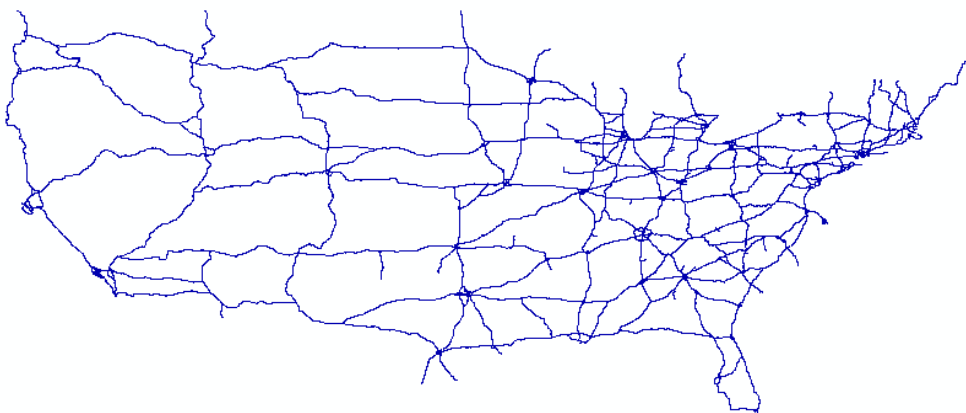
Lines

Interstates

Source: ESRI

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

Location: US

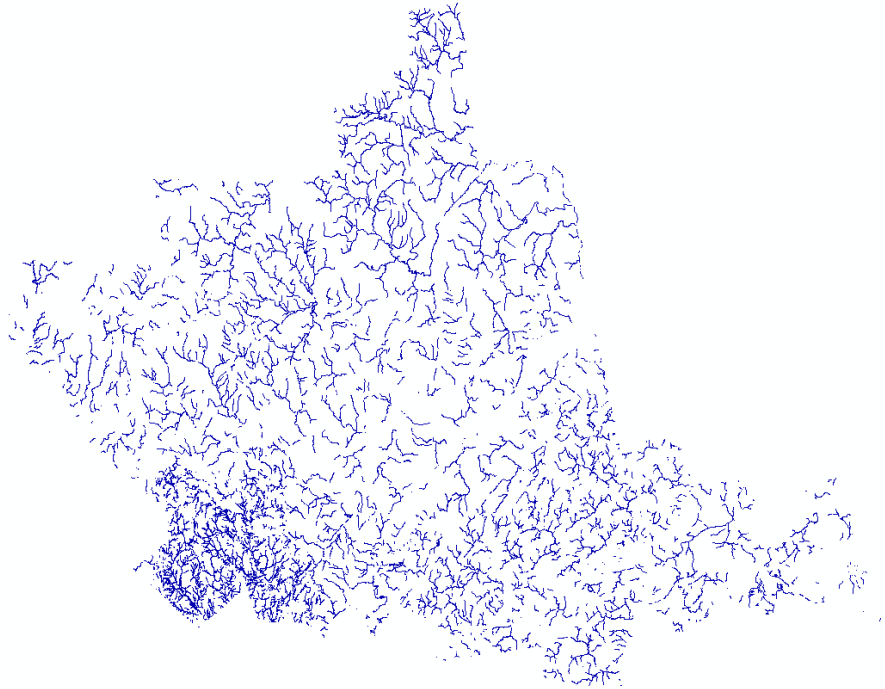


Rivers_and Streams_ESRI

Source: ESRI

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

Location: New Hampshire and Massachusetts

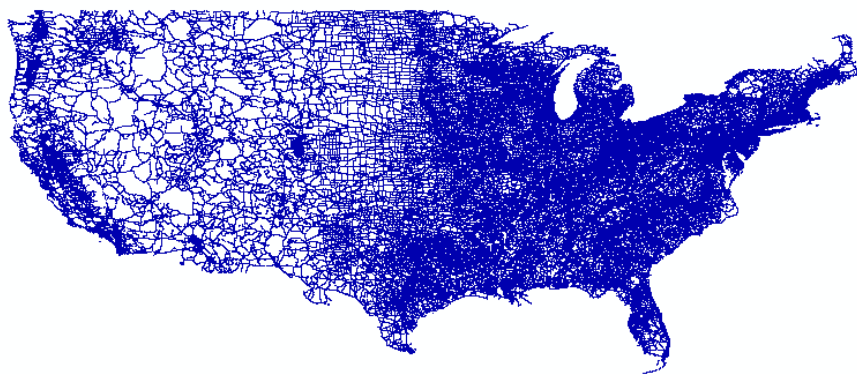


Highways

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



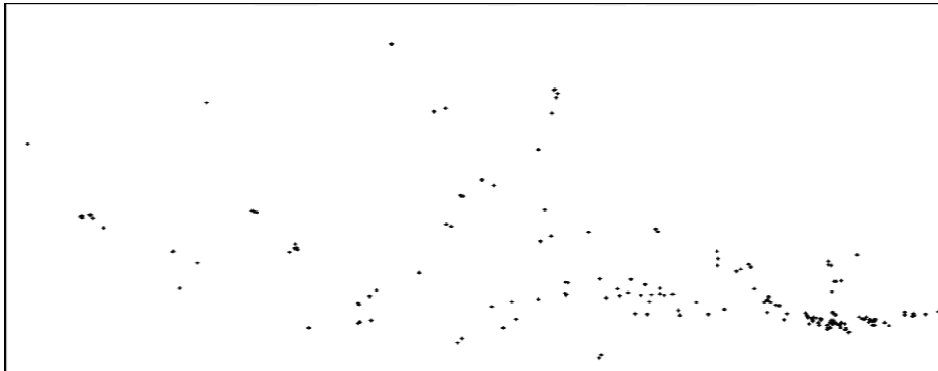
Points

National_Register_Historic_Buildings

Source: NRIS

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

Location: New Hampshire and Massachusetts

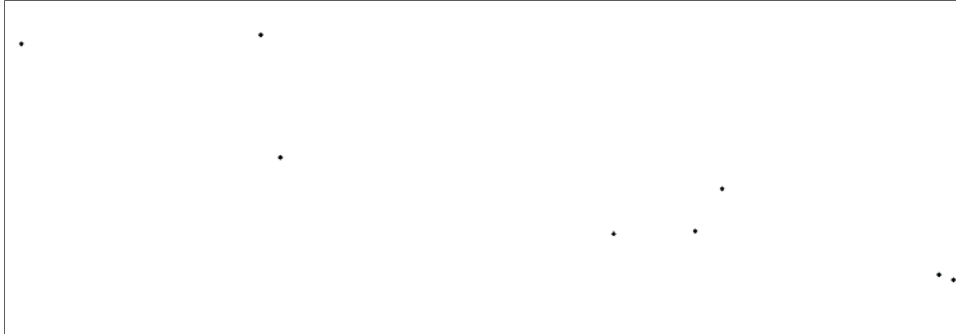


CRDistrict_pt

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

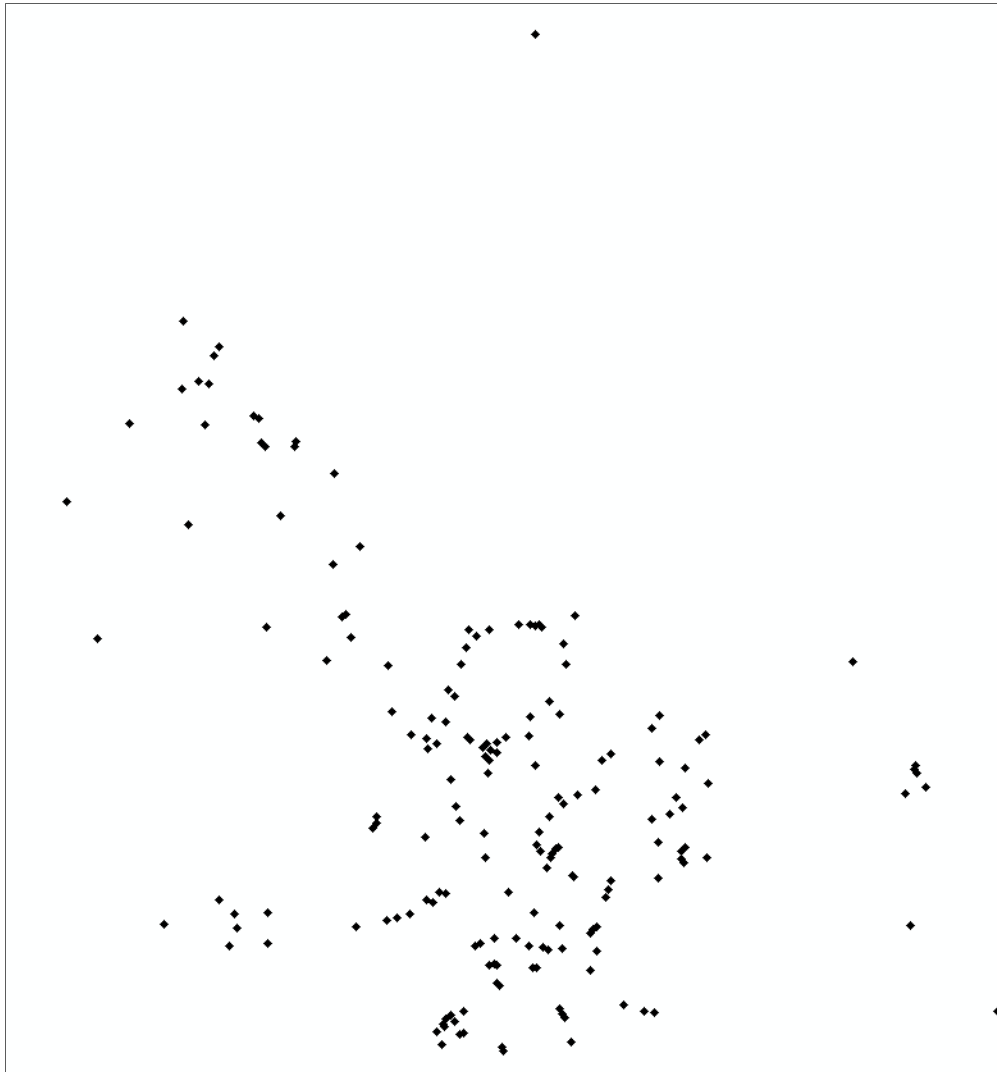


nrpc_historicalsites_Clip1

Source: Nashua Regional Planning Commission

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

Location: New Hampshire

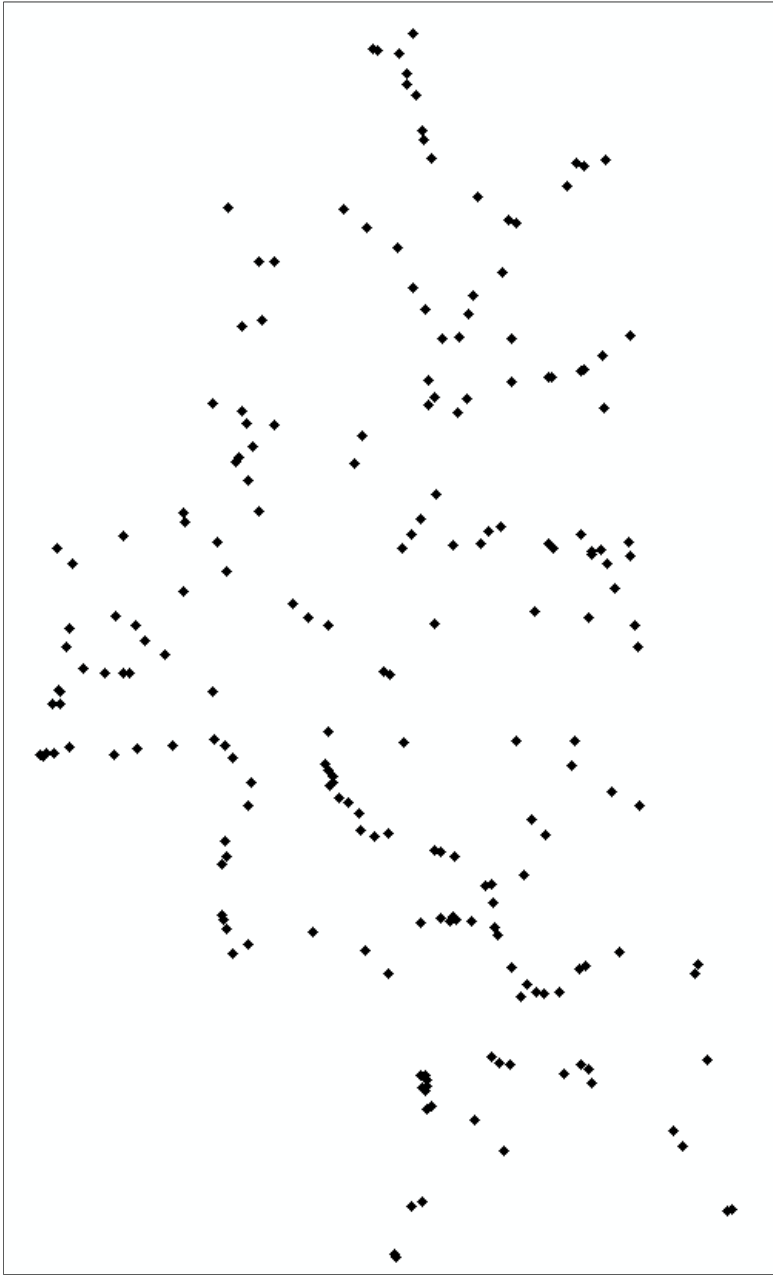


AmherstInventory

Source: GRANIT

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

Location: New Hampshire

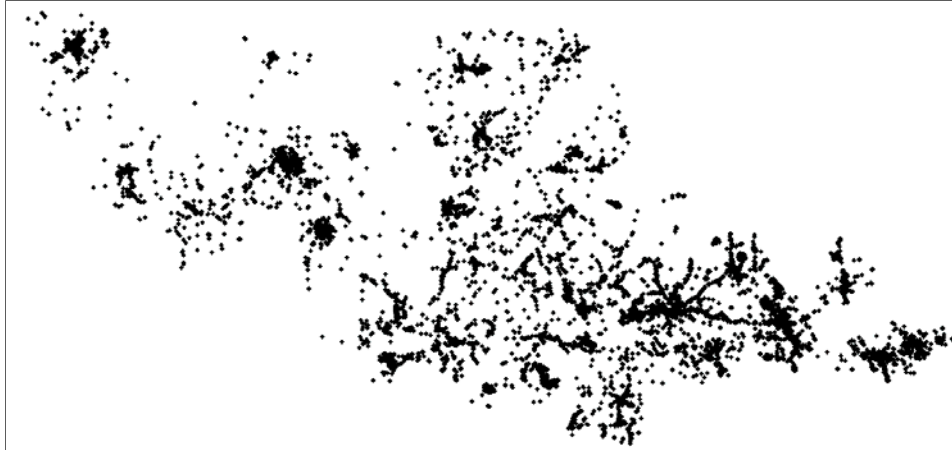


MHCInvPoints

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

