



**Laurel Ridge  
Senior Housing  
Development**

**East Hampton  
Connecticut**

**Eastern Connecticut  
Environmental Review  
Team Report**

**Eastern Connecticut Resource Conservation and Development Area, Inc.**

# **Laurel Ridge Senior Housing Development**

**East Hampton, Connecticut**



**Environmental Review Team Report**

**Prepared by the  
Eastern Connecticut Environmental Review Team  
of the Eastern Connecticut  
Resource Conservation and Development Area, Inc.**

**for the  
Inland Wetlands Commission  
and Planning and Zoning Commission  
East Hampton, Connecticut**

**January 2002**

**CT Environmental Review Teams  
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## Acknowledgments

This report is an outgrowth of a request from the East Hampton town planner on the behalf of the Inland Wetlands Commission and the Planning and Zoning Commission to the Middlesex County Soil and Water Conservation District (SWCD). The SWCD referred this request to the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The Eastern Connecticut Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on Tuesday, November 27, 2001.

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I would also like to thank Diane Blackman, town planner, Frederick Hansen, planning and zoning commission member, Peter Carli, applicant and Richard Dimmock, engineer for the applicant, for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members were given plans and additional information. Some Team members made individual or additional visits to the project site. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town and applicant. This report identifies the existing resource base and evaluates its significance to potential development, and also suggests considerations that should be of concern to the town. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in reviewing this proposed senior housing development.

If you require additional information please contact:

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# Introduction

## Introduction

The East Hampton Inland Wetlands Commission and the Planning and Zoning Commission have requested assistance from the Eastern Connecticut Environmental Review Team in conducting a review of the proposed Laurel Ridge Senior Housing Development.

The ±34 acre site is located between Route 66 and Bear Swamp Road with access from both roadways. There is a 2 acre commercial parcel fronting on Route 66. The preliminary concept plan reviewed by Team members showed 99 detached units of one-story ranch style homes with a community center building. An approximately one mile through road is shown with five (5) cul-de-sacs. The site will be served by public sewer and an on-site community well with a waster tower. There was discussion at the ERT meeting that there would also be a walking trail and/or walkway throughout the project. Wetlands have been field delineated and there is one wetland crossing. Approximately 14 acres would be open space.

## Objectives of the ERT Study

The commissions are requesting the review to act as guidance for the town and developer in the final design of the project so that it will be sensitive to environmental concerns prior to final plans being submitted. Specific concerns include wetland impacts, stream crossing design, erosion and sediment control, stormwater management and open space design. The ERT report will provide a natural resource inventory, a discussion of impacts, guidelines and recommendations for the mitigation and protection of the natural resources and also raises some areas of concern where additional information may be required.

### The ERT Process

Through the efforts of inland wetlands and planning and zoning commissions this environmental review and report was prepared for the Town of East Hampton.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the commissions. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Identification of resource areas and review of plans; and
4. Presentation of education, management and land use guidelines.

The data collection phase involved both literature and field research. The field review was conducted on Tuesday, November 27, 2001. Some Team members made individual and/or additional site visits. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

Figure 1.



Location and Topographic Map

Scale 1" = 2000'

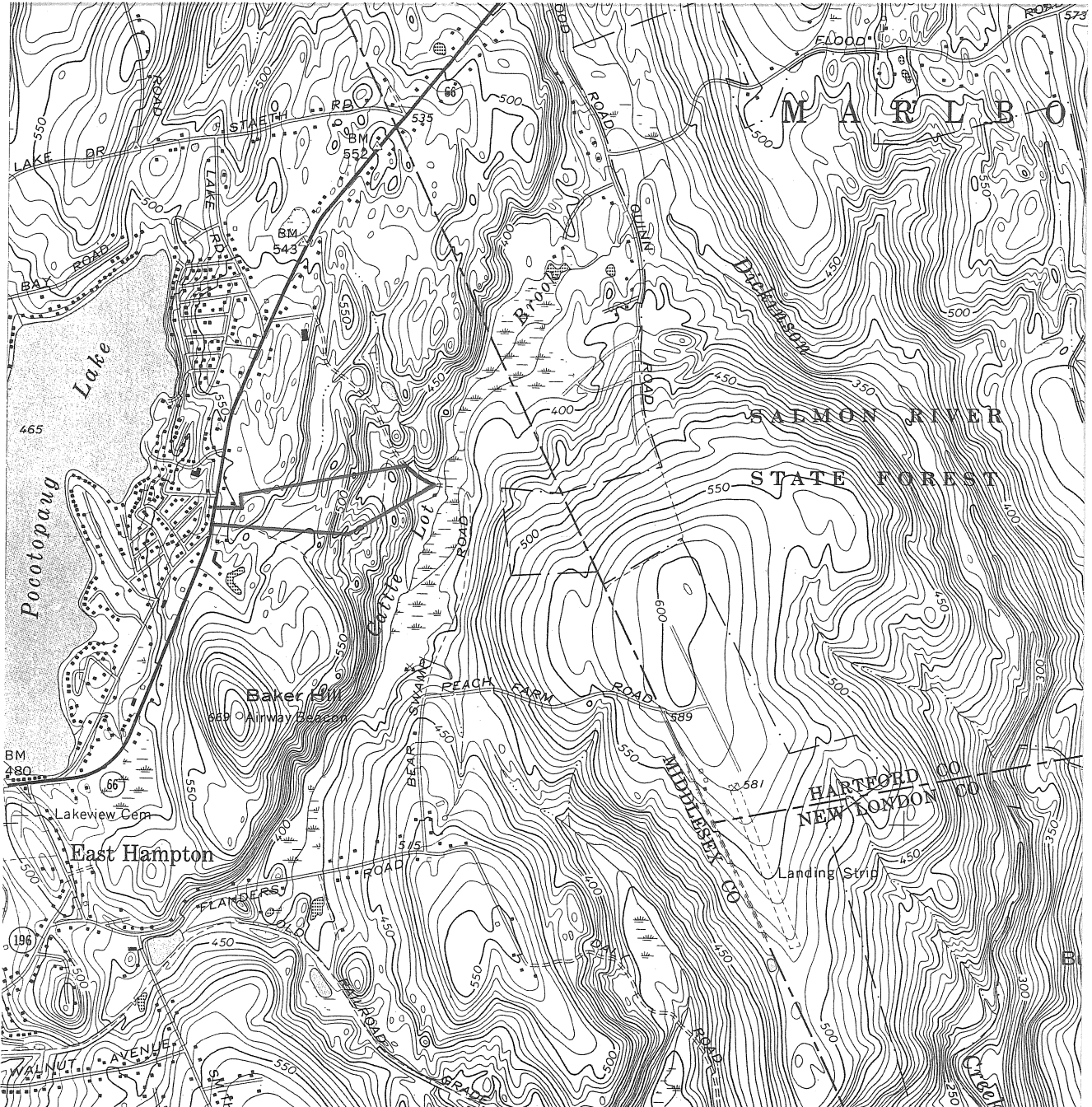




Figure 2.



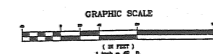
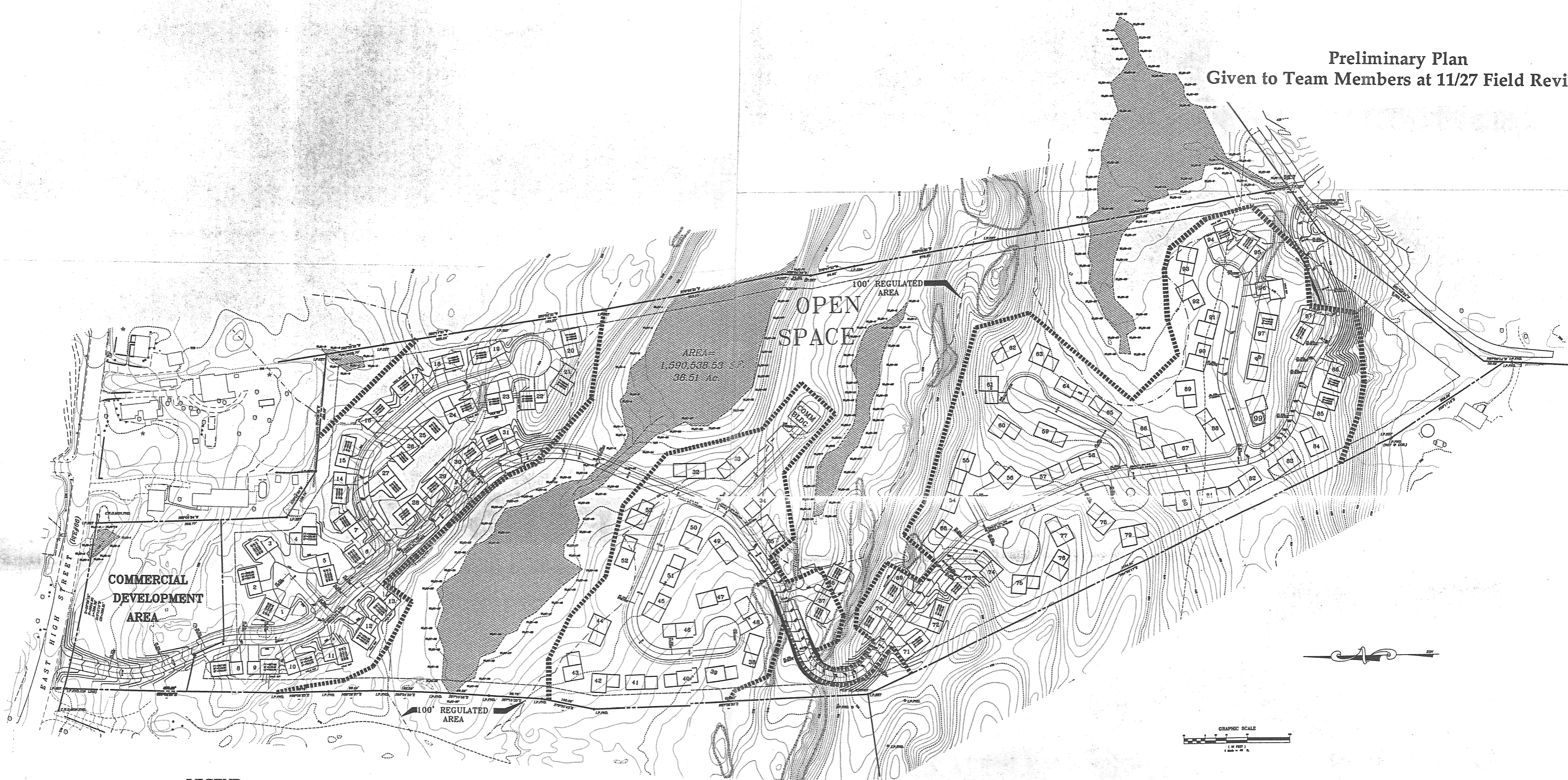
Soils Map

Scale 1" = 1320'



Figure 3.

Preliminary Plan  
Given to Team Members at 11/27 Field Review



DATE: 9-10-00 SCALE: 1"=100'  
 0 50' 100' 200' 300'  
 SCALE IN FEET

**LEGEND**

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>⊕ TEST PITS</li> <li>○ PERC TEST</li> <li>— EXISTING CONTOUR</li> <li>- - - PROPOSED CONTOUR</li> <li>○— IRON PINS RECOVERED</li> <li>○— IRON PINS TO BE SET</li> <li>- - - BUILDING SETBACK LINES</li> <li>- - - BUILDING SETBACK LINES</li> <li>— STONE WALL</li> <li>— EXISTING TREE LINE</li> <li>— PROPOSED TREE LINE</li> <li>XXXXXX EXISTING SHRUB ROW</li> <li>— FOOTING DRAINS</li> <li>— EXISTING WATER FLOW AREA (MEANDERING)</li> </ul> | <ul style="list-style-type: none"> <li>○ PROPOSED WELL</li> <li>- - - SILT FENCE BARRIER</li> <li>○ SILT FENCE BARRIER (AROUND CATCH BASIN)</li> <li>□ MONUMENT RECOVERED</li> <li>□ MONUMENT TO BE SET</li> <li>— PRIME LEACHING TRENCH</li> <li>— HIGH LEVEL OVERFLOW DISTRIB BOX</li> <li>— RESERVE LEACHING TRENCH</li> <li>— TYP. GRADE TO DRAIN SWALE</li> <li>— PROPOSED CATCH BASIN</li> <li>○ PROPOSED MANHOLE</li> <li>— UNDERGROUND STORM SEWER</li> </ul> | <ul style="list-style-type: none"> <li>▨ WETLANDS AREA</li> <li>— CONSTRUCTION ENTRANCE</li> </ul> |
|--|---|--|



THE EAST HAMPTON CONSERVATION COMMISSION ACTING AS THE INLAND WETLANDS AGENCY FOR THE TOWN OF EAST HAMPTON APPROVES THE PLAN AS DEPICTED. ANY CHANGES IN THE PLAN THAT MAY HAVE ANY IMPACT UPON REGULATED WETLANDS OR WATERCOURSES ARE SUBJECT TO REVIEW BY THE COMMISSION AND MAY REQUIRE ADDITIONAL PERMIT.

CHAIRMAN: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY THE EAST HAMPTON PLANNING & ZONING COMMISSION

CHAIRMAN: \_\_\_\_\_ DATE: \_\_\_\_\_

EXPIRATION DATE: \_\_\_\_\_

**BOUNDARY & TOPOGRAPHY PLAN**

LAUREL RIDGE  
 EAST HIGH STREET  
 EAST HAMPTON, CONNECTICUT

PLAN PREPARED FOR  
 LAUREL RIDGE  
 DEVELOPMENT LLC  
 PARUM ROAD  
 COLCHESTER, CONNECTICUT

R.P.DIMMOCK ASSOCIATES  
 CONSULTING ENGINEERS  
 11 WEST HIGH STREET, EAST HAMPTON, CONN.

## Soil and Water Conservation District Review

The following are general comments and recommendations regarding the Laurel Ridge Senior Housing Development. The comments are based on a review of:

- 1"= 50' preliminary site plan dated December 4, 2001,
- and a site visit conducted on November 27, 2001.

These comments are advisory in nature and are intended to assist the East Hampton Planning and Zoning Commission and Inland Wetlands Commission in their charge.

### Site Description

The Laurel Ridge development is located in the Dickinson Creek and Pine Brook Watershed. Wetlands and hilly terrain with moderate to steep slopes and bedrock outcrops characterize the site. Two ridges running north and south divide the site into three subbasins. The first subbasin (subbasin #1) collects water draining the western-most ridge to Route 66. The second subbasin is in between the two ridges and drains to the two larger wetlands. The third subbasin (subbasin #3) extends from the eastern-most ridge to Bear Swamp Road. Trees and shrubs cover the majority of the site. Canopy cover is greater than 75 percent.

An intermittent stream drains from the large wetland located in the middle of the property. The intermittent stream eventually flows into Cattle Lot Brook northeast of the property. Cattle Lot Brook is part of the Dickinson Creek Watershed. The water quality in Cattle Brook is classified B/A indicating that the water is impaired by pollution.

The Town of East Hampton is concerned about the impacts of surface runoff from nearby developments on Lake Pocotopaug. Lake Pocotopaug is 0.25 mile due west of the development. The lake routinely has large algal blooms as a

result of high nutrients present in the water. Two large fish kills occurred in January and June 2000. The first fish kill was attributed to algal toxicity and the second fish kill was caused by aluminum toxicity. The aluminum was used to eradicate the algae. The water quality for Lake Pocotapaug is classified as B/A.

### Soils

The soil types were not shown on the December 4, 2001 site plans. Soil information obtained from the 1979 Soil Survey of Middlesex County, Connecticut shows the following soils:

#### Upland Soils:

- Charlton-Hollis very stony fine sandy loams (3-15% slopes) are well drained soils found on the ridges of glacial till plains. Permeability is moderate to moderately rapid. The erosion hazard potential is moderate to severe. The shallow depth-to-bedrock conditions and rocky outcrops can make excavation difficult.
- Hollis-Rock Outcrop complex (3-15% and 15-40% slopes) are excessively drained soils found in rough surface areas with bedrock outcrops. Permeability for the Hollis soils is moderate to moderately rapid above the bedrock. The erosion hazard potential is moderate. The shallow depth-to-bedrock conditions and rocky outcrops can make excavation difficult.
- Canton and Charlton extremely stony fine sandy loams (3-15% slopes) are well drained soils found on hills and ridges of glacial till plains. Permeability is moderate to moderately rapid. The erosion hazard potential is moderate to severe.

- Merrimac sandy loams (3-10% slopes) are excessively drained soils found on outwash plains and stream terraces. Permeability is moderately rapid to rapid in the surface layer and subsoil. The erosion hazard potential is moderate.

Wetland soils:

- Adrian muck are very poorly drained organic soils found in low depressions of outwash terrace and glacial till plains. Permeability is rapid. The water table is at or near the surface most of the year. Excavations are unstable.

*Recommendation:* Request that the soil types are shown on the site plans.

### Erosion and Sediment Control

Erosion and sediment control will be critical given the hilly terrain, steep slopes, highly erodible soils, and proximity to the wetlands. Road and driveway construction during the early development phases will require careful layout to prevent erosion and sediment loss. The development roads and driveways are steeply sloped in several areas and involve significant cuts and fills.

The primary development road is approximately 3,360 feet long, 20 feet wide, bordered by a 5 foot wide sidewalk, and has grades ranging up to 10%.

The cul-de-sac roads are 20 feet wide, bordered by a 5-foot wide sidewalk, are relatively flat with grades ranging up to 6%.

The driveways are less than 50 feet and are potentially steeply graded as shown by existing topography (ranging up to 30% slopes). A detailed grading plan has not been developed.

In general, quickly establishing plant cover, providing temporary diversions, and establishing sedimentation basins are suitable management practices for this site. Appropriately designed, installed, and maintained erosion and sediment controls will reduce sediment loss, reduce the amount and total cost for replacement fill, protect water quality, and protect upland and wetland habitat.

**Specific areas of concern for road construction include:**

- 1. The entrance to the development: The road slopes downward at an 8-10 percent grade to Route 66 (East High Street).
  - *Recommendations*: Consider installing a temporary sedimentation basin on both sides of the primary development road to trap water and sediment during early road construction and prevent drainage onto Route 66. This will also potentially reduce adverse impacts to Lake Pocotopaug. The sedimentation basin should be stabilized and functional before the primary development road is roughed out. A maintenance plan should be developed and an access route to the basins created.
  
- 2. The large wetland in the middle of the site: The primary development road follows the perimeter of half the wetland before it crosses the wetland. Approximately 600 feet of road is within the 100-foot regulated wetland area. The area between the road and the wetland slopes downward at grades ranging up to 25-30% and the soils in this area are highly erodible.
  - *Recommendations*: Install temporary diversions (e.g., swales, stone check dams) to channel water and sediment away from the wetland during early road construction before catch basins are installed.
  
- 3. The curved portion of the primary road between units 34 and 69: Significant cuts and fills are needed to construct this steep section (8% grade) of the road. The large wetland is downslope from this area. The road

shoulders are steeply sloped (1 horizontal to 3 vertical) and are immediately adjacent to the 100-foot wetland regulated area.

- *Recommendations:* Request information on how the slopes will be stabilized. Request that diversions are installed downslope from the shoulders to channel water and sediment away from the wetland during early road construction. Provide a detailed plan for permanent stabilization. Stabilization using mixed vegetation (grasses and shrubs) may not be possible with steep slopes.
- 4. Primary road: Several sections of the primary development road are long (350-400 feet) and have 8% slopes. The combination of long, steeply graded areas will concentrate surface runoff.
  - *Recommendation:* Request that temporary diversions are incorporated into the erosion and sediment control plan for road segments with 8-10% grades.

Other concerns regarding erosion and sediment control are listed below:

- 5. Given the hilly terrain and highly erodible soils, it will be important to phase construction to reduce the area of exposed soil.
  - *Recommendations:* Avoid mass grading of the site. Divide the construction into smaller units to reduce the amount of area that is disturbed at any point in time. Minimize the amount of clearing. Maintain as much as the existing vegetation as possible. The existing vegetation will serve as a natural erosion and sediment control measure. Stabilize the area with permanent erosion and sediment controls as soon as possible.

As each lot is developed, ensure that adequate erosion and sediment control measures are installed and maintained especially

for units immediately adjacent to wetlands (units 13, 16-17, 20-21, 27-35, 42-44, 52, 62-64, 88-93). Overall, many of the units are located on steeply sloped areas.

- 6. Develop a detailed grading plan for the site that shows the slopes for each driveway.
  
- 7. The CT DEP requires that applicants obtain a general permit for the discharge of stormwater and dewatering wastewaters for construction activities that result in the disturbance of five or more acres. As part of this general permit, the CT DEP requires temporary sediment storage to retain a minimum of 134 cubic yards of water per acre for any disturbed area over two acres. The preliminary plan shows two sedimentation basins located 20-25 feet away from the wetlands.
  - *Recommendations:* Verify that the basins are appropriately sized. Consider relocating the basin further away from the wetlands. If the basins failed, the wetlands could be impacted by the water and sediment within the basin. Provide access to the basins for maintenance purposes.

### Wetlands and Watercourses

Five wetlands are located on the property. The large center wetland (36.51 acres) appears to be hydrologically connected to Cattle Lot Brook via an intermittent and permanent stream. Protecting this wetland from sedimentation will potentially protect the downstream watercourses.

The primary road will cross the large center wetland and impact less than 1,000 square feet. Approximately 600 feet of the road is within the 100-foot regulated wetland area.



During the November 27, 2001 site walk, questions were raised regarding the impact of different types of crossings (e.g., standard box culverts, open-bottom box or culverts) and the advantages and disadvantages of each crossing type. The engineering firm has proposed using an undersized culvert for the crossing. The culvert will detain stormwater within the wetland.

Feasible and prudent alternatives should be explored before a wetland permit is granted. Direct impacts of the proposed crossing are limited to the stream crossing. Indirect impacts could result in clearing of wetland vegetation, conversion of buffer space into lawn, and sedimentation impacts on downstream watercourses.

Additional information is provided in the Wetland Resources Section of this report.

*Recommendations:*

- 1. Request that the applicant provide a more detailed assessment of the alternatives for wetland crossings. A discussion regarding the impacts of eliminating the crossings and comparing standard box culverts, open-bottom culverts, and spans should be included within the alternatives assessment. The comparison of crossings should include the advantages and disadvantages, maintenance costs, and the impact of repairs and replacement of each method. The rationale behind each alternative should be presented so that the East Hampton Planning and Zoning Commission and Inland Wetlands Commission have sufficient information to make an informed decision regarding maintaining the integrity of the wetlands and reducing the impact of the road crossings on the wetlands.

If culverts are the only feasible alternative, the culverts should be adequately sized and provide sufficient inlet and outlet protection.

Request that the engineer determine the volume and duration of ponding for 2, 10, 25, and 50 year storms. Consider the effects of ponding on wetland vegetation.

- 2. Request that the existing vegetation surrounding the wetlands be protected to the maximum extent possible in order to protect plant and wildlife habitat within the wetland corridor.
- 3. Consider the impact of residential housing on the wetlands. Housing units 13, 16-17, 27, 35, 44, 52, 64, 88-93 are located within the 100-foot regulated wetland area.

### Stormwater Management

The preliminary plan includes two sedimentation basins. One sedimentation basin is located in subbasin #2 and will collect water draining from the two ridges toward the center of the property. The other sedimentation basin is located in subbasin #3 and collects water draining eastward from the eastern ridge. It is not clear if these basins will be used for permanent stormwater quality control. No provisions have been made for detention in subbasin #1.

No provisions to treat stormwater from the roads are indicated on the preliminary plan.

The Town of East Hampton has requested that the water quality impacts of this development on Lake Pocotopaug be assessed. The Town is trying to reduce any additional nutrient-rich surface runoff into the lake. Careful design and sound construction practices can minimize the adverse impacts of residential development and protect the water quality of the wetlands and downstream watercourses.

Additional information is provided in the Stormwater Management Section of this report.

**Recommendations:**

- 1. CT DEP's general permit for the discharge of stormwater and dewatering wastewaters from construction activities requires treatment of at least 80 percent of the suspended solids from the post construction site. It is unclear whether the retention basins will remove 80 percent of suspended solids. **While the town is not responsible for compliance with stormwater regulations, if additional treatment is required by the DEP, the treatment measures should be shown on the plan prior to final approval.** A number of best management practices are available. The District can provide assistance if additional information is needed regarding the specific measures.
- 2. Use the natural topography to collect and concentrate stormwater in the three subbasins. Use the two sedimentation basins as permanent methods to treat stormwater in the middle and eastern subbasins. Consider either using a basin or a swirl concentrator structure to treat stormwater on the western side of the property near Lake Pocotopaug.
- 3. Consider eliminating curbing on relatively level roads. This will allow stormwater to run off as sheetflow onto lawns. Stabilize non-curbed areas early in construction to reduce erosion.
- 4. Develop a stormwater pollution control plan.

### Open Space and Passive Recreation

The applicant has proposed developing a trail system within the open space area. The applicant is considering installing a series of 5-foot wide stone dust paths throughout the area. These paths could be linked to an existing trail and old woods road. During the site walk, questions were raised regarding whether the paths should be restricted to foot traffic or whether bicycles and golf carts should also have access.

A five-foot wide continuous sidewalk will also be installed along the roads.

#### *Recommendations:*

1. Consult a landscape architect or landscape architecture text for more information on trail and sidewalk design. Consider the following factors during the design of the trails and sidewalks.

- Grading: use a gentle grade on all paths
- Paving Materials: use permeable paving materials
- Width: provide sufficient space to accommodate two individuals walking side by side.
- If golf carts are allowed on the trails, determine if the trails will accommodate two passing carts. Pullouts could be installed to provide passing space. Golf cart traffic could also be restricted to one-way travel.

## Wetland Resources

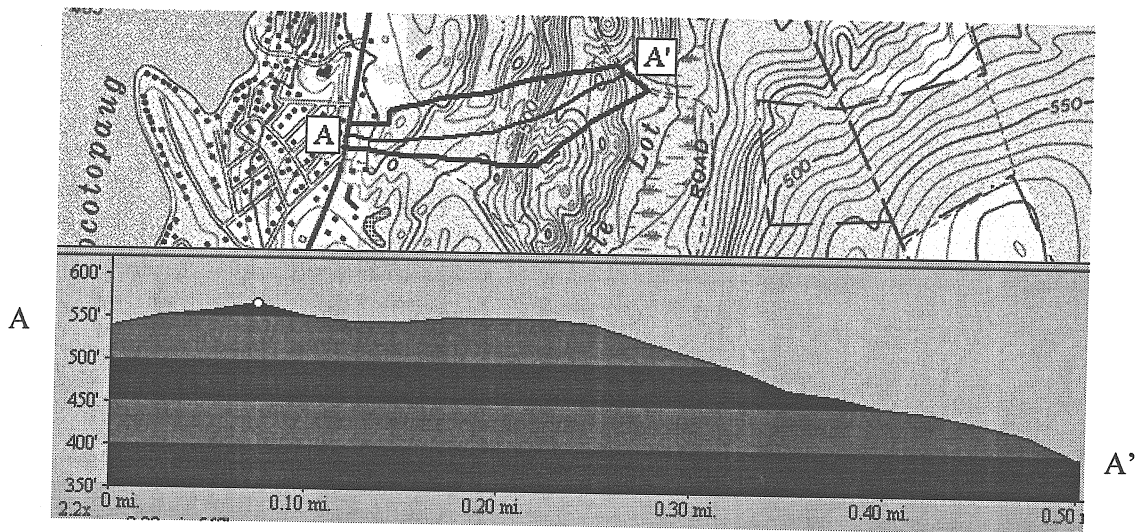
### Site overview

The site is located in the east central part of town about half way between the east shore of Lake Pocotopaug and the East Hampton - Marlborough town line. It encompasses 38 acres of which 36 will be developed for housing and two set aside for commercial use. These two acres abut Route 66.

There are three fingers of wetlands that occur on the property. The most significant of these and the largest occurs towards the western third of the parcel and extends northeast to southwest through the property. The most unique wetland however occurs in the center of the parcel. Located in a ravine several tens of feet of depth this wetland is remote even on this small property. The third and eastern most wetland is in the northeastern corner of the parcel and is a finger of a larger, off-parcel wetland that drains into a small stream which passes under the eastern boundary road just north of the proposed entrance to this subdivision.

Two much smaller wetlands occur on the parcel. The first is in the northwest corner of the parcel boundary and runs slightly off the property. It is protected within the Open Space designation. The second wetland is at the extreme west edge of the parcel abutting East High Street, Route 66 and seems to be used for stormwater collection from this main road. Each of these measures roughly 1800 or 1900 square feet in size.

The elevation of the parcel ranges from 396 to about 567 feet above sea level. As the cross section below shows, much of the relief and thus the drainage or runoff flows away from the road and away from the lake. The first 400 feet or so slopes towards the road but east of that the relief is primarily sloping down to the east.



## Soils

The wetland boundaries were all well marked and flagged on the property. This made the interplay between the mapped resources and the Team's location in the field easy to coordinate. But while the wetland soils are delineated on the map that the team was presented, the names of the wetland soils were not included. However, in the Tolland County Soil Survey of 1977 these wetland soils are mapped as Aa - Adrian Muck. These are wetland soils with a thick (24 inch) organic layer. Because of the mapping scale only the largest, western most wetland was large enough to be picked up at the 1:24,000 scale.

Subsequent Natural Resources Conservation Service soils mapping for the area done in the 1990's for this county indicates this wetland map unit to be a complex of Leicester, Ridgebury, Whitman soils, the complex being wetlands soils. These are poorly and very poorly drained and range from stony to extremely stony in their makeup. General descriptions of this complex indicate areas of Adrian soil inclusions of as much as five acres. This mapped unit would certainly fit the description as it measures between two and two and a half acres in size.

Regardless of the soil type, this largest wetland area has been mapped as wetland soils and, specific soil nomenclature aside, it is a headwater wetland for a first order intermittent stream which drains into Cattle Lot Brook.

### National Wetland Inventory Classification

The U.S. Fish and Wildlife Service has mapped and classified the wetlands and watercourses using a system of codes for all the topographic maps in the state. This parcel occurs on the Moodus quadrangle National Wetland Inventory (NWI) map. As with the soils mapping the NWI only classified the largest (western most) of the wetlands. This is mapped as a palustrine wetland, with palustrine being defined as: *of or pertaining to a swamp; marshy.*

The full NWI classification is PFO1/4E. This is palustrine (P), forested (FO), mixed broad leaved deciduous and needle leaved evergreen (1/4), seasonally saturated (E).

### Water Quality

The water quality for this parcel as mapped by the Connecticut Department of Environmental Protection indicates that the surface water quality classification (which includes the wetlands and watercourses) for all of the parcel is assumed to be A. Ground water quality for the site is assumed to be GA. Assumptions are made on many of the watercourses over the extent of the map and throughout the state and not every watercourse gets quality tested. But with no known sources of pollutants and this being a headwater wetland it has been given the water quality classification of A.

In addition, the groundwater classification for the area is also classified as A for the same reasons listed above. The descriptions of these classifications are:

*Class A Designated uses:* potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation.

Discharge restricted to: same as allowed in AA (i.e.: Discharge restricted to: discharges from public or private drinking water treatment systems, dredging and dewatering, emergency and clean water discharges.).

*Class GA Designated uses:* existing private and potential public or private supplies of water suitable for drinking without treatment; base flow for hydraulically connected surface water bodies.

Discharge restricted to: same as for GAA (i.e.: discharges limited to: treated domestic sewage, certain agricultural wastes, certain water treatment wastewaters) and discharge from septage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.

Source: *Protection Summary of the Water Quality Standards and Classifications (1997)*, Connecticut Department of Environmental Protection, Bureau of Water Management.

### **Comments**

- **Wetland soils mapping:**

The wetland soils are mapped and delineated but there is no indication of the wetland soil types presented on the map or as an addendum to it. In addition, there is no reference to the source of the mapping although conversationally it was the Team's understanding that Mr. Harvey Luce was the soil scientist responsible for the wetland delineations. Though the Team had a preliminary plan for its review, the name of the various soil classifications along with their



individual boundaries, the name of the soil scientist and the date of the work should occur on the final plans.

- **Orientation**

On the small map handed out to the ERT Team and the subsequent larger map dated 12-04-01 sent by Mr. Dimmock there is an error in the orientation of the North arrow which led to some confusion early in the discussions. This should be corrected on the final map for future reviewers to aid in the correct alignment and correlation to the actual landscape and/or other maps. In addition, there is confusion over the scale of the 12-04-01 map. While in print it reads that one inch represents 40 feet, one measured inch on the graphic scale actually more closely represents 50 feet. This also needs to be rectified in the final version.

- **Importance of wetland buffers:**

Buffers are important to wetlands because they have the ability to filter out unwanted materials from the wetlands and protect the wetlands from impacts of abutting land uses. These impacts include sediment such as road sand and pesticide and fertilizer runoff from yard and garden applications. In the town of East Hampton the buffer around wetlands is 100 feet and this line has been delineated on the maps. Several hundred feet of road and several structures have been placed within the 100 foot wetland buffer on this plan. The town Wetland Chair said that each intrusion into the buffer will be viewed on a case by case basis and this is appropriate for this parcel. Certainly the structures that are within the 100 foot buffer of the middle, or ravine, wetland would have an unlikely opportunity to impact the wetland due to the nature of the local relief. Conversely, some of the units that are proposed entirely or in part on slopes which drain directly into wetlands (i.e.: 13, 52 and 64) or natural draws (i.e.: 43 and 44) within the buffer delineation should be considered far more closely.

The several hundred feet of roadway in the vicinity of unit numbers 27 through 30 and over to 31 are placed within the wetland buffer. In places, the slope from road to wetland approaches 20% (across from unit 27) and decreases in steepness to 12 % (across from lot 30). Erosion and sediment controls will need to be in place and reviewed for all of this within-the-buffer construction while road construction is underway. Once again the Wetland Commission will need to decide if the proximity of the road within the buffer along the steep slope area which drains directly into a mapped wetland is appropriate or if the road should be removed from the buffer - at the expense of house lots - for the protection of the wetlands.

- **Wetland crossing:**

It is recommended that the integrity of the western-most large wetland be preserved by spanning the crossing versus damming or constricting its flow and using the upstream section for a flood control and/or sedimentation basin. As described above, this is a headwaters wetland which contributes to a stream with a water quality rating of A. The consistent flow of clean water and the timed release of runoff that this wetland provides to the overall wetland system should be maintained. A box culvert with sunken bottom, an open bottom box culvert that preserves the wetland flow path, or a clear span would carry the road and preserve the integrity of the wetland floor.

- **Curb Breaks:**

One of the ways to minimize storm water runoff from the in-street, catch basin, detention pond system is through the use of curb breaks in the road. These breaks allow for and encourage road runoff to sheet-flow into the surrounding vegetated areas. The goal is to try to mimic or replicate the pre-built runoff conditions as closely as possible. Often a combination of curbing and open edge roadway work together. Curbed sections being used at steep slopes and/or curved road areas and then ended where the gradient allows. Geotextiles/filter fabrics

applied at the point of contact between the road and vegetated areas cover the soil and allow the vegetation to anchor thereby negating the erosion that could occur without these stabilizing fabrics. This method also reduces stormwater runoff downslope allowing for smaller sedimentation collection devices.

- **Storm drain/catch basin maintenance:**

The homeowner's association should have scheduled maintenance of storm drain/catch basin cleanouts registered with an appropriate town commission or official. The registry should detail who in the association is the responsible contact for the town if occasion arises for communication.

- **Construction Phasing:**

Phasing of construction is suggested. At the ERT meeting this concept of construction occurring in three phases was discussed. This seemed to be an increasingly important issue as the Team had the chance to walk to the property. The slopes, proximity to wetlands and need to minimize soil disturbance all point to phasing as the most logical way to deal with these challenges.

Construction phasing is increasingly used in the form of the construction of a hard surfaced roadway before lot disturbance begins. This ensures minimal erosion and sedimentation problems when the heavy equipment is brought in to begin house construction. The final road top or finished surface is applied when all construction is complete.

- **Soil stockpiles:**

Soil stockpiles and appropriate erosion and sediment devices are typically shown on final plans delineating the areas of soil stockpiles and the accompanying erosion and sediment controls that will surround them. As mentioned above, the Team received 'check sheets' for review so that the opportunity to see final

plans will be with the town. Soil stockpile locations should be located on the final plan, away from wetland areas. It is assumed these piles will be needed for the amount of both cutting and filling that seem to be proposed on this project.

- **Runoff**

One of additional runoff issues is the question regarding impervious surface runoff is where roof runoff will be directed. Will it be directed to the catch basin system or allowed to disperse into vegetated areas on the property and allowed to recharge the groundwater?

## Stormwater Management Review

The following review comments are based on the requirements of the Department of Environmental Protection's (DEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("the construction general permit"). Many of the requirements of the construction general permit overlap with the requirements of local agency(ies) and the Connecticut Guidelines for Soil Erosion and Sediment Control ("the guidelines").

Since the proposed senior housing development involves the disturbance of over five acres, the owner or developer of the site must register this site with the DEP thirty days prior to the commencement of construction activity. Additionally, a Pollution Control Plan ("the PCP") must be prepared and kept on site during the entire life of the construction project.

The PCP must include a site map as described in Section 6(b)(6)(A) of the construction general permit and a copy of the erosion and sedimentation (E & S) control plan for the site. An E & S plan which has been approved by the Town of East Hampton in conjunction with the DEP Inland Water Resources Division (IWRD) and the local Soil and Water Conservation District may be included in the PCP. The PCP and site map must include specifics on controls that will be used during each phase of construction, pursuant to Section 6(b)(6)(B) of the construction general permit. Specific site maps and controls must be described in the PCP, as well as construction details for each control used. The construction general permit requires that "the plan shall ensure and demonstrate compliance with "the guidelines"." The Plan must be flexible to account for adjustment of controls as necessary to meet field conditions.

The PCP must demonstrate that the post-construction stormwater treatment system has been designed with a goal of 80% removal of total suspended solids, pursuant to Section 6(b)(6)(C)(iii)1 of the construction general permit. Such measures may include, but are not limited to, stormwater detention basins, stormwater retention basins, swirl concentrator technology structures (such as Vortech, Downstream Defender, Stormceptor, Stormtreat, or similar), vegetated swales, deep catch basin sumps (4'+) and stormwater infiltration devices. The PCP must also discuss the installation of velocity dissipation devices at all discharge locations as a post construction stormwater management measure. A detail of proposed measures as well as drainage calculations must be provided. If site conditions allow, DEP recommends the installation of retention or detention basins because of maintenance, cost, and efficiency considerations. The elimination of point sources through the use of level spreaders or curb elimination should also be evaluated.

The construction general permit (Section 6(b)(6)(D)) requires inspections of all areas at least once every seven calendar days and after every storm of 0.1 inches or greater. The PCP must also allow for the inspector to require additional control measures if the inspection finds them necessary, and should note the qualifications of personnel doing the inspections. Since the proposed site has areas with significant slopes and numerous wetland areas requiring protection, ongoing inspections and adjustments of controls will be an important aspect of this project. Additionally, the PCP must include monthly inspections of stabilized areas for at least three months following stabilization.

The following are comments are specific to the proposed project based on review of the site plan provided on November 27, 2001:

- If dewatering is necessary on lower portions of this site, the PCP must address how dewatering wastewaters generated onsite will be managed in accordance with Section 6(b)(6)(C)(ii) of the construction general permit.

- Since the disturbance of an area greater than 2 acres at any one time (including road installation) is likely, a sediment trap and/or a sediment basin with the ability to store 134 cubic yards of water storage per acre drained must be installed. If an area greater than 5 acres is disturbed at any time, a sediment basin with an outlet engineered to remove sediment must be installed. The elimination of proposed house lots may be necessary to allow for the installation of a basin(s). The DEP strongly recommends a buffer area exist between the basin(s) and the wetlands areas. Should the basin(s) fail due to inadequate design, lack of maintenance, etc., the absence of a buffer area would result in the immediate contamination of the wetland areas with sediment. A discharge of sediment to a wetland or watercourse without a permit would be a violation of Section 22a-42a(c)(1) of the Connecticut General Statutes and may require remedial action.
- In order to minimize the area of disturbance and the amount of impervious area post-construction, DEP recommends that the width of the roadway be limited to 24 feet. Additionally, the width of the pathway adjacent to the road should be minimized to the maximum extent possible. Where possible, roadways with no curbs should be installed to promote the sheet flow of stormwater runoff. Reducing the volume of stormwater collected in the drainage system would result in a cost benefit since any treatment system installed would be sized for smaller flows.
- In order to reduce erosion potential, DEP recommends that construction activities be phased to the maximum extent possible so that unstable areas are minimized. The construction general permit also requires that any inactive area left disturbed for over 7 days be temporarily stabilized. Areas left disturbed over 30 days must be temporarily seeded.

- For slopes such as those along portions of the roadway which are steeper than 4 horizontal to 1 vertical, DEP strongly recommends the use of erosion control matting to provide slope stabilization.
- Any slope such as the one shown behind Lot 87 with a vertical height exceeding 15 feet is required by the guidelines to have a reverse slope bench installed. The guidelines specify design criteria for reverse slope benches.
- Any areas left disturbed beyond the planting season (after October 1) must be stabilized for the winter. Stabilization should be in the form of properly selected erosion control matting or a spray-on "soil cement" type of armor mulch.



## The Natural Diversity Data Base

The Natural Diversity Data Base maps and files regarding the project area have been reviewed. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

## Archaeological Review

A review of the State of Connecticut Archaeological Site files and maps show no known archaeological resource in the project area. However, our files do show eight historic Euroamerican farmsteads and industrial sites in close proximity. These sites date to the early settler's use of the land in the 18th and 19th centuries. In addition, our files indicate two native American campsites associated with Lake Pocotopaug.

The Office of State Archaeology recommends an archaeological survey to locate and identify any historic and prehistoric cultural resources that can be associated with the project area. Stonewalls and ruins should be avoided when feasible. Stonewalls and other ruins that will be effected by construction activities should be mapped and photo-documented prior to removal. Subsurface archaeological testing is recommended for the eastern and western extremes of the project area, which appear most sensitive for Native American and Euroamerican sites respectively. The recommended archaeological survey should be conducted in accordance with the Connecticut Historical Commission's *Environmental Review Primer for Connecticut's Archaeological Resources*. The Office of State Archaeology is prepared to provide any technical assistance in conducting the recommended mapping and photographing.

# ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

**The services of the Team are available as a public service  
at no cost to Connecticut towns.**

## 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 reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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 town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 860-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.