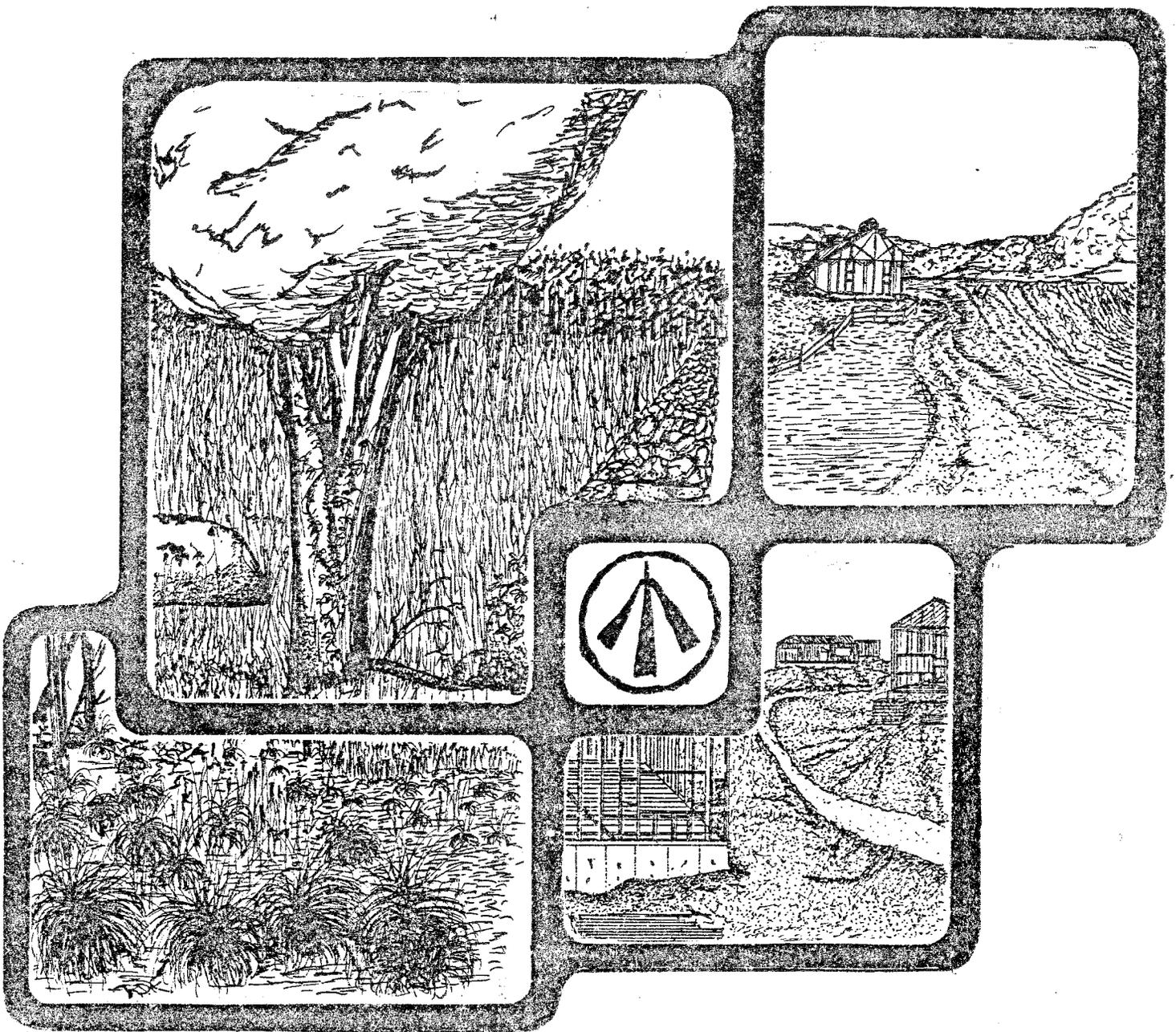


# ENVIRONMENTAL REVIEW TEAM REPORT

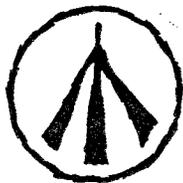


## OLD QUARRY NATURE CENTER DANBURY, CT

KING'S MARK  
RESOURCE CONSERVATION & DEVELOPMENT AREA

**KING'S MARK  
ENVIRONMENTAL REVIEW TEAM REPORT**

**OLD QUARRY NATURE CENTER  
DANBURY, CT  
SEPTEMBER 1984**



**King's Mark Resource Conservation and Development Area  
Environmental Review Team  
Sackett Hill Road  
Warren, Connecticut 06754**

## ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

### Federal Agencies

U.S.D.A. Soil Conservation Service

### State Agencies

Department of Environmental Protection  
Department of Health  
University of Connecticut Cooperative Extension Service  
Department of Transportation

### Local Groups and Agencies

Litchfield County Soil and Water Conservation District  
New Haven County Soil and Water Conservation District  
Hartford County Soil and Water Conservation District  
Fairfield County Soil and Water Conservation District  
Northwestern Connecticut Regional Planning Agency  
Valley Regional Planning Agency  
Central Naugatuck Valley Regional Planning Agency  
Housatonic Valley Council of Elected Officials  
Southwestern Regional Planning Agency  
Greater Bridgeport Regional Planning Agency  
Regional Planning Agency of South Central Connecticut  
Central Connecticut Regional Planning Agency  
American Indian Archaeological Institute  
Housatonic Valley Association

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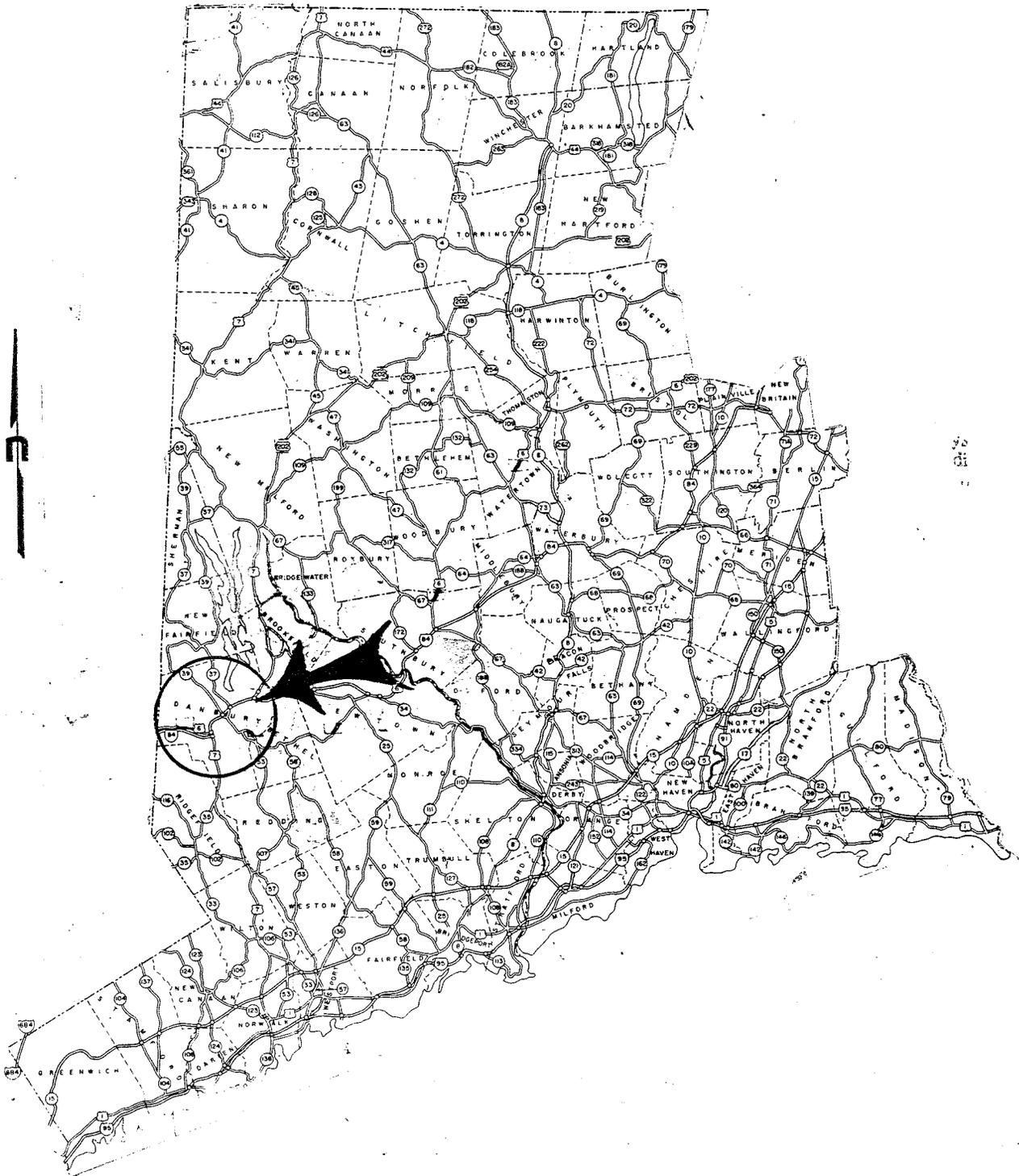
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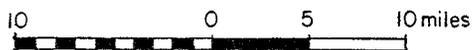
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# LOCATION OF STUDY SITE



Scale 1" = 10 miles



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# OLD QUARRY NATURE CENTER

## I. Introduction

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The preparation of this report on the Old Quarry Nature Center was requested by the Mayor of Danbury and the Danbury Conservation Commission.

The Old Quarry Nature Center is reportedly about 39 acres in size and located in the south-eastern quarter of town off Maple Lane. The land is owned by the City of Danbury and is managed as a natural area. As shown in Figure 1, Rogers Park is located just north of the site.

The Old Quarry Nature Center consists of a diversified landscape of wooded land, old fields, wetlands, and brush. Slopes vary from slight to precipitous. The steepest slopes, which are associated mainly with bedrock exposures, generally face eastward. The highest and lowest points on the parcel are + 500 feet and + 380 feet above mean sea level, respectively. The site contains evidence of quarry trench-cuts in two locations which resulted from an old agricultural limestone mining operation.

In the southcentral portion of the site just south of Maple Lane, is an activities building with nature displays and a meeting room (see Figure 2). In the central portion of the property, just north of Maple Lane, is a ranger house which is accessible from the north off Overlook Road. The ranger residing in the house is responsible for patrolling Rogers Park which, as noted above, is located just north of the Old Quarry Nature Center. Additional landmarks, including several trails, are also identified in Figure 2.

The City of Danbury is interested in restoring and revitalizing the Old Quarry Nature Center for enhanced use. Towards this end, this ERT study was requested. The ERT was asked to provide a natural resource inventory of the site and to discuss opportunities and limitations for forest management, wildlife management, and passive recreational use. This information will assist the City in developing a long-term management plan for the property.

The King's Mark Executive Committee considered the City's request, and approved the project for review by the team.

The ERT met on May 30, 1984 to field review the site. Team members participating on this review included: Marc Beroz, Soil Scientist, U.S.D.A. Soil Conservation Service (SCS); John Hecklau, Wildlife Biologist, CT Department of Environmental Protection (DEP); Richard Lynn, ERT Coordinator, King's Mark Resource Conservation and Development Area (RC&D Area); David Thompson, District Conservationist, U.S.D.A. SCS; Don Smith, Forester, CT DEP; William Warzecha, Geohydrologist, CT DEP; Russell Handsman, Archaeologist, American Indian Archaeology Institute.

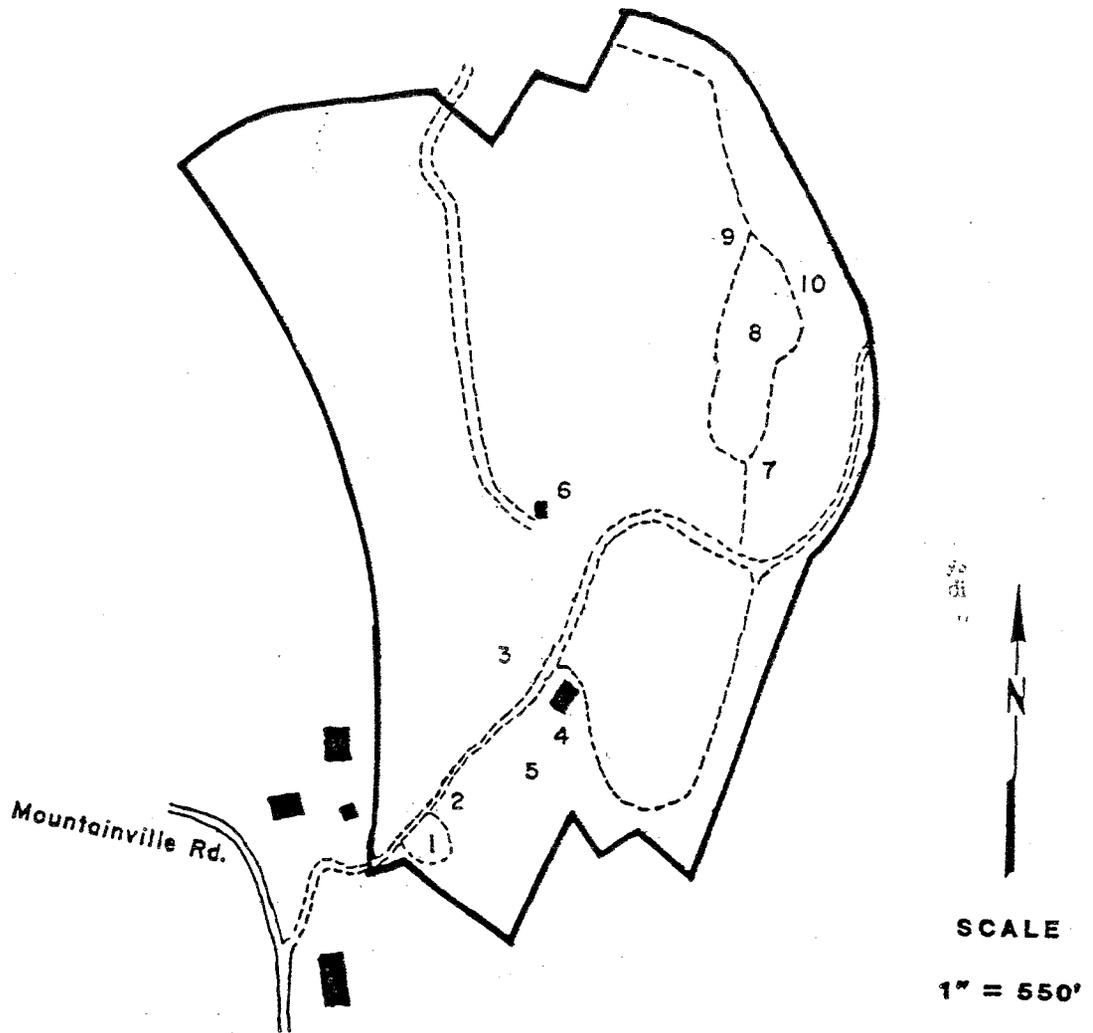
# FIGURE 1 TOPOGRAPHIC MAP



SCALE

1" = 1000'

# FIGURE 2 LANDMARKS



- = road/driveway
- = trail
- = boundary
- 1 = parking lot
- 2 = Indian mortar
- 3 = amphitheater
- 4 = field house
- 5 = old dump
- 6 = ranger's house
- 7 = small quarry pit
- 8 = large quarry pit
- 9 = community fireplace
- 10 = "Giants Chair" rock outcrop

Prior to the review day, each team member was provided with a summary of the proposed study, a checklist of concerns to address, a soils map, a topographic map, and a soils limitation chart. The day of the field review, team members met with representatives from the City Conservation Commission and walked the property. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the team's findings. The report identifies the natural resource base of the property and discusses opportunities and limitations for land management. All conclusions and final decisions with regard to future land use rest with the City of Danbury. It is hoped the information contained in this report will assist the City in making environmentally sound decisions.

If any clarification of this report is required, please contact Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, Sackett Hill Road, Warren, Connecticut 06754.

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## II. Highlights

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1. The geology of the site should pose no major problems in terms of passive recreational uses. Some of the precipitous cliffs associated with rock outcrop areas in the eastern limits of the site (e.g., near Giant's Chair) may prove hazardous for people visiting the center, especially children. Consideration should be given to installing a snowfence or some other safety fence in this area to permit the safe viewing of this scenic area by visitors to the site. (p. 10)
2. The wetlands on this property serve many valuable ecological and hydrological functions (e.g., flood control, water quality improvement, sediment retention, and wildlife habitat). Their disturbance should be kept to a minimum. (p. 10)
3. An on-site bedrock well of adequate yield and quality could probably be developed to service the Nature Center if so desired. (p. 12)
4. Portions of the site consist of upland soils with good potential for footpaths. An erosion problem is evident on a portion of the existing trail network and is in need of attention. The Saco soils on this property have good potential for developing dug out ponds or providing an area for the study of wetlands. (p. 15)
5. Based on visual inspection and soil mapping, it does not appear as though the area surrounding the activities building is well-suited for subsurface sewage disposal due to the presence of wetlands, till-based soils, and bedrock near the ground surface. However, it may be possible to install a small sized septic system to serve the building assuming it is properly designed and installed. (p. 15)
6. Serious consideration should be given by the Town to surveying the property to determine accurate property boundaries and then marking or posting the property boundaries in the field. (p. 16)
7. A variety of vegetation types exist at the Old Quarry Nature Center. While the DEP's Natural Diversity Data Base does not have any record of rare or endangered species on this site, the site does have the potential for supporting such species. A thorough cataloging of the vegetation on the site, over a minimum one-year period of time, might identify such species. (p.19)
8. Within the Old Quarry Nature Center there exist 4 major wildlife habitat cover types. These are upland mixed hardwood forest, bottomland mixed hardwood forest, old field, and wooded swamp. An additional unique habitat

on the area is a small grassland slope. Typical wild-life species, special habitat features, and possible management techniques for each type are presented in the text of this report. Generally by creating and maintaining a diversity of cover types and successional stages, one can attract a wide variety of wildlife species. It is important to realize that a properly managed area can often be more attractive to wildlife than one that is preserved and left alone. (p. 20 & 25)

9. The Old Quarry Nature Center has good potential for supporting a full range of community oriented activities of educational, scientific, cultural, and recreational value. The Old Quarry tract has been blessed with a variety of landscapes and, with innovative management, is capable of supporting a broad based program of nature related activities. The site needs a great deal of resource management and manipulation to realize its potential. (p. 25)
10. While Maple Lane provides ready access to the Nature Center, the road is in poor condition in places and convenient parking is not presently available at the Center. Consideration should be given to: 1) improving Maple Lane from its point of intersection with Mountainville Road to the exhibition hall in the southcentral portion of the site; 2) providing at least 8-10 parking spaces near the exhibition hall with any overflow using the present parking area west of the hall; and 3) improving signage for the Center at Mountainville Road and posting parking signs at selected parking areas. (p. 26)
11. During the ERT's field review, recently deposited garbage and debris was observed at the eastern border of the tract along the Maple Lane "trail". Consideration should be given to removing this debris, posting the boundaries of the entire tract, and policing the area as needed to curtail such undesirable activity. (p. 27)
12. The existing trails on the property are in need of maintenance. To facilitate a pleasant hiking experience the trails should be cleared of vegetation to a width of four feet and to a height of eight feet. Consideration should also be given to the preparation of a "trail map with selected points of interest" to facilitate public use and enjoyment of the trail network. (p. 27)
13. The absence of known archaeological sites and the extensive signs of historic quarrying suggest that significant archaeological remains are not present or intact at the Old Quarry Nature Center. However any future recreational use of the parcel should attempt to preserve and recognize the late prehistoric mortar, which was once used to grind grain, wild seeds, and nuts. (p. 28)

### III. Geology

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The "Old Quarry Nature Center" is located primarily in the Danbury topographic quadrangle; however, a small percentage of the site is located in the southern portion of the Bethel topographic quadrangle. A bedrock geologic map (QR-7), by James W. Clarke, for the Danbury quadrangle has been published by the Connecticut Geological and Natural History Survey. Although the surficial geologic map for the quadrangle has not been published to date, there is preliminary surficial geologic information on open-file at the Department of Environmental Protection's Natural Resource Center in Hartford.

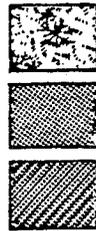
#### SURFICIAL GEOLOGY

Most of the site is covered by a relatively thin blanket of glacial sediment called till (see Figure 3). "Till" refers to a nonsorted, nonstratified sediment that was deposited directly from the glacial ice sheet. These sediments consist of rock particles and fragments which were derived from the local bedrock: gneisses, schists and marble. As the glacier moved across the area, it churned up the pre-existing soils and scraped, gouged, and broke up bedrock surfaces. Because the glacier collected rock particles of all sizes, and because these particles were not reworked by glacial meltwater streams, the till deposits contain everything from clay to boulders. Till is also variable in texture. It is generally fairly loose, coarse-grained and stony in the upper few feet, but at depth (3-5 feet) commonly becomes finer-grained, less stony and siltier. Where the compact zones are encountered, till is commonly called "hardpan". The thickness of the till ranges from zero, where bedrock is exposed at the ground surface, to probably not more than 10 feet at various points in between on this site.

Another type of glacial deposit, found in the low-lying topographic swales in the northern portions of the property, are lake bottom sediments. These sediments, which were deposited approximately 12,000 years ago by meltwater streams flowing into a former glacial lake in Danbury, consist of fine grained sediments such as sand, silt and clay. The ancient lake occupied the low-lying areas that are now drained by the Still River.

Overlying the lake bottom sediments in the northern portions of the site are "swamp sediments". These sediments consist of sand, silt, clay and a high percentage of organic material (e.g., decayed plant matter) which formed in areas of sluggish-moving water. Swamp sediments are delineated by the symbol Sb (Saco soils) on the accompanying soils map (see Figure 6). A small area in the southern part of the site also contains swamp sediments. The sediments in this area are probably underlain by till and/or bedrock.

# FIGURE 3 SURFICIAL GEOLOGY



Till

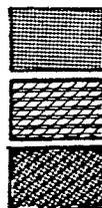
Lake bottom sediments

Areas overlain by swamp sediments

SCALE

1" = 1000'

# FIGURE 4 BEDROCK GEOLOGY



Manhattan formation

Inwood marble

Areas where bedrock is at or near ground surface

SCALE

1" = 1000'

## BEDROCK GEOLOGY

Numerous bedrock outcrops are visible on the site, primarily in those areas delineated as HrE (Hollis-Rock outcrop-Charlton complex) and NfD (Nellis-Farmington) in Figure 6. According to Quadrangle Report No. 7, the principle rock type which underlies or crops out on the site is a member of the Manhattan formation (see Figure 4). This rock consists of sillimanite-garnet-biotite gneiss which, in places, grades into a mica schist and also into quartzite. The main minerals in the rock include quartz, andesine, biotite, garnet and sillimanite. A "gneiss" is a banded or streaked crystalline rock. A "schist" is a structurally layered crystalline rock in which platy or flaky minerals (micas) have aligned to form wavy surfaces of parting. A "quartzite" is a rock which consists wholly of quartz sand cemented with quartz. The Manhattan formation rocks were deposited during the Ordovician geologic period (approximately 510-465 million years ago). All three rock types (i.e., gneisses, schist and quartzite) are metamorphic; that is, they were all subjected to great heat and pressure within the earth's crust. It should be pointed out the new updated State bedrock geologic map will be changing the Manhattan formation mapping in this area to the Walloomsac Schist. The Walloomsac Schist is described as a dark, fine-grained schist composed of the minerals quartz, albite and commonly garnet.

The other rock type found in the eastern limits of the site is the Inwood marble. This rock consists of a white to gray dolomitic marble. Accessory minerals present in the rock are phlogopite, tremolite, diopside, forsterite, quartz, microcline, zircon, tourmaline and antigorite. The term "marble" refers to a metamorphic rock composed essentially of the mineral dolomite. According to the "Geology Trail Guide", prepared by Jon Pawloski for the Old Quarry Center, the marble rock had been mined in the eastern limits of the site primarily for agricultural lime. It should be noted that the Inwood marble formation has also been mined commercially for agricultural lime in an area north of the Danbury city limits just east of U.S. Route 7.

According to the "Geology Trail Guide" referenced above, the quarrying operation on the "Old Quarry Center" property did not prove very productive and subsequently was abandoned by the turn of the century. As mentioned earlier, trench cuts made by the mining operation are evident on portions of the property. The Inwood marble rocks were deposited during the Cambrian and/or Ordovician geologic periods (approximately 570-430 million years ago). The marble rocks differ chemically from the schist and gneiss rocks on the site. The carbonate minerals in the marble are subject to rapid erosion because they are soft and also because they are dissolved by our more acidic rains and ground water.

Because of these physical and chemical properties, the marble erodes much more rapidly than do the aluminum silicate minerals found in the schists and/or gneisses. As a result, bedrock exposures of marble are not that common. It is thought this relatively narrow belt of marble traversing the western edge of Connecticut in a northward direction is the remains of a carbonate bank which existed at the continental margin during an early stage of North America's geologic history.

The geology of the site should pose no major problems in terms of passive recreational uses. Some of the till-based soils may experience high ground water levels during the wet time of year. These conditions (high ground water levels, compact till) would not be expected to have a significant adverse effect on passive recreational uses. Nevertheless, hiking trails through wetland areas should be avoided if possible. Some of the precipitous cliffs associated with rock outcrop areas in the eastern limits of the site (e.g., near Giant's Chair) may prove hazardous for people visiting the center, especially children. Consideration should be given to installing a snowfence or some other safety fence in this area to permit the safe viewing of this scenic area by visitors to the site.

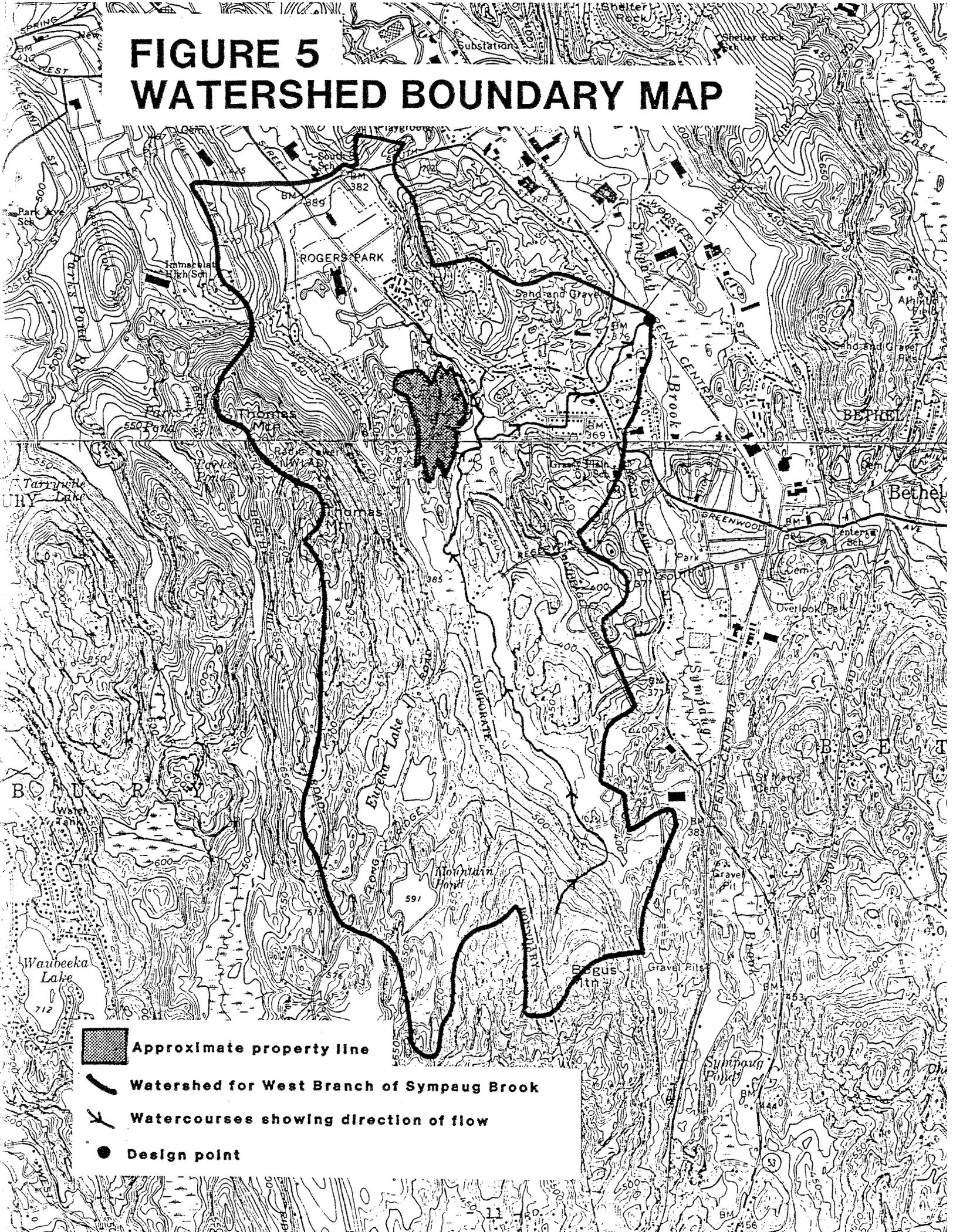
#### **IV. Hydrology and Water Resources**

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The "Old Quarry Nature Center" lies within the watershed of the west branch of the Sympaug Brook (see Figure 5). This watershed drains an area of approximately 2.2 square miles or  $\pm$  1,408 acres. Surface runoff in the northern half of the site is directed towards two topographic swales. Water is then routed northward via the swales towards an unnamed tributary of the west branch of Sympaug Brook. Surface runoff in the southern half of the site is directed into an intermittent drainage channel which ultimately empties into the west branch of Sympaug Brook or flows by sheet flow directly into the brook.

As mentioned earlier in the Geology section, there are some wetland areas on the property. Wetlands serve many valuable hydrological functions. For one, they play an important role in regulating streamflows. During periods of heavy rainfall or snowmelt, wetlands store surface water temporarily, releasing it more slowly than would otherwise be the case and thereby reduce the peak flood flows to downstream watercourses. Wetlands also help protect the quality of the surface water through various natural biochemical processes. Also, because wetland areas reduce flood flows and the velocity of flood water, sediment which is carried in the water from upstream areas is allowed to settle out. As a result, wetland vegetation filters and holds the sediment which might otherwise enter watercourses or waterbodies further downstream. Wetlands are also valuable

# FIGURE 5 WATERSHED BOUNDARY MAP



-  Approximate property line
-  Watershed for West Branch of Sympaug Brook
-  Watercourses showing direction of flow
-  Design point

from an ecological stand point in that they provide habitat for waterfowl and various other wildlife including some rare and endangered species. Because of the valuable hydrological and ecological functions of the wetlands at the Old Quarry Nature Center, their disturbance should be minimized.

On the review day, the Team was asked to comment on whether or not a water supply, which would serve the lecture/exhibition hall, could be developed on the site. It appears the principle aquifer which would be capable of use on this site is the crystalline rock underlying most of the parcel. Bedrock transmits water by means of an interconnected system of fractures. The amount and natural quality of water withdrawn from a bedrock well depends upon the number of water-bearing fractures or seams it intersects and on the mineralogy of the rock formations through which the fractures pass. Most wells drilled in bedrock can achieve sustainable yields of 3 gallons per minute or more without penetrating more than 300 feet of rock. A yield of 3 gallons per minute should adequately serve the needs of the Old Quarry Center.

The natural quality of the water supply should be good. However, there is a chance the underlying bedrock may be mineralized with iron and/or manganese. If the concentrations of these minerals are high, the well water may need to be treated with a suitable method of filtration.

## **V. Soils**

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Figure 6 and the following narrative are a revision of data contained in the Soil Survey of Fairfield County, Connecticut. The symbols on the map identify map units. Each map unit has a unique composition of soils. Areas with the same symbol have the same composition.

### Map Unit CrC

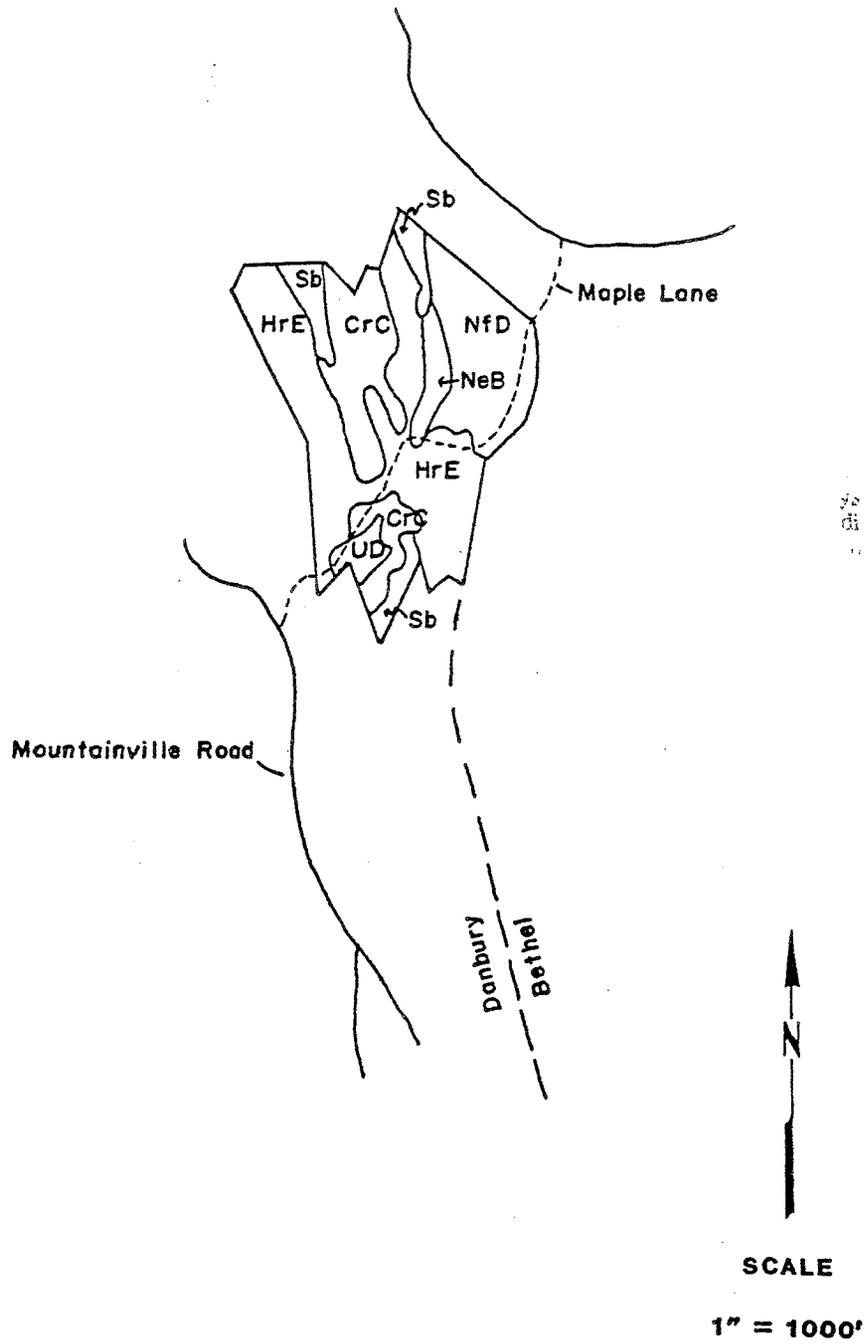
This map unit is composed primarily of 2 kinds of soils that are so intermingled on the ground that they cannot be separated on the map. Both soils are on 3 to 15 percent slopes. Stones and boulders cover 1 to 5 percent of the soil surface.

One soil is named Charlton. Charlton soils are very deep and well drained. Typically, they have a very dark brown fine sandy loam surface layer 3 inches thick. The subsoil is strong brown fine sandy loam 26 inches thick. The substratum is light olive brown gravelly sandy loam to a depth of 60 inches or more.

The other major soil in this map unit is Hollis. Hollis soils are shallow and somewhat excessively drained. Typically they have a very dark brown fine sandy loam surface layer 3 inches thick. The subsoil is dark yellowish brown fine sandy loam and overlies hard bedrock at a depth of 10 to 20 inches. The shallow Hollis soils and associated bedrock exposures comprise about 25 percent of the map unit.

There are also soils in this map unit that are an intergrade between Charlton and Hollis soils. They are char-

# FIGURE 6 SOILS MAP



acterized as overlying bedrock at depths of between 20 and 60 inches.

These soils are well suited for footpaths. There are a few locations within the CrC map unit where the slopes are steeper than 15 percent. Footpaths developed on these steeper slopes should be carefully designed to avoid erosion problems.

#### Map Unit HrE

This map unit is composed primarily of 2 kinds of soils and rock outcrop. These components are so intermingled on the ground that they cannot be separated on the map. Both soils are on 15 to 45 percent slopes and have 1 to 5 percent of their surface covered by stones and boulders.

One soil is named Hollis. The Hollis soils are the same as the Hollis described above in the CrC map unit except for slope. These soils cover about 40 percent of the area.

The rock outcrops consist of exposures of hard schist bedrock and comprise about 25 percent of the map unit.

The third major component is Charlton soils. The Charlton soils are the same as the ones described above in the CrC map unit except for slope. These soils cover about 20 percent of the area.

The remaining 15 percent of this map unit consists of a number of soils with a variety of properties and potentials. They are not described here because each of these soils cover only a very small area.

This map unit is poorly suited for footpaths. The major problem is the steepness of slope. Footpaths developed through these areas will be costly to build, hard to walk and may lead to severe erosion problems.

#### Map Unit NeB

This map unit is composed principally of Nellis soils on 3 to 8 percent slopes. These soils are deep and well drained. Typically the Nellis soils have a very dark grayish brown surface layer 8 inches thick. The subsoil is yellowish brown fine sandy loam and loam, 19 inches thick. The substratum is very pale brown sandy loam to a depth of 40 inches or more.

This map unit is well suited for footpaths.

#### Map Unit NfD

This map unit is composed of 2 kinds of soils that are so intermingled on the ground that they cannot be separated on the map. Both soils occur on 25 to 50 percent slopes.

One soil is named Nellis and comprises 50 percent of the area. These Nellis soils are the same as the Nellis described above in the NeB map unit except for slope.

The other soil is named Farmington. Farmington soils are shallow and somewhat excessively drained. Typically these soils have a dark brown fine sandy loam surface layer 8 inches thick. The subsoil is yellowish red sandy loam overlying marble bedrock at a depth of 10 to 20 inches. The Farmington soils comprise about 30 percent of the map unit.

Maintaining trails on these soils is difficult due to the steep slopes. An erosion problem has already been recognized on the established trails within this area. The natural sands and gravels that have weathered out of the marble bedrock is helping to stabilize the trail surface, however, other erosion control measures are needed so that the trails do not degrade further. This is especially critical if more use of these trails is anticipated.

#### Map Unit Sb

Areas labelled Sb are dominated by Saco soils on 0 to 1 percent slopes. Saco soils are very deep and very poorly drained. These poorly drained soils are inland wetlands.

Typically, Saco soils have a black silt loam surface layer 14 inches thick. The underlying layer is dark gray silt loam and very fine sandy loam 27 inches thick. The next layer is stratified sand or sand and gravel to a depth of 60 inches or more.

The Saco soils have a water table at or near the surface for much of the year. The shallow depth to ground water makes these soils poorly suited for footpaths. Paths through this area will often be muddy. Saco soils are also subject to flooding during storm periods.

These soils have good potential for developing dug out ponds. These areas can also provide the Nature Center with sites to visit for studying the role of wetland areas in the ecosystem.

#### Map Unit Ud

The area encompassed by this map unit is an old landfill. It is composed of domestic waste, asphalt, pipe and boulders. This waste material is estimated to be 1 to 3 feet thick over the naturally occurring soil. Broken glass contained in the fill would be a nuisance if footpaths were developed here. There is an excellent opportunity to study the ecological reversal of landfills back to "natural" areas. This type of study could be developed as part of the Nature Center's education program.

## **VI. Sewage Disposal**

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On the review day, team members were asked to comment on the feasibility of installing an on-site septic system which would serve the exhibition/lecture hall in the southern parts of the site. Based on visual inspection and soil mapping, it does not appear as though the area surrounding the building is well-suited for subsurface sewage disposal due to the presence of wetlands, till-based soils, and bedrock near the ground surface. However, it may be possible to install a small sized septic system to serve the building assuming it is properly designed and installed. In order to determine if an on-site septic system can be installed on the site, it will first be necessary to conduct detailed soil testing which includes deep test pits and percolation tests. It should be noted that specially designed (i.e., engineered) septic systems are commonly more costly to install than "conventional" septic systems.

## VII. Forestry

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Aerial photo interpretation indicates that 6% of the area of this property is non-forested, being either open field or a residential area. The remaining 94% of the area can be divided into 7 differing vegetative types (see Figure 7). These are discussed below.

It should be noted that physical and topographic features encountered in the northeastern quarter of the property, (areas 4, 5, 6, and open areas in Figure 7), seem to indicate that a larger area than previously reported has been actively quarried in the past. Vegetation found in stand 4 is fairly young in nature and appears typical of the species normally associated with disturbed ground. The remains of what appears to be an old access road can be found leading into area 5 from the north central boundary through the smaller piece of area 2. Additionally, the rock faces found in the central north-south running inaccessible/inoperable area (see Figure 7) seem to bear indications of having been the result of man-caused fractures. Similar rock faces can be found in some of the western most inaccessible/inoperable areas. The Team Geologist has speculated that these additional areas of disturbance were exploratory in nature, where hopeful prospectors searched in vain for additional marble deposits of some significance.

### A. Stand Descriptions

Stand #1. Oak/Hickory, 27.3% of total acreage\* - This well-stocked stand is composed of medium quality, sawlog-sized red oak, white oak, and hickory. These trees are growing at a fair rate on a fair quality growing site and are approximately 85 years old.

The understory species encountered include red oak, red maple, mountain laurel, beech, dogwood, sassafras, and maple-leaved viburnum. Some chestnut root sprouts can still be found.

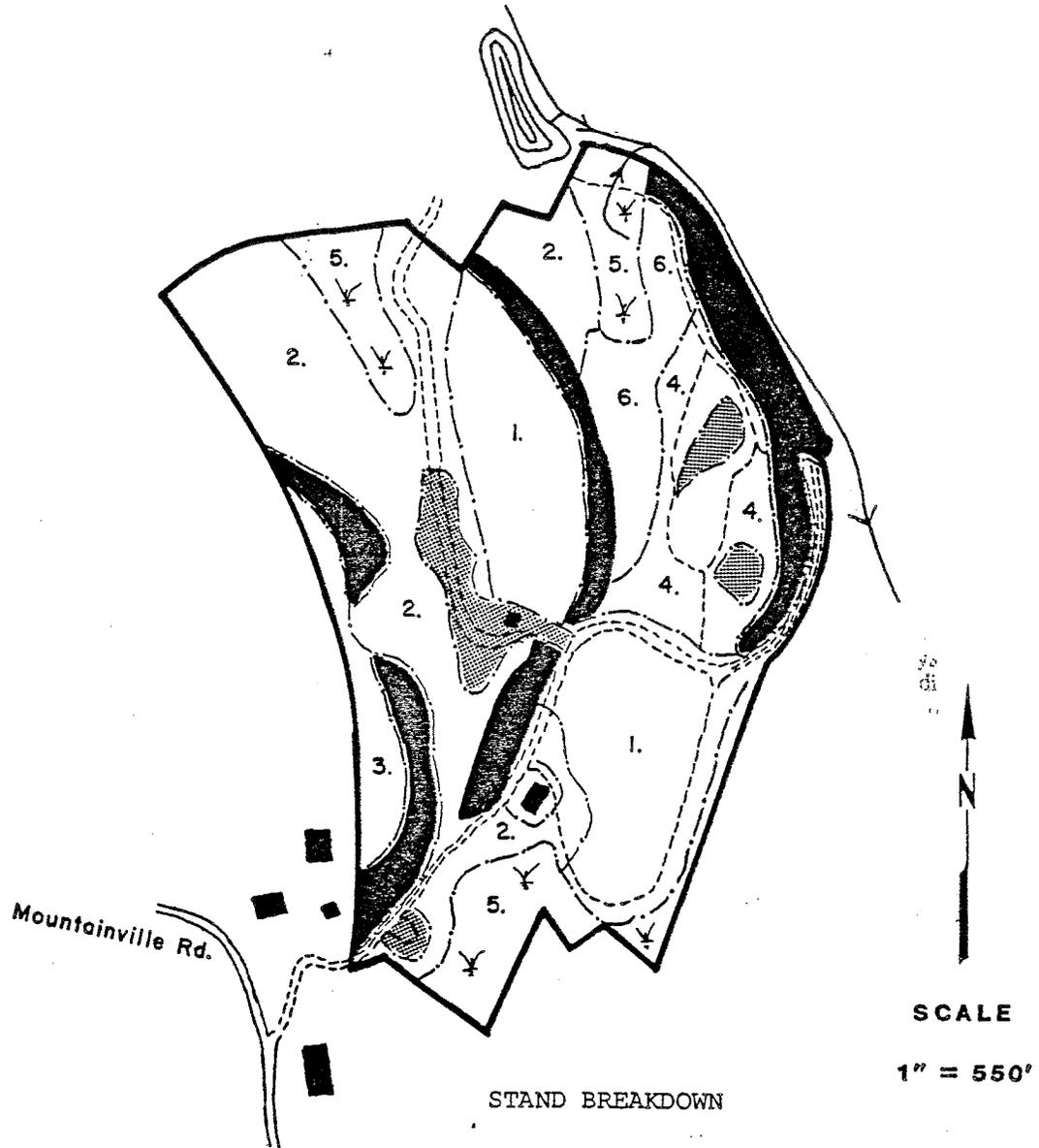
The ground cover here includes poison ivy, scattered grasses, rattlesnake plantain, dewberry, agrimony, jumpseed, common cinquefoil, lowbush blueberry, and some greenbriar. A variety of mushrooms were also observed on the forest floor during the ERT's investigation.

Although the larger stems in this stand are mature the heavy reliance upon aesthetic considerations here seem to preclude removal of the overstory to favor the developing understory.

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\* Since the exact acreage of this parcel is unclear, the Team forester has chosen to refer to stand areas as a percentage of the total area. Serious consideration should be given by the Town to surveying the property to determine accurate property boundaries and then marking or posting the property boundaries in the field.

# FIGURE 7 VEGETATION TYPE MAP



**LEGEND:**

- ==== Road
- Woods Road
- Trail
- .-.- Stand boundary
- Building
- ~ Stream
- ∇ Wetland
- ⊖ Pond

**STAND BREAKDOWN**

STAND	% of Total Area	Description
1.	27.3	Oak/hickory (sm. sawtimber)
2.	25.8	Oak/mixed hardwoods (pole-sm. sawlog)
3.	3.7	Oak ridge
4.	7.9	Oak/mixed hardwood (poles)
5.	11.6	Wetland
6.	5.1	Old field
⊖	12.4	Inaccessible/inoperable
		93.8 % FORESTED
		6.2 Open/residential
		6.2 % NOT FORESTED

Stand #2. Oak/Mixed Hardwoods, 25.8% of total acres. - This well-stocked stand is composed of good quality, small sawlog-sized red oak, black oak, hickory, red maple, ash, sugar maple, and black birch. These trees are growing at a medium rate on a medium quality growing site and are approximately 65 years old.

The understory species encountered include dogwood; sugar maple, red maple, and black birch regeneration; maple leaved viburnum; brambles; and spicebush in the wetter areas.

The ground cover here includes hayscented and Christmas ferns, marginal woodfern, polypody, virginia creeper, trillium, New York fern, barberry, poison ivy, violet; wild geranium; blackberry, bloodroot, wood nettle, cleavers, and scattered maidenhair fern. Skunk cabbage and marsh fern were observed in the wetter areas.

While not yet mature, this area is becoming overcrowded and a light improvement cut yielding cordwood would ease the overcrowding. Removals should come from only the poorest quality stems, leaving the best stems to grow at a higher rate.

Stand #3. Oak Ridge, 3.7% of total acres. - This understocked stand is composed of poor quality, pole to small sawlog-sized scarlet oak, chestnut oak, beech, red maple, and black birch. These trees are growing at a poor rate on a poor quality growing site and are approximately 50 years old.

The understory species encountered include dogwood, sassafras, and viburnum.

The ground cover here includes grasses, low bush blueberry, poison ivy, and scattered common cinquefoil.

No management is suggested for this area. As a lowest priority measure, white pine might be planted in the more open areas. In all likelihood, though, the deer population will prevent the development of planted conifers.

Stand #4. Oak/Mixed Hardwood, 7.9% of total acreage. - This understocked old quarry site is composed of fair quality, pole-sized red cedar, hop hornbeam, big toothed aspen, basswood, red maple, red oak, ash, and yellow poplar. These trees are growing at a good rate on a medium quality growing site and are approximately 40 years old.

The understory species encountered include highbush blueberry, smooth sumac, honey suckle, sweet pepperbush, and hardwood saplings.

The ground cover here includes Queen Anne's lace, black eyed susan, daisy, indian pipe, poison ivy, polypody, Christmas fern, and virginia creeper.

No management of this stand is necessary at this point in time.

Stand #5. Wetland, 11.6% of total acreage. - This overstocked hardwood swamp is composed of fair quality, pole-sized red maple, with occasional ash, american elm, black

gum, and yellow birch found on the drier sites. These trees are growing at a fair rate on a poor quality growing site and are approximately 40-50 years old.

The understory species encountered include spicebush, sweet pepperbush, high bush blueberry.

The ground cover here includes sedge, sensitive fern, cinnamon fern, moss, skunk cabbage, jewel weed, grape vines, and hummocks of grasses.

Management of this area for the production of wood products is not feasible due to saturated soils which limit access and tree growth rates.

Stand #6. Old Field, 5.1% of total acreage. - This understocked old field is composed of poor quality, sapling-sized oaks, red cedar, and aspen. These trees are growing at a fair rate on a good quality growing site and are approximately 20 years old.

The understory species encountered include sumac, grey dogwood, blueberry, and multiflora rose.

The ground cover here includes grasses, goldenrod, and raspberries.

Inaccessible/Inoperable Areas, 12.4% of total acreage. - These areas are characterized by steep slopes, generally composed of ledge, boulders, stone, and small pockets of soil. Occasionally, small plateau-like areas can be found which contain better than average soils. Available moisture and nutrients range from relative abundance at the base of these slopes to extremely poor conditions at the crest of slopes.

Vegetative cover on these areas varies widely, depending on the conditions found in any particular spot. In general, these slopes are covered with mature stems, due largely to the inaccessibility of the area, which precludes any harvesting activity.

It is strongly recommended that these areas be left intact. Topography prevents meaningful management, anyway, and soils here will be very sensitive to erosion.

## B. Species Diversity

As shown in Figure 7, a variety of vegetation types exist at the Old Quarry Nature Center. While the DEP's Natural Diversity Data Base does not have any record of rare or endangered species on this site, the site does have the potential for supporting such species. A thorough cataloging of the vegetation on the site, over a minimum one-year period of time, might identify such species. The staff at DEP's Natural Diversity Data Base would be interested in the results of any comprehensive vegetation inventory conducted on the site as this would add to their baseline data. The City of Danbury files on this site contain a vegetation inventory of the property, although the date of the inventory and the investigator are not identified. The results of that investigation are summarized below. This listing, while not a comprehensive inventory of the site, does indicate the diversity of vegetation which may be found on the site.

Tree and Shrub  
Species

- |                       |                           |
|-----------------------|---------------------------|
| 1) witch hazel        | 18) weeping willow        |
| 2) ironwood           | 19) cottonwood            |
| 3) chestnut oak       | 20) sassafras             |
| 4) bigtooth aspen     | 21) New Jersey tea        |
| 5) ash                | 22) round leaved dogwood  |
| 6) red maple          | 23) pussywillow           |
| 7) red elm            | 24) maple leaved viburnum |
| 8) black cherry       | 25) spicebush             |
| 9) trembling aspen    | 26) smooth sumac          |
| 10) sugar maple       | 27) pin cherry            |
| 11) oak               | 28) staghorn sumac        |
| 12) choke cherry      | 29) honeysuckle           |
| 13) gray dogwood      | 30) lowbush blueberry     |
| 14) hophornbeam       | 31) highbush blueberry    |
| 15) red osier dogwood | 32) blackberry            |
| 16) white willow      | 33) black raspberry       |
| 17) white oak         | 34) bayberry              |

Herbaceous Species

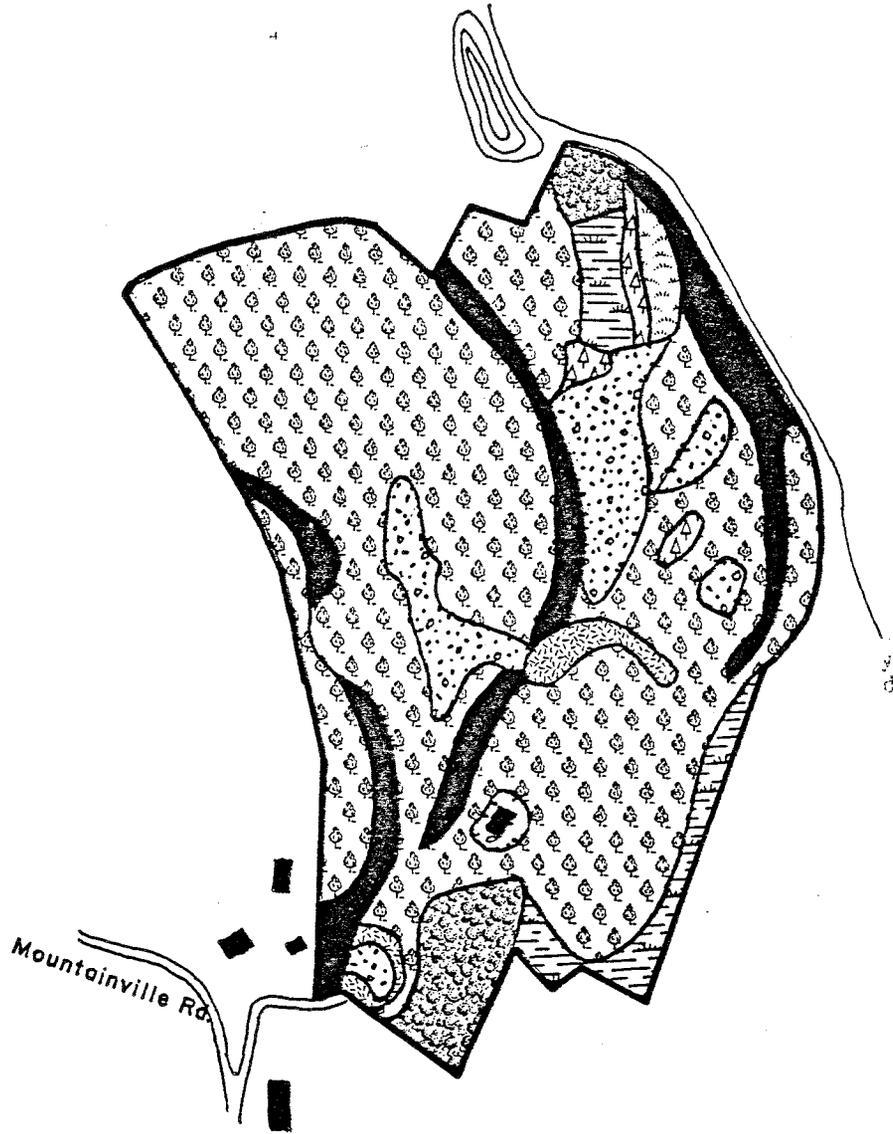
- |                          |                         |
|--------------------------|-------------------------|
| 1) skunk cabbage         | 21) meadow rose         |
| 2) purple loosestife     | 22) carrion flower      |
| 3) false Solomon's seal  | 23) cinquefoil          |
| 4) wild geranium         | 24) bloodroot           |
| 5) wood anemone          | 25) wild sarseparilla   |
| 6) violets               | 26) goldenrod           |
| 7) rue-anemone           | 27) boneset             |
| 8) jack-in-the-pulpit    | 28) blue lobelia        |
| 9) clover                | 29) vervain             |
| 10) pasture rose         | 30) showy tick trefoil  |
| 11) ox-eye daisy         | 31) trumpet foneysuckle |
| 12) thimbleweed          | 32) northern wild bean  |
| 13) fleabane             | 33) agrimony            |
| 14) black-eyed susan     | 34) aster               |
| 15) virginia creeper     | 35) white baneberry     |
| 16) common St. Johnswort | 36) jewelweed           |
| 17) self-heal            | 37) indian pipe         |
| 18) barberry             | 38) trillium            |
| 19) Solomon's seal       | 39) columbine           |
| 20) Queen Anne's lace    | 40) coltsfoot           |

## VIII. Wildlife

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Within the Old Quarry Nature Center there exist 4 major wildlife habitat cover types (see Figure 8). These are up-land mixed hardwood forest, bottomland mixed hardwood forest, old field, and wooded swamp. An additional unique habitat on the area is a small grassland slope. These cover types are described in the following section. Typical wildlife species, special habitat features, and possible management techniques for each type are also presented.

# FIGURE 8 WILDLIFE HABITAT MAP



-  Mixed hardwoods (upland)
-  Mixed hardwoods (bottomland)
-  Old field / open field
-  Wooded swamp
-  Brush
-  Aspen stands
-  Grassland slope
-  Mixed hardwoods (upland) on extremely steep slopes



SCALE  
1" = 550'

## Upland Hardwood Forest

Upland hardwood forest is the predominant habitat type on the area. It is characterized by a mixture of 60-80 year old oaks and hickories. On north slopes and in moister areas, maples, beech, white ash, and black birch are also common. In many areas, the overstory canopy coverage is patchy, resulting in thick understories of viburnum, flowering dogwood, and witch hazel.

Wildlife species using this habitat type include white-tailed deer, gray squirrel, flying squirrel, raccoon, cottontail rabbit, opossum, gray fox, red fox, striped skunk, ruffed grouse, wild turkey (if present), and a variety of small mammals and songbirds.

Techniques that can be used to enhance the wildlife value of this habitat type include:

1. Increase habitat diversity by making several (2-4) patch cuts. These cuts should be 1/4 - 1/2 acre in size, and irregular in shape. Slash should be piled around the edge of these cuts to provide cover for cottontails, songbirds and small mammals. Opening the overstory will encourage a thick growth of shrubs which provide food and cover for a variety of wildlife species. This shrub growth can be maintained and rejuvenated by periodic mowing (every 5 years) with a brush hog. More frequent mowing can be used to encourage the growth of grass and herbaceous species. The most feasible location for these cuts is probably on the flat areas adjacent to the driveway leading to the ranger's house.
2. Thin pole stands (20-40 year old trees). This will result in earlier and more prolific fruiting of the remaining trees. It will also stimulate the growth of understory vegetation.
3. If any cutting is undertaken in this area, consider following these guidelines:
  - favor mast-producing trees (oak, hickory, beech, wild cherry) which provide food for wildlife.
  - preserve exceptionally large old trees, as these are generally prolific fruiters, and represent potential den trees.
  - preserve snags and live trees with cavities suitable for use by wildlife. Where few snags exist, consider creating some by girdling selected live trees.
  - release food-producing shrubs and vines such as honeysuckle, viburnum, wild grape, and dogwood.
4. Release brush along the edges of roads and small openings by removing selected overstory trees. This will provide additional food and low cover.
5. Release evergreens where they occur. Also consider underplanting small clumps of shade-tolerant evergreens such as hemlock and red spruce. Conifers are rare on the area, and are important sources of food and cover for red squirrels, grouse, and many species of songbirds
6. Provide nest boxes for squirrels, raccoons, and various species of cavity-nesting songbirds.

## Bottomland Hardwoods

This forest type is found on moist lowland sites, and is dominated by an association of elms, maples oaks and cottonwood. Dense understories of gray dogwood, multiflora rose, and honeysuckle are generally present.

Wildlife species using this habitat type are similar to those found on upland sites. The habitat improvement techniques that can be used are also similar to those described in the previous section.

## Old Field

Centrally located on the property is a sizable old field. This old field is dominated by herbaceous species such as goldenrod, but is being overgrown by raspberries, sumac and clumps of gray dogwood. Scattered red cedars are also present.

The open field adds habitat diversity to the area, and provides edge zones which are particularly attractive to a variety of species. Open fields are important habitat for wildlife species such as cottontail rabbit, woodchuck, deer, small mammals and songbirds.

Ways to improve this old field for wildlife could include:

1. Maintain the area in herbaceous vegetation by mowing at least once every three years. Mowing should be conducted after August 1, to avoid disturbing any nesting birds.

2. Expand the existing old field by cutting back larger trees along the border. The edge should be irregular, so as to maximize interspersion of cover types. Shrub growth should be maintained around the edge, and rejuvenated when necessary by mowing and selective removal of overstory species. The same treatment should be applied to the large old quarry pit adjacent to the field. This area should be maintained in herbaceous vegetation and low shrub growth.

3. Some existing clumps of dogwoods, raspberries, and sumac within the field should be preserved and maintained to provide additional food and cover. Other food-producing species (e.g. autumn olive) could also be planted to serve as a demonstration of habitat improvement.

4. Existing evergreens in and around the field should be preserved and released where necessary. Planting small clumps of conifers around the field edge or in a corner could be used to improve cover for cottontails and songbirds. Plant the trees at a 10 x 10 foot spacing. Lower branches touching the ground will live for a longer time, and the wide spacing allows herbaceous vegetation to grow between the trees.

5. Brush piles should be constructed around the edges of the opening.

6. Bluebird nest boxes should be placed around the edges of the opening.

## Wooded Swamp

Along the south edge of the property, and north of the old field, there exist wooded swamps. Much of the southern swamp appears to be off the property, so discussion will be limited to the swamp north of the field. This area was flooded at the time of observation, and was dominated by shrub growth, primarily gray dogwood. Skunk cabbage was also present in abundance.

Wildlife typically inhabiting such areas include wood duck, mallard, muskrat, mink, raccoon, wading birds various songbirds, as well as numerous species of reptiles and amphibians.

This wetland is quite overgrown, and could benefit from some habitat improvement work. Possible ways of improving the wildlife value of this area include:

1. Remove some of the shrub growth and invading over-story trees, to create some open water areas and provide more sunlight. Increased sunlight will encourage the growth of emergent vegetation, which will attract a variety of wildlife species.

2. Dredge portions of the swamp to create larger areas of open water 2-3 feet in depth. Permanent open water will encourage use of the area by waterfowl.

3. Remove overstory trees around the edge of the swamp to encourage a thick brushy border.

4. Preserve existing rocks and partially submerged logs which provide sunning and resting areas for waterfowl, muskrat, turtles and frogs. If these are absent, consider providing them.

5. Provide a wood duck box, since trees with suitable nesting cavities are not common in this area.

## Grassland Slope

A rather unique habitat that occurs on this property is a small grassland slope. The western slope on the ridge near the end of the geology trail is grass covered, with patches of blueberry, sumac, and aspen around the edges. Scattered small cedars and oaks are found along the ridge top.

This area adds diversity to the property, and provides food used by grouse, deer, cottontails, raccoons and a variety of songbirds.

To maintain this area in its current productive state, the following treatments are recommended:

1. Remove invading overstory trees around the grassland edge to release blueberries, sumac, and other low shrubs.

2. Remove overstory trees competing with the aspens. Cut some aspens around the grassland edge to stimulate stump sprouting and expansion of the stand.

3. Rejuvenate sumac by periodically cutting it back (every 3-5 years). This will stimulate sprouting and spreading, and will keep the sumac within browsing reach of deer.

4. Maintain grass cover on the slope through controlled burning every 3-5 years. On a steep, inaccessible slope, this represents the most economical means of maintenance. It could also serve as a means of educating people about the role of fire in maintaining certain ecosystems.

5. Release small cedars along the ridge top by selective removal of overstory trees. Limit removal of healthy oaks which are producing mast.

## Additional Suggestions

Additional ways of improving the wildlife habitat and educational value of the area could include:

1. Develop an additional trail to allow visitors to observe a variety of wildlife habitats and the species that use them. The trail could also expose visitors to the various habitat improvement projects undertaken.

2. Manage the aspen stands on the property, especially the one along the northwest edge of the old field (see map). Release these trees from competition and attempt to increase the size of the stands. Cut some aspen to stimulate sprouting and to produce a diversity of age classes. This species provides excellent food and cover for ruffed grouse.

3. Manage existing grape tangles. Selectively remove overstory trees to provide light in areas where wild grapes are common in the understory. These tangles provide food and thick cover for grouse, raccoon, and a variety of songbirds.

4. Remove trees and brush to provide views in selected locations. Along the trail, below the ranger's house, brush could be removed to provide a view of the open field and surrounding hills. Trees could also be removed along some high points on the trail to provide a view of the field and wetland.

Generally by creating and maintaining a diversity of cover types and successional stages, one can attract a wide variety of wildlife species. It is important to realize that a properly managed area can often be more attractive to wildlife than one that is preserved and left alone.

For further wildlife related assistance, the town is encouraged to contact the Western District Wildlife Biologists at 485-0226.

## **IX. Land Management and Access**

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### A. Land Management

The Old Quarry Nature Center has good potential for supporting a full range of community oriented activities of educational, scientific, cultural, and recreational value. The Old Quarry tract has been blessed with a variety of landscapes and, with innovative management, is capable of supporting a broad based program of nature related activities. The site contains a variety of habitats, vegetation, and physical features. This variety in the resource base offers considerable opportunity, through innovative utilization, to develop activities that attract many interests.

For program development at a nature center to be successful, it must be geared to serving the community. Program management must weave the resources of the center into the fabric of community life. This can be accomplished by involving the following in the planning and management of the site: local leaders from the school system, public agencies, service and fraternal organizations, interested citizens and resident professionals from all fields.

Few nature centers are endowed with all the necessary physical prerequisites to complement its objectives. The missing elements can often be developed through careful management, however. The Old Quarry tract is no exception, and it needs a great deal of resource management and manipulation to realize its potential. For example, the successional process should be arrested in the old field and open field areas to maintain a variety of indigenous types of landscapes. There are also opportunities for creating additional open meadows, shrub borders, cut back borders, marshland, managed woodland areas, open water areas and a vastly improved trail system. These opportunities are evident and they are significant. The natural resources are available; organization and management are the necessary catalysts.

## B. Access

Access to the Nature Center is presently available from the west off Mountainville Road and Maple Lane. Maple Lane is no longer a through road, having been closed off with the construction of a housing project to the east of the site. Maple Lane is thus essentially a long dead end road which serves as a driveway to the Nature Center. The road is passable to an area just beyond the exhibition hall; beyond this point, the dirt road narrows to a trail.

While Maple Lane provides ready access to the Nature Center, the road is in poor condition in places (e.g., the intersection with Mountainville Road), and convenient parking is not presently available at the Center. Consideration should be given to: 1) improving Maple Lane from its point of intersection with Mountainville Road to the exhibition hall in the southcentral portion of the site; 2) providing at least 8-10 parking spaces near the exhibition hall with any overflow using the present parking area west of the hall (This would facilitate convenient use of the Center, particularly by the handicapped); and 3) improving signage for the Center at Mountainville Road and posting parking signs at selected parking areas. Better clearing and mowing of the parking areas would also be desirable.

An alternative access point is feasible from the north via Rogers Park. This road is presently marked "private" and "no entry" and has a chain across the road at the northern border of the property. This access point is presently being used by the ranger who resides at the ranger house on the Old Quarry tract. Although this access point would provide easy access to the northern portions of the property,

encouraging such access may prove problematic (vandalism, littering, noise) and doesn't really appear necessary with the present access available off Maple Lane.

During the ERT's field review, recently deposited garbage and debris was observed at the eastern border of the tract along the Maple Lane "trail". Consideration should be given to removing this debris, posting the boundaries of the entire tract, and policing the area as needed to curtail such undesirable activity.

The existing trails on the property are in need of maintenance. To facilitate a pleasant hiking experience the trails should be cleared of vegetation to a width of four feet and to a height of eight feet. Consideration should also be given to the preparation of a "trail map with selected points of interest" to facilitate public use and enjoyment of the trail network.

To conclude, the diverse landscape, vegetation, and wildlife habitat present at the Old Quarry Nature Center offers a rich opportunity for management of the land. With the proximity of the site to the urban center of Danbury, and its potential for supporting a variety of nature related programs, the Old Quarry Nature Center clearly is a valuable resource worthy of restoration and protection.

## **X. Archaeological Potential**

The City of Danbury and its outlying regions have experienced significant residential and industrial development since the mid-19th century. This process of urbanization and its associated patterns of intensive land use are reflected by a continuing history of landscape disturbance. Many archaeological sites have been lost.

South of the city along the border between Danbury and Bethel more of the landscape is intact and several prehistoric sites have been recorded from the drainages of the Sympaug and East Swamp Brooks. Recorded information suggests that these sites were occupied by populations between 6000 and 3000 years ago. While no archaeological sites have been identified at the Nature Center, the existence of these resources from adjacent localities suggests that the parcel might have been used in the distant past.

Given the frequent steep slopes and numerous bedrock outcrops at the center it is doubtful that prehistoric populations made extensive use of the land. Small hunting camps may have once existed; such sites were probably destroyed by the late 19th century lime quarries which once covered the tract. The only definite prehistoric feature which is present is a large mortar once used to grind grain, wild seeds, and nuts. This mortar probably is less than 700 years old and was found originally near the airport although it may have been transported there. Such features are relatively rare.

The absence of known archaeological sites and the extensive signs of historic quarrying suggest that significant archaeological remains are not present or intact at the Old Quarry Nature Center. However any future recreational use of the parcel should attempt to preserve and recognize the late prehistoric mortar.

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# ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

## PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrial developments, and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

## REQUESTING A REVIEW

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the team to enter the property for purposes of review, and a statement identifying the specific areas of concern the team should address. When this request is approved by the local Soil and Water Conservation District and the King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.