



## **Town of Lebanon, Connecticut** Co-occurring Resource Inventory Project Summary

The Co-occurring Resource Inventory carried out for the Town of Lebanon was a collaborative project between the Town of Lebanon Conservation Commission and the Green Valley Institute. This project consisted of the participating Commission, under instruction from Green Valley Institute staff, selecting electronic map data provided by the Green Valley Institute, and then assigning a weight of importance to each data set.

The selected data sets were then entered into a computer model. The computer model processed the data sets, the corresponding weights assigned by the Conservation Commission were then attached to the processed data sets, and the resulting data were then added together. The result was a data set showing differing levels of resource value within the town. This data set was utilized in a map of the Town of Lebanon, which was presented subsequently to the Conservation Commission during September 2007.

This project involved an iterative process that involved a number of meetings between the Conservation Commission and Green Valley Institute staff. During this process, the Conservation Commission members became more familiar with their respective roles as well as with the available data sets. Over the time span during which this project took place, a number of innovations put forth both by Commission members and Green Valley Institute staff were implemented, both in the form of supplemental data sets and methodology.

Input data sets (Appendix 1) were processed into two types of data sets within the computer model: data sets that identified a resource directly, and data sets that attached value to areas in proximity to the original data set (Table 1). Data sets that identified resources directly generally represented an area within which the potential for future development was present, yet the area had conservation value due to the presence of some identified valuable natural resource. Such data sets included in this project included wetland soils, potential stratified drift aquifer areas, wildlife habitats and corridors, and parcels greater than fifty acres in area. Such resources were considered valuable as they were considered key wildlife habitats and potential corridors, or were areas that were thought or known to contain key resources that directly affected the quality of life in those areas and subsequently the surrounding areas within and near the town.

Data sets that identified areas in close proximity to particular natural resources were predicated on the fact that future development could not take place on or within a given resource area itself, but could take place in close proximity to that resource area, yet that proximal resource area was considered to have conservation value due to its potential use as a riparian buffer zone or other wildlife habitat or corridor. In this project, such data sets included areas in proximity to protected open space parcels, and riparian buffer zones. In this project, riparian buffer zones included areas in proximity to perennial and intermittent streams, lakes, ponds and rivers.

The computer model utilized in this co-occurring resource inventory project was designed and constructed by the Green Valley Institute Geographic Information Systems Center, using ESRI ArcGIS 9.2 geographic information systems software. Data sets entered into the model were in vector-based geographic information systems shapefile format. The shapefile data sets were processed into raster-based pixel data sets, with each of the pixels measuring 25 by 25 scale feet. The majority of the processed data sets

covered the area of the Town of Lebanon, plus a buffer zone measuring one linear scale mile in width extending from the edge of the town boundary. Data containing wildlife corridors and habitats, and parcels data extended only to the town boundary.

In the case of data that attached resource value to areas in proximity to key resources, the width of the area of proximity to the corresponding resource was decided upon, based on recommendations by Green Valley Institute staff and confirmation by members of the Conservation Commission. In the case of proximity to protected open space parcels, the width of the areas of proximity were set to 2000 linear feet, while riparian buffer zones widths were set to 200 feet. Within the zone covering the area of proximity internal values were assigned such that with increasing distance from the corresponding open space parcel or active waterway, the internal value decreased correspondingly in a non-linear fashion. The maximum internal value occurred in areas abutting the corresponding resource such that the final values closely approached the full weighting values as assigned by the Conservation Commission. Toward the outer edges of the areas in proximity, the values tapered off such that the final values approached zero.

Prior to the final co-occurring resource inventory meeting, members of the Lebanon Conservation Commission and Green Valley Institute staff made a decision as to what data would be included on the list of input data sets. The Lebanon Conservation Commission decided upon the final sets of criteria during their final co-occurring resource inventory meeting with the Green Valley Institute during September 2007. During this meeting, the Green Valley Institute provided the Conservation Commission with a computer-projected display showing the interface window of the co-occurring resource inventory model, along with the geographic information systems software showing the template for the co-occurring resource inventory map of the Town of Lebanon. The Green Valley Institute also provided the Conservation Commission with a blank co-occurring resource inventory value sheet (Table 1), which included the input data sets, and three blank adjacent columns in which percent weights could be written in by Commission members.

The Conservation Commission members were instructed to fill in the blank Percent Weight columns (labeled ‘Scenario 1, Scenario 2, and Scenario 3’; see Table 1), such that the sum of all the percent weights in each column was equal to a value of 100. The Commission members were also instructed to assign a percent weight value of zero to any available input data set that would not be included in the model in any of the three scenarios.

This system allowed for data to be produced by the co-occurring resource inventory model during the meeting, permitting members of the Conservation Commission to see the results almost immediately, which helped to expedite the process and allowed for the Commission to decide upon a final set of criteria prior to the end of the meeting.

The Conservation Commission decided to use the criteria included in the “Scenario 1” Percent Weight column in the weighting value sheet (Table 1) for the co-occurring resource inventory data set included on the final map. The Conservation Commission considered two other sets of weighting criteria (Scenario 2 and Scenario 3;

see Table 1). The latter two sets of criteria are shown on two corresponding map images, but were not printed on a paper map.

## **Appendix 1: Input Data Sets Used During the Final Co-occurring Resource Inventory Meeting**

- **Riparian Buffer Zones:** this data set included areas within 200 feet of any active waterway, including lakes, ponds, rivers, perennial and intermittent streams. Riparian buffer zones data were derived from hydrological features data that were in turn processed from hydrography data courtesy of the State of Connecticut Department of Environmental Protection, Office of Information Management.
- **Proximity to Protected Open Space:** this data set included areas within 2000 feet of any open space parcel that was determined to be protected from future development. Data showing areas in proximity to protected open space were derived from permanently protected and other significant open space data that were processed from open space data courtesy of the following organizations: United States Department of Agriculture, Natural Resources Conservation Service; State of Connecticut Department of Environmental Protection, Office of Information Management; State of Connecticut Office of Planning and Management; Windham Regional Council of Governments.
- **Wetland Soils:** this data set represented soils that were delineated as wetland soils. These data were processed and extracted from soils data courtesy of the United States Department of Agriculture, Natural Resources Conservation Service, and the State of Connecticut Department of Environmental Protection, Office of Information Management.
- **Potential Stratified Drift Aquifer Areas:** this data set consisted of areas within which the ground is thought to contain stratified drift deposits that originated as a result of glacial and post-glacial activity. Within this data set, the estimated depths of stratified drift are in two categories: zero to forty feet, and greater than forty feet. Due to their coarse granular makeup, stratified drift deposits carry the potential for high yields of drinking water. This data set was generated using surficial materials data courtesy of the United States Geological Survey, and the State of Connecticut Department of Environmental Protection, Office of Information Management, and based on hydrogeological maps published by the United States Geological Survey in cooperation with the Connecticut Water Resources Commission.
- **Wildlife Habitats/Corridors:** this data set was generated based partially on a map courtesy of the Town of Lebanon that showed roads throughout the town that had been delineated such that some roads were considered to be fragmenting boundaries for wildlife, while other roads were not. The wildlife habitats/corridors data set was based partially also on property parcel data courtesy of the Windham

Regional Council of Governments. The data set included a combination of parcels that were 20 acres or greater in area, and areas within 250 feet of a road that was considered to be a fragmenting boundary.

- **Parcels Greater than 50 Acres:** large property parcels were considered to be largely undeveloped potential wildlife habitats and/or prime agricultural areas. This data set was courtesy of the Windham Regional Council of Governments.

Note: in the co-occurring resource inventory model, the internal weighing of the potential stratified drift aquifer areas data set was set up such that the areas depicted as zero to forty feet estimated depth of stratified drift deposits carried eighty percent of the weight value assigned by the Conservation Commission: areas depicted as greater than forty feet estimated depth of stratified drift deposits carried one hundred percent of the weight value assigned by the Conservation Commission.

Note: the final input criteria selected by the Town of Lebanon Conservation Commission for the printed co-occurring resource inventory map did not include the input data set depicting parcels greater than 50 acres (Table 1).

**Table 1: Co-occurring Resource Inventory Value Weighting Sheet**

	Data Set	Percent Weight		
		Scenario 1	Scenario 2	Scenario 3
Proximity Inputs	Riparian Buffer Zones	26%	20%	15%
	Proximity to Protected Open Space	22%	40%	40%
Direct Value Inputs	Wetland Soils	23%	20%	15%
	Potential Stratified Drift Aquifer Areas	6%	0%	0%
	Wildlife Habitats/Corridors	23%	20%	15%
	Parcels Greater than 50 Acres	0%	0%	15%

Figure 1: Final Co-occurring Resource Inventory Map

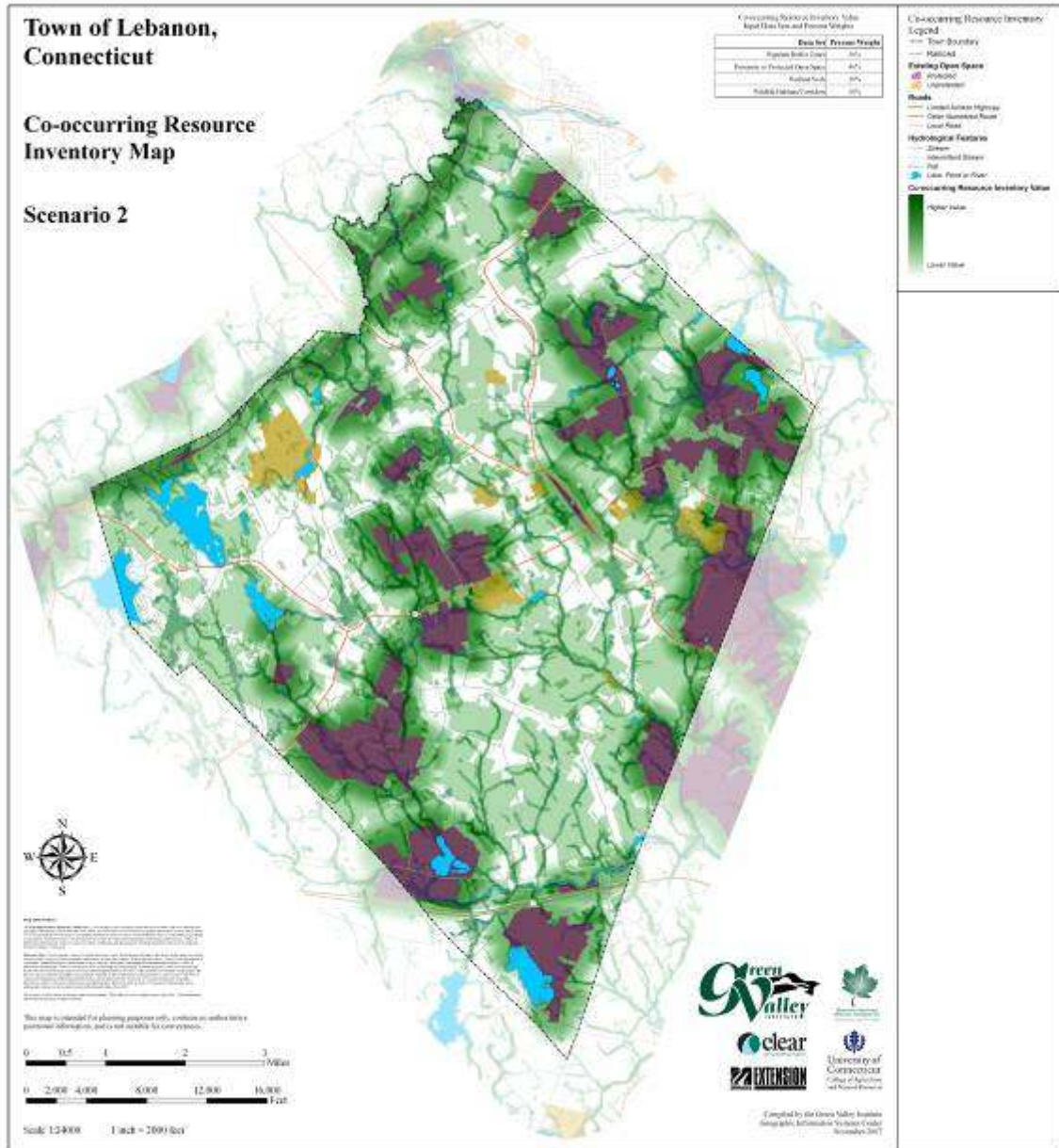
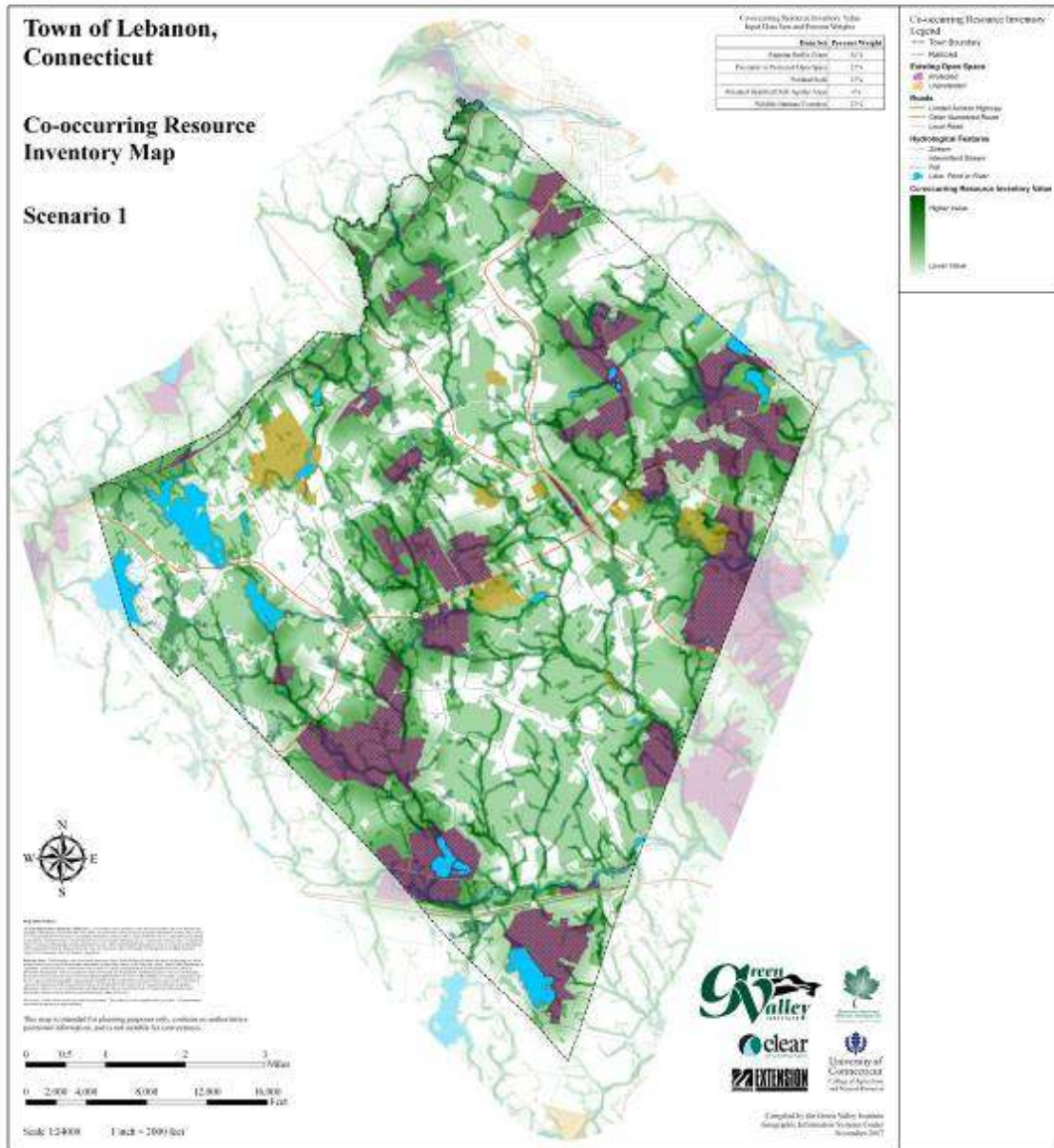


Figure 2: Alternate Co-occurring Resource Inventory Map (Scenario 1 and 3)



# Town of Lebanon, Connecticut

## Co-occurring Resource Inventory Map

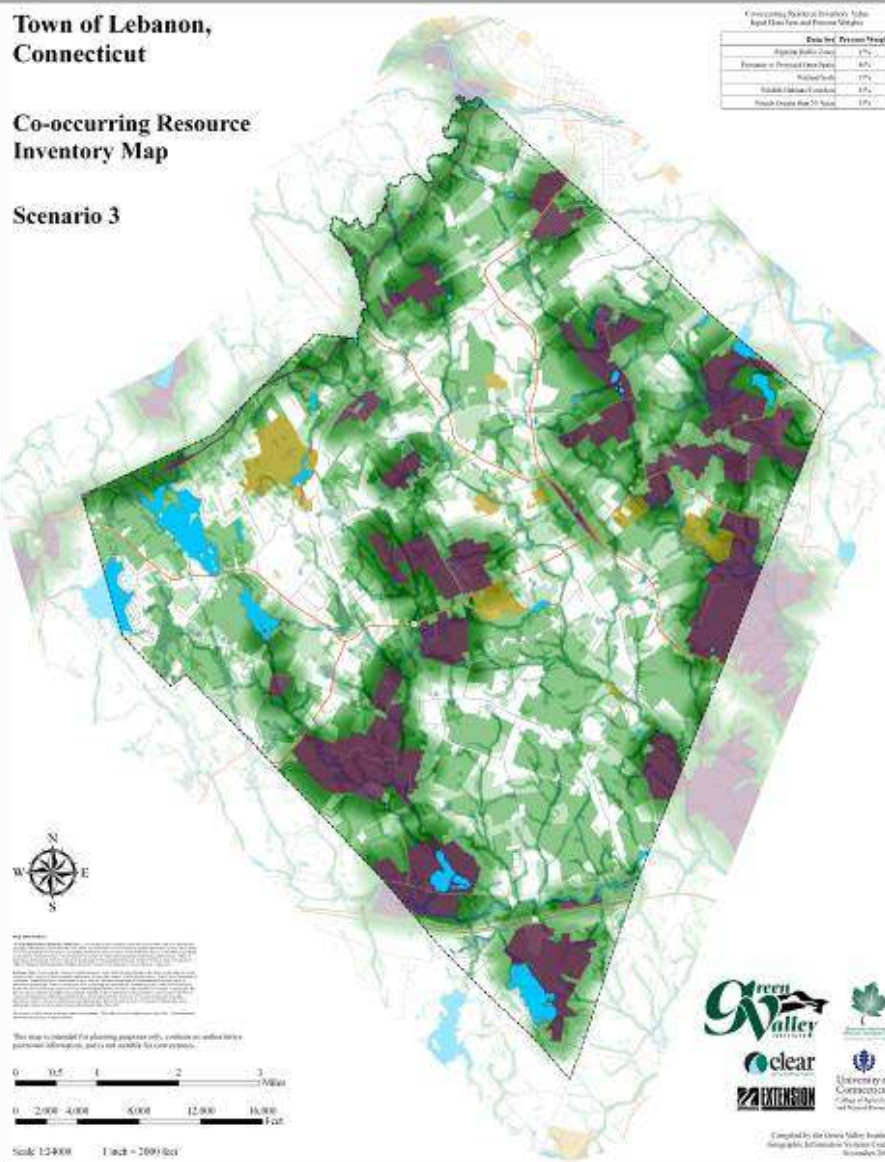
### Scenario 3

Co-occurring Resource Inventory Table  
Legend Class Type and Percent Values

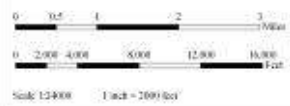
Class Type	Percent Value
Open Field Area	17%
Forest or Forested Open Space	46%
Wetland	17%
Water (Lake, Pond, Stream)	17%
Developed Area (Other)	1%

Co-occurring Resource Inventory Legend

- Town Boundary
- State Boundary
- Waterway Class Space
  - Wetland
  - Water
  - Stream
- Roads
  - United States Highway
  - State Route
  - Local Road
- Hydrological Features
  - Stream
  - Identified Stream
  - Wet
  - Water Pond or River
- Co-occurring Resource Inventory Value
  - High Value
  - Low Value



NOT TO SCALE  
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Compiled by the Green Valley Institute  
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