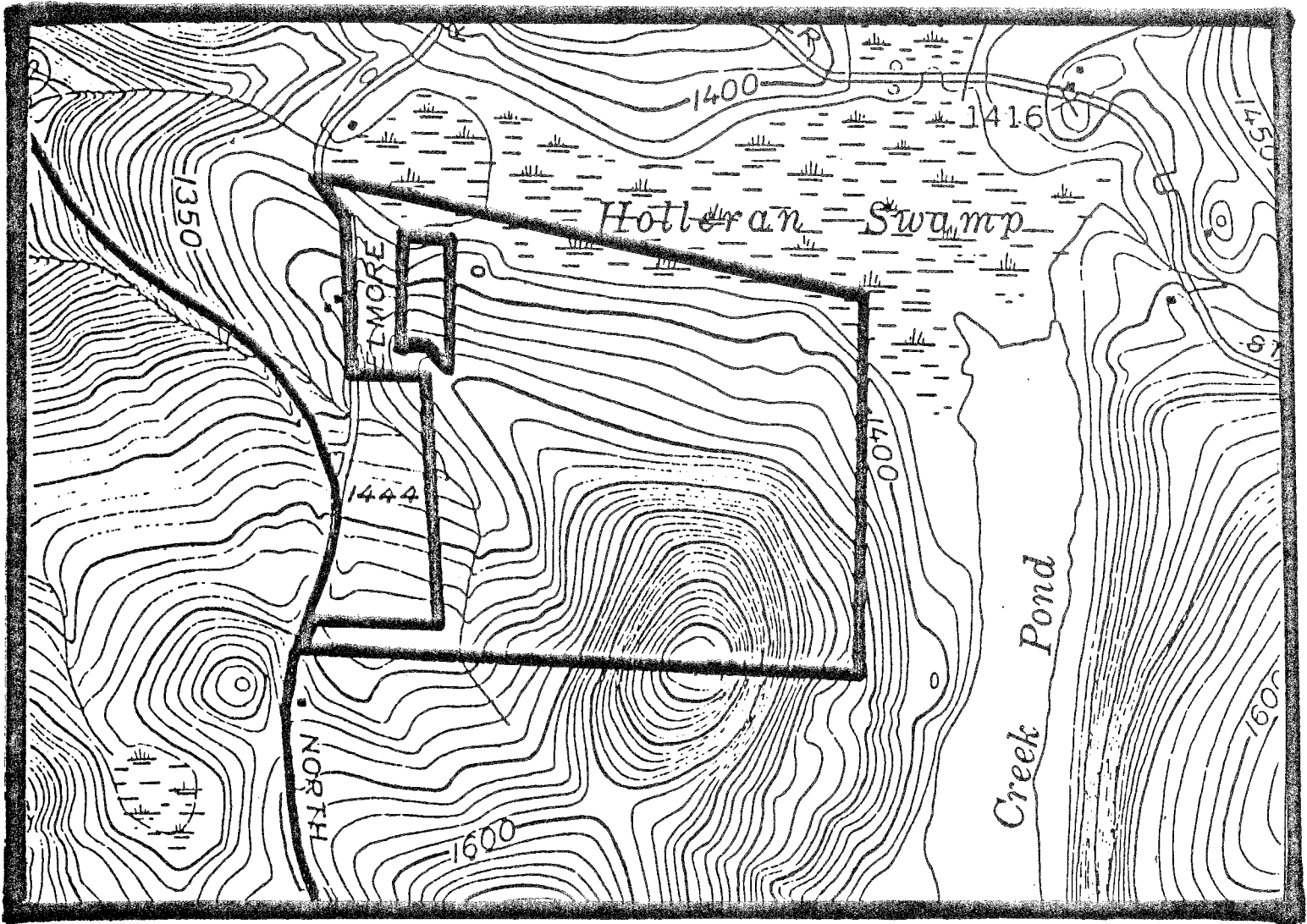


ENVIRONMENTAL REVIEW TEAM REPORT



HICKORY RIDGE SUBDIVISION NORFOLK, CONNECTICUT

HICKORY RIDGE SUBDIVISION

NORFOLK, CONNECTICUT

Environmental Review Team Report

Prepared by the King's Mark Environmental Review Team
of the King's Mark Resource Conservation
and Development Area, Inc.

Wallingford, Connecticut

for the

Norfolk Planning and Zoning Commission

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Norfolk. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of the land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

FEBRUARY 1987

ACKNOWLEDGEMENTS

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- * Ralph Scarpino, Forester
Department of Environmental Protection - Forestry Bureau
- * Steve Jackson, Wildlife Biologist
Department of Environmental Protection - Wildlife Bureau

I would also like to thank Laverne Mendela, Secretary, and Janet Jerolman, Cartographer of the King's Mark Environmental Review Team for assisting in the completion of this report.

Finally, special thanks to the following people for their cooperation and assistance during this environmental review: Marybeth Y. McNamee, Chairperson of Norfolk Planning and Zoning Commission, John P. Anderson, Jr., Norfolk Inland Wetlands Commission, Robert Maltby, Zoning Enforcement Officer, Town of Norfolk, Perry Hunter and Ernest Sinclair, developers, and Nancy Murray, Biologist with the Department of Environmental Protection, Natural Diversity Data Base.

EXECUTIVE SUMMARY

Physical Setting

The Norfolk Planning and Zoning Commission requested that an environmental review be conducted on an approximately 145-acre parcel proposed for single-family subdivision development. The site is located in northern Norfolk off North Street (Route 272) and Elmore Road. The site is characterized by upland forest and wetland communities. A small brook traverses the western portion of the site. Holleran Swamp, an important wetland area is north of the proposed subdivision with Wood Creek Pond to the east. Moderate to very steep slopes occupy the majority of the site.

Proposed Development Plans

The proposed development originally encompassed 41 house lots but was subsequently reduced to 19 house lots. Lots range in size from a minimum of four acres to a maximum of 12 acres. The site will be served by one loop road built to town standards with frontage varying from 200 to 800 feet. On-site water and subsurface sewage disposal are proposed to serve the development.

PHYSICAL CHARACTERISTICS

Soil Characteristics

The landscape of Hickory Ridge Subdivision is characterized by rolling to very steep topography. Soils derived from glacial till dominate the area with the exception of small areas of outwash and peat. Soils vary from very poorly drained to well-drained throughout the parcel. There are significant areas of soils with firm, dense substratum (hardpan) at about three feet of depth.

Sedimentation and Erosion Concerns

The proposed subdivision should be sited carefully to minimize erosion and sediment control problems. The southeast quadrant of the property has severe limitations due to slope steepness and amounts of bedrock. Any construction in this area will pose a challenge in controlling erosion and sediment during construction. After construction, stabilization of roadbanks would also be difficult. Other areas in this subdivision pose less problems as far as erosion and sediment control is concerned.

Geologic Development Concerns

The major geologic limitations which may pose constraints with respect to the proposed subdivision included: (1) shallow to bedrock areas in the southeast corner of the parcel; (2) the presence of till-based soils throughout the site; and (3) the presence of inland wetland soils.

Sewage Disposal

The presence of very steep slopes and shallow to bedrock soils in the southeast corner makes this area generally unfavorable for development purposes, especially for on-site sewage disposal. Therefore, consideration should be given to preserving this area as open space and concentrating the development on the more moderately sloping areas of this site.

As it seems most or all of the property constitutes an "area of special concern," engineered plans for sewage disposal systems should be required before individual sewage and building permits are issued.

Water Supply

It is expected that the proposed subdivision will be served by an individual on-site water supply well which tap the underlying metamorphic bedrock. A well drilled no more than 200 feet into the underlying bedrock should be capable of yielding a few gallons of water per minute (gpm). A yield of 2 to 3 gpm is usually sufficient for residential demands.

An area of concern arises when numerous wells are drilled into bedrock in a concentrated area. The concern is that there may be mutual interference between wells during pumping periods. When a number of wells are drilled in a concentrated area, every effort should be made to separate wells as far apart as possible. Studies have shown that well interference can be minimized by increasing the spacing between wells.

Watershed Boundary

Surface runoff within the parcel can be divided roughly into three subdrainage areas. Surface runoff from the site is routed via the major watercourse in the western parts to Ginger Creek. The eastern limits of the site drain downslope to Wood Creek Pond.

Runoff Considerations

The subdivision as proposed would be expected to lead to some increases in runoff from the site. Because the density of development is relatively low, it is expected that any peak flow increases would be small.

It is suggested that the developer inspect the size of the culvert under Elmore Road since it receives drainage from the southwest corner of the site. Because of the moderate to steep slopes above Elmore Road, there is little opportunity for natural detention that is performed by Holleran Swamp and Wood Creek Pond. As a result, even a small increase in runoff in this area could lead to flooding problems if the culvert is too small.

Every effort should be made to protect Holleran Swamp from potential hydrogeologic/runoff impacts associated with the proposed development.

BIOTA

Forestry Resources

The vegetation occurring within the proposed Hickory Ridge Subdivision site consists of six broad forest cover types: (1) mixed hardwood dominated by red oak; (2) mixed hardwood dominated by red maple; (3) mixed hardwood dominated by red oak poles; (4) mixed hardwood dominated by white birch poles; (5) mixed hardwood dominated by red oak on dry, steep slopes; and (6) mixed hardwood/hemlock.

In a commercial sense, the present value of the wood on the property is not high. Most of the land was commercially logged within the past 6 or 7 years which removed the higher value red oak sawlogs. Pole-sized timber is the traditional firewood-size trees, and the value of standing firewood is presently low.

The large expanse of diverse vegetation on this property plays an important role in the aesthetics of the area and enhances the water storage capacity of the landscape. In addition, the woodland provides a rich renewable resource in the form of wood and diversified wildlife habitat. These amenities can enhance the site whether it remains in its natural undeveloped state or is developed as proposed. The subdivision of a large parcel complicates alternatives for active forest resource management.

Forest Management Considerations

Several factors should be considered in the maintenance of present vegetation. Wetland soils have a high water table close to the surface of the ground. This allows for shallow root penetration of the trees. Additional openings and clearings in and alongside wet areas should be avoided if possible. The vegetation growing on these soils is, on a whole, more sensitive to disturbance than vegetation growing elsewhere.

Alterations in the wetlands which permanently raise or lower the water table and/or restrict natural drainage may have a negative impact on the vegetation in the immediate area. Raising the water table may drown root systems causing widespread mortality in the plant community. Lowering the water table may result in plant desiccation. These types of situations may occur when crossing wet areas with roadways or driveways. Care should be taken in the placement of any culverts in wet areas to avoid alteration of the water table.

Wildlife Habitats

The site is characterized by two major wildlife habitat: (1) upland mixed hardwood forest and (2) wooded swamp (Holleran Swamp). The mixed hardwood habitat is desirable habitat for deer and wild turkey primarily, along with many small birds and mammals. Though, there is little evidence that this habitat is heavily used by wildlife, it has a good deal of potential for wildlife habitat combined with forest management which would establish a greater diversity of species and age classes of vegetation.

Holleran Swamp is a biologically significant area because of the presence of many "Species of Special Concern." Every effort should be made to protect this area from development. Its large size and location near Wood Creek Pond makes it likely to have a diverse and abundant fauna.

LAND USE AND PLANNING CONSIDERATIONS

Planning Issues

The proposed site plan indicated land to be preserved adjacent to Holleran Swamp. This land may be undevelopable or may be protected by deed restriction limiting the use of the property when it is sold as part of a lot. More important for preservation should be the top of the high hill on the property.

This is generally undevelopable because of steep slopes and shallow to bedrock areas, yet provides a scenic vista of Wood Creek Pond and the surrounding area.

Although the developer is asking that an amendment be approved allowing the development of this area exclusively with private unpaved roads, the Town should require that some standard roads be built at some point in the development. This gives the Town some control over the area because they have town-accepted roads there and insures that emergency vehicles will have access to a certain point in the subdivision. As shown on the proposed plan, there is altogether too much road. The length of road can be reduced by the use of at least one cul-de-sac.

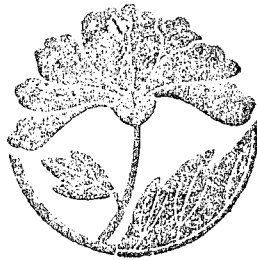


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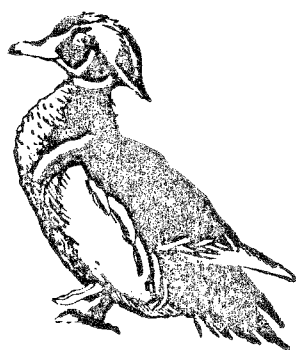
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INTRODUCTION



AREAS OF CONCERN

According to the the Planning and Zoning Commission, the major concerns with the proposed development were:

- (1) the suitability of the site for subsurface sewage disposal;
- (2) impact on stormwater runoff;
- (3) erosion and sedimentation; and
- (4) impact on wetlands located on the property and abutting the property.

Additional concerns included: (1) forestry resources (i.e., site contains stand of hickory trees - what is its value and is it worth protecting?); (2) development impacts on forest and wetland wildlife; (3) open space - is the proposed area designated for open space the best use of this land or should other areas in the parcel be designated and protected?; and (4) site design compatibility and traffic and access - should Elmore Road, a gravel road, be upgraded?

THE ERT PROCESS

Through the efforts of the Town of Norfolk Planning and Zoning Commission, the developer and the King's Mark ERT, this environmental review and report was prepared for the Town. This report primarily provides a description of on-site natural resources and presents planning and land use guidelines.

The review process consisted of four phases:

- (1) inventory of the site's natural resources (collection of data);

Figure 1
LOCATION OF STUDY SITE

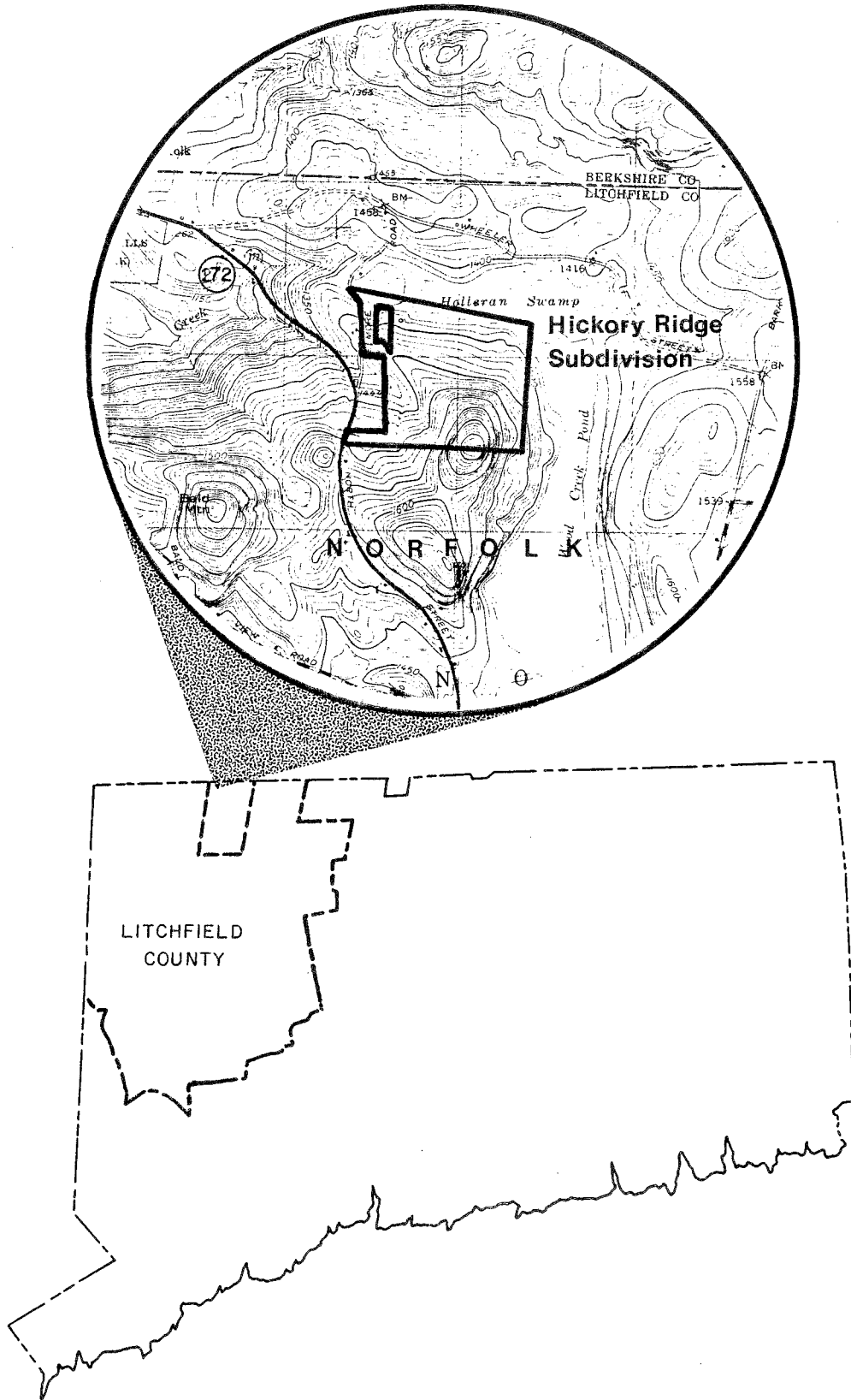


Figure 2




**HICKORY RIDGE
SUBDIVISION**

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**CONCEPTUAL
SITE PLAN**

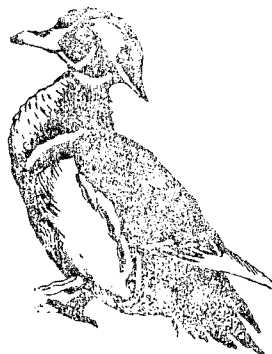
King's Mark Environmental Review Team



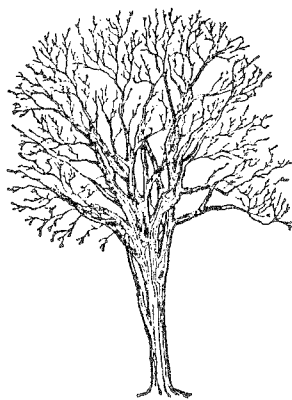
- (2) assessment of these resources (analysis of data);
- (3) identification of resource problem areas; and
- (4) presentation of planning and land use guidelines.

The data collection phase involved both literature and field research. The ERT field review took place on December 3, 1986. Field review and inspection of the proposed development site proved to be a most valuable component of this phase. The emphasis of the field review was on the exchange of ideas, concerns or alternatives. Mapped data or technical reports were also perused and specific information concerning the site was collected. Being on site also allowed Team members to check and confirm mapped information and identify other resources.

Once the Team members had assimilated an adequate data base, it was then necessary to analyze and interpret their findings. The results of this analyses enabled the Team members to arrive at an informed assessment of the site's natural resource development opportunities and limitations. Individual Team members then prepared and submitted their reports to the ERT Coordinator for compilation into the final ERT report.



PHYSICAL CHARACTERISTICS



PHYSICAL CHARACTERISTICS

TOPOGRAPHY

The land surface rises moderately, then very steeply to the rock-cored hill in the southern portions of the site. This hill, forming one of the highest peaks in Norfolk is at about 1,721 feet above mean sea level. Slopes flanking the hill are very steep rising from about the 1,500 foot contour to the peak of the hill (Figure 3).

A major unnamed watercourse flows through the southwest corner of the parcel enroute to Ginger Creek, the outlet stream for the western end of Holleran Swamp. A watershed divide bisects Holleran Swamp indicating that the surface drainage in the swamp is divided nearly in half. Surface drainage in the western end of Holleran Swamp drains westward to Ginger Creek, while the eastern end drains eastward to Wood Creek Pond.

GEOLOGY

No surficial or bedrock geologic maps have been published to date for this area. Therefore, the Team's Geologist referenced the Bedrock Geological Map of Connecticut by John Rodgers (1985) for the bedrock geology section of this report and the Soil Survey of Litchfield County, Connecticut (1970), a U. S. Department of Agriculture, Soil Conservation Service publication for the surficial geology section of this report.

Bedrock Geology

Rodgers' describes two rock types underlying the site: (1) a layered gneiss

and (2) the Dalton Formation. The rock core for most of the site consists of a gray, medium-grained, well-layered gneiss. These rocks are very old and have complex geological histories. The bedrock structure has influenced the shape of the landforms and the drainage patterns on the site. The Dalton Formation underlies the northern limits of the parcel and generally parallels the northern boundary. Rocks comprising the Dalton Formation consist of gray, tan-weathering feldspathic quartz gneisses and schists (Figure 4).

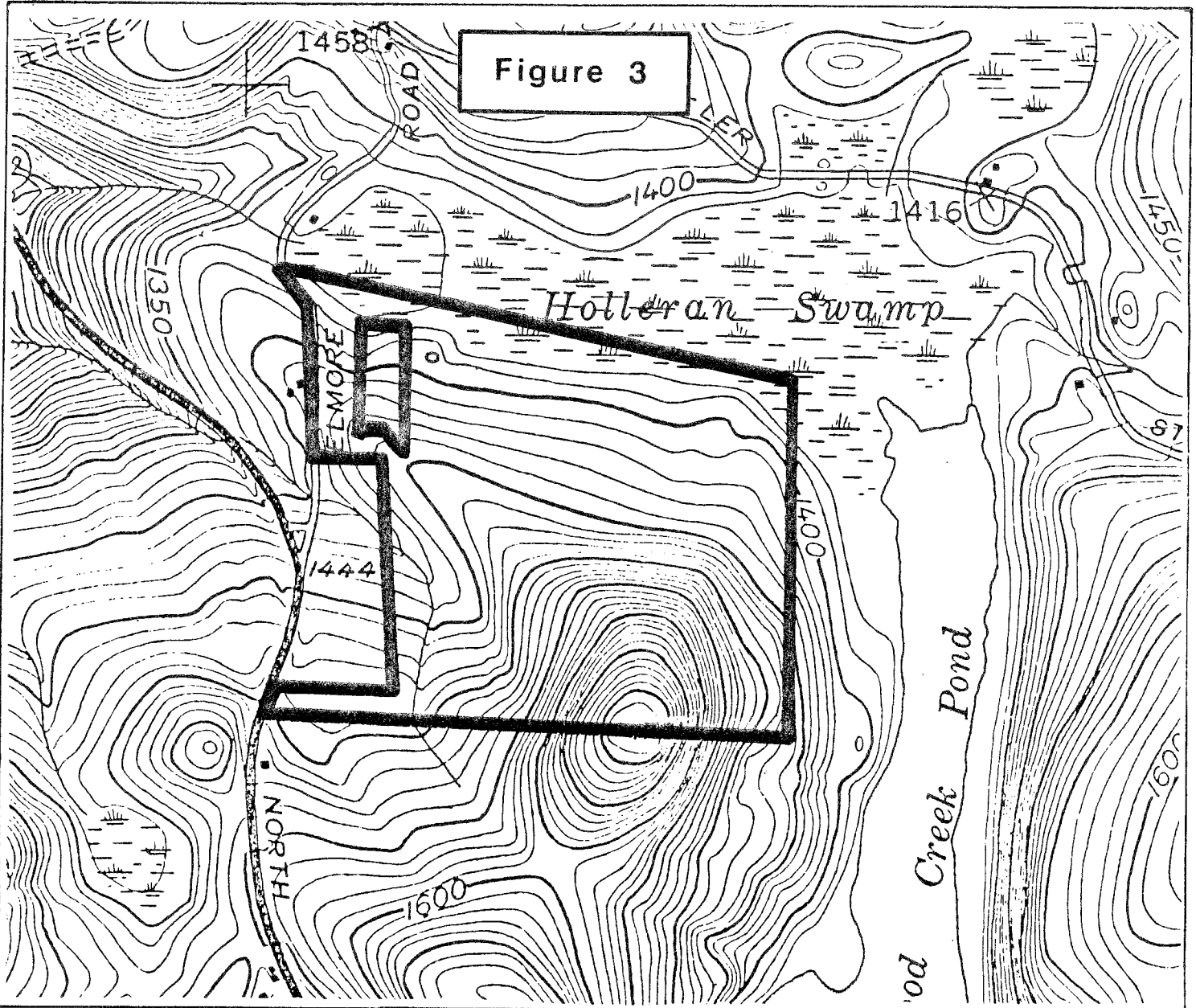
Deep test hole exploration for subsurface sewage had not been completed on the site at the time of the field review. Therefore, the exact depth the bedrock is unknown at this time. It is expected to range from zero in rock outcrop areas to probably not much more than 10 feet in areas in between outcrops.

It seems likely that all homes constructed in the proposed subdivision would need to derive their domestic water source from the underlying bedrock (See Water Supply section).

Surficial Geology

Except for a small area of sandy, gravelly soils northeast of the adjacent Sherman property, the entire site is covered by a glacial sediment called till. Till, consisting of a non-sorted, non-stratified mixture of rock particles of widely varying shapes and sizes was deposited directly from glacier ice without substantial re-working by meltwater. The aforementioned sandy gravelly soils were deposited by glacial meltwater streams (Figure 5).

Glacier ice in the State moved across the region generally from north to southeast. Where till is less than five feet thick, it is commonly sandy, very stony and loose; where till is more than five feet thick, the upper few feet is commonly sandy (as previously described). The lower portion of the deposit,

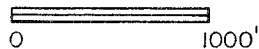


**HICKORY RIDGE
SUBDIVISION**

NORFOLK, CONNECTICUT

TOPOGRAPHY

King's Mark Environmental Review Team



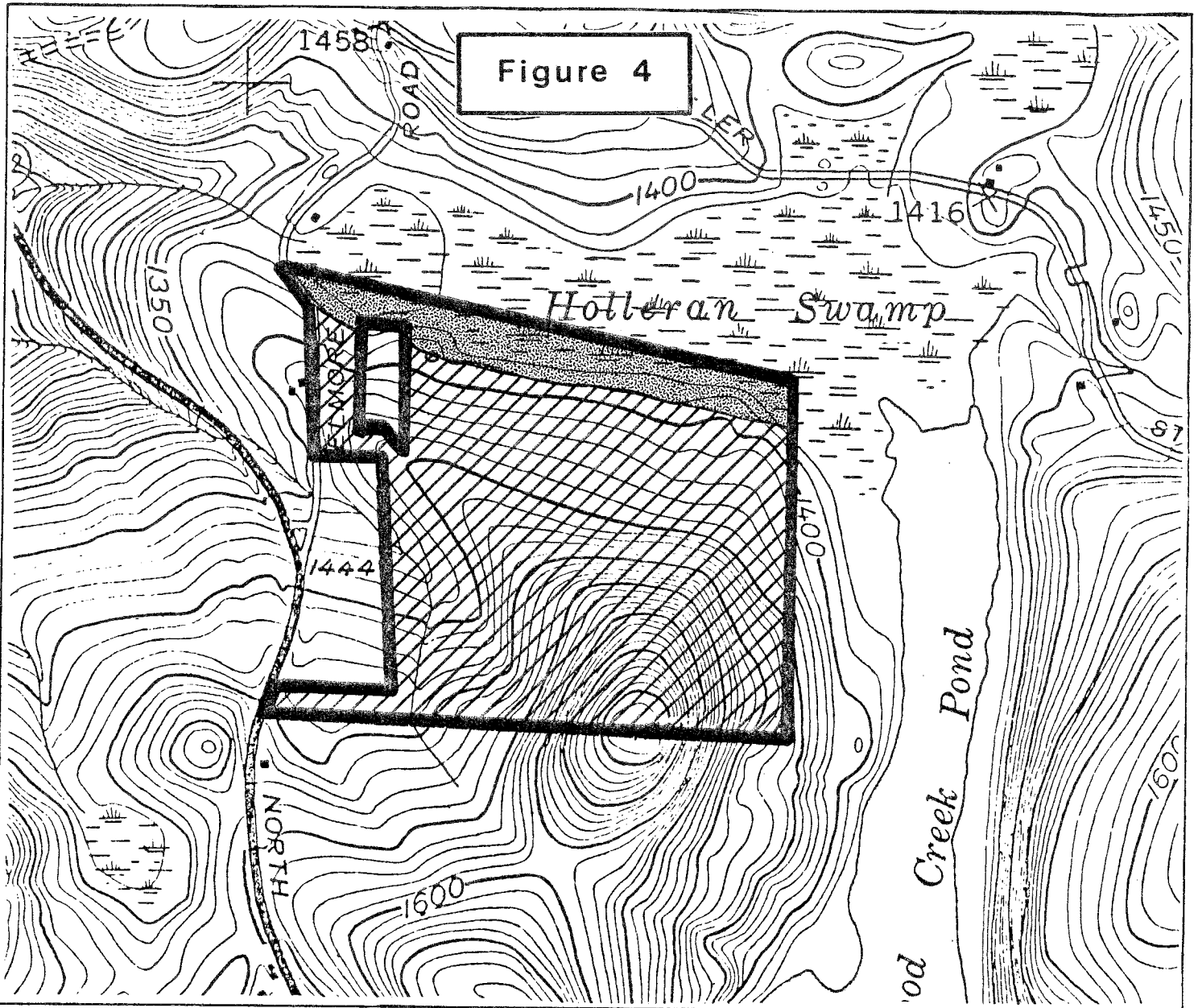
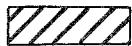


Figure 4



LAYERED GNEISS



DALTON FORMATION

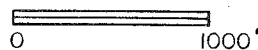
Adapted from John Roger's Bedrock Geological Map of Connecticut

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BEDROCK GEOLOGY

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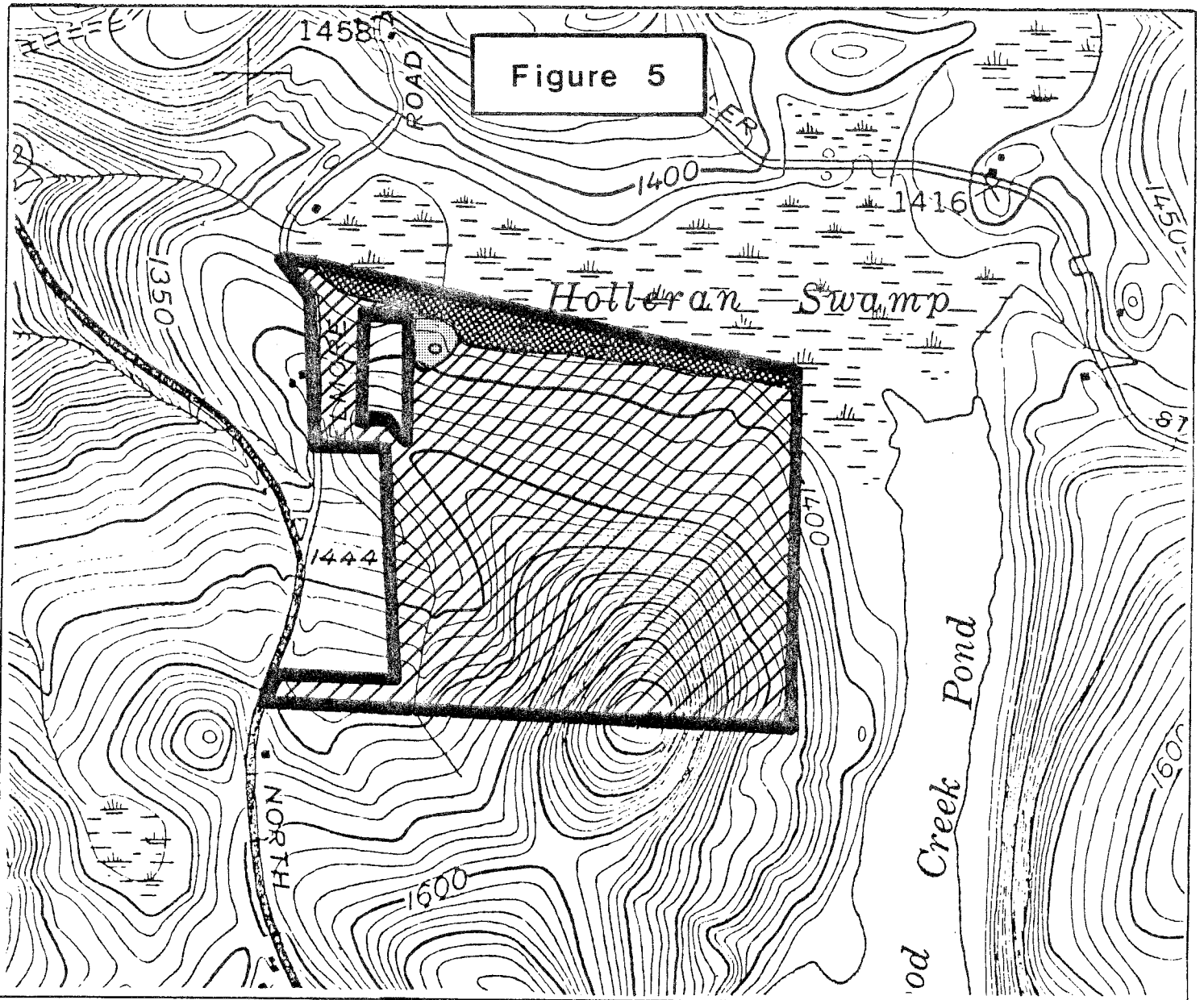
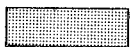


Figure 5



TILL



STRATIFIED DRIFT



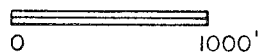
SWAMP SEDIMENTS

HICKORY RIDGE SUBDIVISION

NORFOLK, CONNECTICUT

SURFICIAL GEOLOGY

King's Mark Environmental Review Team



however is often siltier and tightly compact. According to soil mapping information, shallow tills cover most of the eastern parts of the parcel, while the deeper tills characterized the western parts. The major drainage channels on the site are paralleled by relatively thin bands of regulated inland wetland soils. Major wetland areas of Holleran Swamp characterize the northern limits of the site (see Figure 5).

The soils comprising the wetlands along the northern boundary probably contain a relatively high organic matter content. Under the proposed development plan, this wetland area will be set aside for open space (see Figure 5).

SEWAGE DISPOSAL AND GEOLOGIC CONCERNS

Based on visual observations and available bedrock and soil mapping, the major geologic limitations which may pose constraints with respect to the proposed subdivision included:

- (1) the shallow to bedrock areas in the southeast corner of the parcel;
- (2) the presence of till-based soils throughout the site, which may have moderately slow to slow percolation rates and seasonally high water tables. (Note: The field review was conducted following a period of heavy precipitation. As a result, numerous areas of seeps and surface water were visible on the deeper till-based soils and inland wetland soils on the site); and
- (3) the presence of inland wetland soils.

Based on soil survey mapping data, soils on the property are generally subject to a seasonal high water condition due to the slowly or very slowly permeable underlying soil layer which restricts vertical drainage. Because of this factor and the presence of wetlands or drainageways, it is essential that adequate soil testing be conducted on proposed lots to identify suitable areas

for subsurface leaching purposes. Sewage disposal systems in these soils would have to be kept shallow or relatively shallow in order to keep the bottom area of leaching facilities at least 18 inches above maximum water levels. It would also seem necessary on many or some lots to elevate the leaching systems partially or entirely with fill. Curtain drains or a combination of footing/curtain drains, if properly located with respect to a leaching area, may prove useful in controlling groundwater, provided individual sites have a satisfactory area to discharge into. Also, in most soils where there is a restrictive or less permeable, underlying layer, leaching systems should be made relatively large and spread out along the contour to lengthen the lateral disposal area of effluent into naturally-occurring soil.

As it seems most or all of the property constitutes an "area of special concern," engineered plans for sewage disposal systems should be required before individual sewage and building permits are issued.

The presence of very steep slopes and shallow to bedrock soils in the southeast corner makes this area generally unfavorable for development purposes, especially for on-site sewage disposal. As discussed during the field review, consideration should be given to preserving this area as open space and concentrating the development on the more moderately sloping areas of this site. If this was accomplished, it appears that 3 or 4 lots would be lost. Perhaps these lots could be included on the better slopes and soils of the site at a smaller lot size (i.e., 2 or 3 acres) instead of five acres without lowering the overall density of the proposed subdivision. Of course, this will all hinge on the outcome of subsurface exploration for on-site sewage disposal and applicable zoning regulations.

It seems likely that if the shallow to bedrock areas are developed for house sites, considerable blasting will probably be required for road and

driveway construction, house foundations and possibly septic systems.

It should not necessarily be assumed that a suitable area for both primary and reserve leaching systems will be available just on the basis of large lot sizes and limited testing. Potential useable area minus any significant adverse topographical features, along with adequate soil testing within an actual useable area should be taken into consideration. A number of adverse conditions or very limited potential useable area may indicate the need for lot sizes larger than normally required by minimum regulations.

WATER SUPPLY

It is expected that each lot in the proposed subdivision will be served by an individual on-site water supply well. The water will likely be derived from drilled wells which tap the underlying metamorphic bedrock. A well drilled no more than 200 feet into the underlying bedrock should be capable of yielding a few gallons of water per minute (gpm). A yield of 2 to 3 gpm is usually sufficient for residential demands.

In order to ensure that water quality throughout the parcel and off-site is adequately protected, all wells will need to be installed in accordance with all applicable Town regulations, the State of Connecticut Public Health Code and the State Well Drilling Board. The Town Sanitarian will need to inspect all well locations before the wells are drilled. All wells will also need to be properly cased into the underlying bedrock.

The natural water quality should be generally adequate, but because of the particular mineralogy of the bedrock underlying the parcel, there is a chance that the water will have elevated concentrations of iron or manganese, which will discolor the water and cause a metallic taste. Depending upon the

ultimate concentrations of these minerals, there may be a need for filtration devices.

An area of concern arises when a number of wells are drilled into bedrock in a concentrated area. The concern is that there may be mutual interference between wells during pumping periods. The exact yield of a bedrock-based well is a function of many hydrogeologic factors such as the number and size of fractures present in the bedrock. Because fractures are unevenly spaced throughout the rock, there is no practical way, short of expensive geophysical tests, to assess the potential of any particular site for a satisfactory well. Nevertheless, when a number of wells are drilled in a concentrated area, every effort should be made to separate wells as far apart as possible. Studies have shown that well interference can be minimized by increasing the spacing between wells. Because of the proposed large lot sizes, it seems likely that conservative separating distances can be maintained.

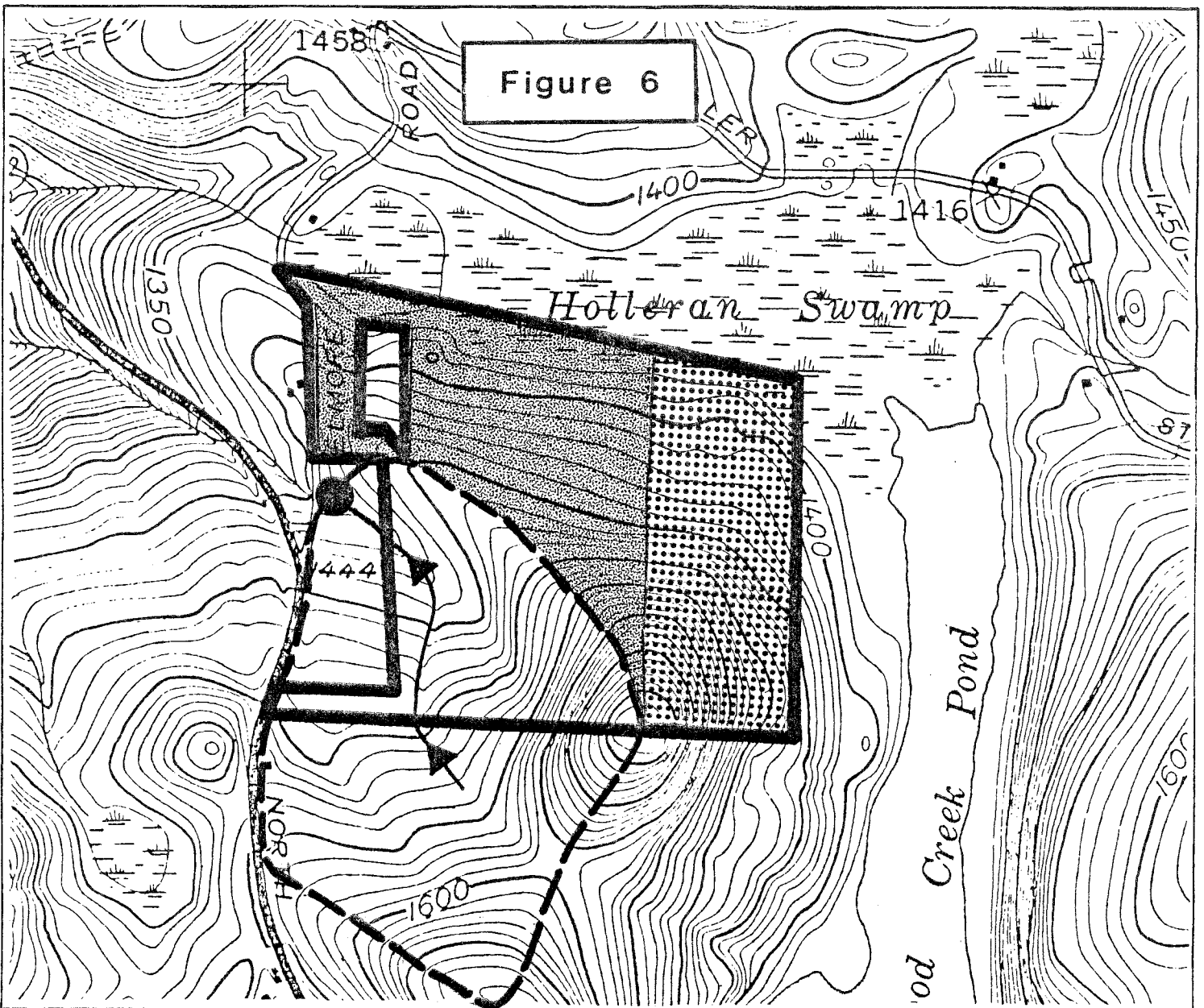
HYDROLOGY





Watershed Boundary

Surface runoff within the parcel can be divided roughly into three subdrainage areas (Figure 6). Except for about 60 acres in the eastern limits, encompassing proposed Lots 7 to 9, surface runoff from the site is routed via the major watercourse in the western parts to Ginger Creek. Lots 7 to 9 drain downslope to Wood Creek Pond.

Runoff Considerations

The subdivision as proposed, followed by the construction of new homes, driveways and roads would be expected to lead to some increases in runoff from



- 
 WATERSHED BOUNDARY AND POINT OF OUTFLOW FOR THE MAJOR UNNAMED STREAM ON THE SITE AT ITS INTERSECTION WITH ELMORE ROAD
- 
 PORTION OF SITE WHICH DRAINS TO THE PART OF HOLLERAN SWAMP WHICH FLOWS WESTWARD TO GINGER CREEK
- 
 PORTION OF PROPERTY WHICH DRAINS TO WOOD CREEK POND OR THE EASTERN PARTS OF HOLLERAN SWAMP
- 
 WATERCOURSE SHOWING DIRECTION OF FLOW

HICKORY RIDGE SUBDIVISION

NORFOLK, CONNECTICUT

WATERSHED BOUNDARY

King's Mark Environmental Review Team

0 1000'



SOIL RESOURCES

Soil Characteristics

The landscape of Hickory Ridge Subdivision is characterized by rolling to very steep topography. Soils derived from glacial till dominate the area with the exception of small areas of outwash and peat. Soils vary from very poorly drained to well-drained throughout the parcel. There are significant areas of soils with firm, dense substratum (hardpan) at about three feet of depth. Also of significance is the mostly steep hillside located in the southeast quadrant of the property. This hillside is largely underlain with bedrock at a depth of less than two feet. The northern boundary of the property is, with one small exception, all wetland soils (Figure 7).

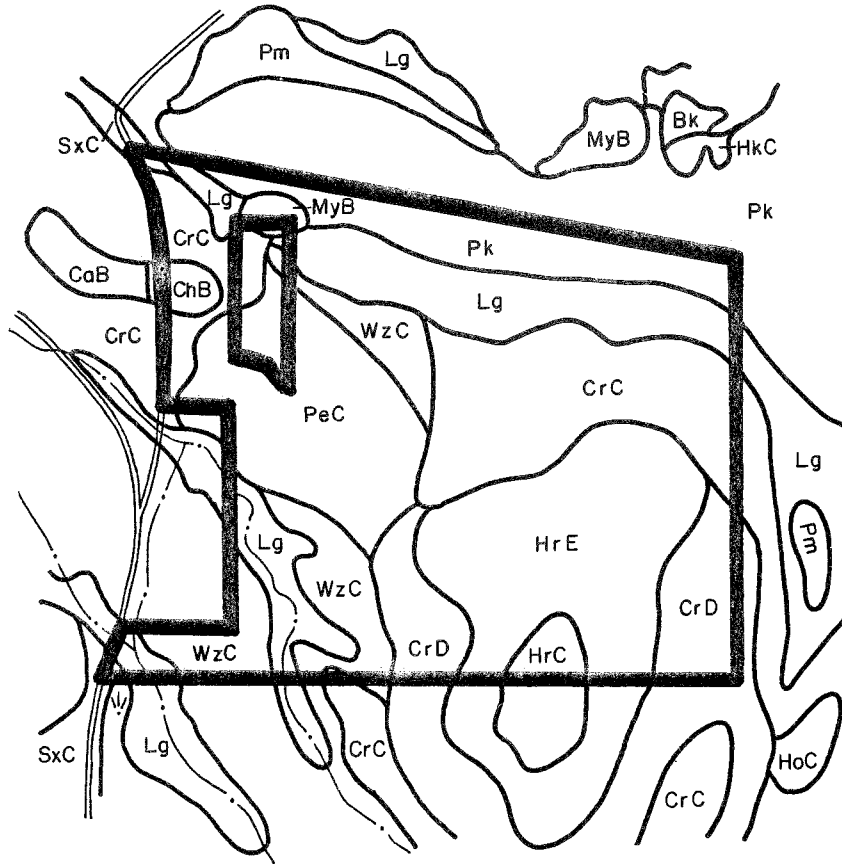
The Soil Survey of Litchfield County, Connecticut (1970) is the basis of information for this discussion. The survey uses a map scale of 1" = 1320'. Wetlands on this parcel of land, which are strongly influenced by topography, should be delineated at a scale of 1" = 100' or less by a private soil consultant. Siting of septic fields can then be made using this new map and on-site deep hole tests.

Specific Soil Concerns

Because of the large number of map units involved, a table of important soil features and interpretations has been prepared (Table 1). The map unit symbols and names are unique to this report and cannot be used in other areas. Below are listed some additional soils information and concerns:

- (1) The soil survey map scale of 1" = 1320' should not be used in discussions about wetland values and acreage. The developer should employ a private soil scientist to map wetlands at a scale of 1" = 100' or less.

Figure 7

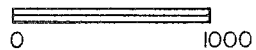


HICKORY RIDGE SUBDIVISION

NORFOLK, CONNECTICUT

DISTRIBUTION OF SOILS

King's Mark Environmental Review Team



<u>PeC</u> Paxton very stony 3-15% slopes	glacial till soils with fragipan formed in loamy materials	well drained 1.5' - 2.5'	wetness due to perched water table	slow perc	seasonal wetness frost action
<u>Pk</u> Peat and Muck	organic materials	very poor drainage	wetness flooding	wetness flooding	wetness flooding
<u>WzC</u> Woodbridge very stony 3-15% slopes	glacial till soils with a fragipan formed in loamy materials	moderately well drained 1.5' - 2.5'	wetness due to perched water table	slow perc	seasonal wetness frost action

- (2) Building roads, driveways and homes on the HrE map units (Hollis) poses many difficulties due to the slope (i.e., 15 to 35 percent) and shallowness to bedrock.
- (3) Septic fields in WzC and PeC map units (Woodbridge and Paxton) may require curtain drains to control perched water tables.
- (4) CrC and CrD map units (Charlton) are very stony and may require disposal of large rocks removed from roads and homesites.

Sedimentation and Streambank Erosion Concerns

As of July 1, 1985 the Connecticut Soil Erosion and Sediment Control Act (P.A. Number 83-388) became fully effective. As a result, a detailed erosion sediment control will be required for the project and should be properly enforced by the Town. Disturbed areas should be kept to a minimum under such a plan, and erosion and sediment control measures should be shown on the subdivision plan.

The proposed subdivision should be sited carefully to minimize erosion and sediment control problems. The southeast quadrant of the property has severe limitations due to slope steepness and amounts of bedrock. Any construction in this area (marked by HrE and HrC map units) will pose a challenge to control erosion and sediment during construction. After construction, stabilization of roadbanks would also be difficult. Other areas in this subdivision pose less problems as far as erosion and sediment control is concerned.

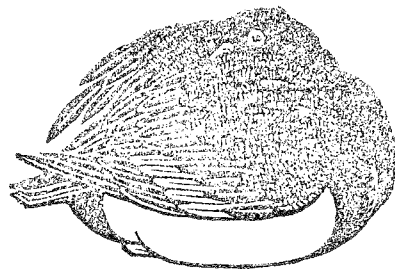
Erosion controls will be necessary during construction. Temporary barriers such as haybales or silt fences should be placed downslope from disturbed areas. Where temporary barriers are inadequate, permanent measures such as sediment basins can be used. The road crossing of the Ginger Creek tributary may require more than one erosion and sediment control measure depending on the location of the road. Wetlands and the stream should be protected from sediment by the use of erosion control measures.

All disturbed areas should be promptly regraded, seeded and mulched. When weather prohibits seeding, bare soil can be protected by mulching. Road banks in the PeC and WzC map unit areas should be graded as flat as is practical to prevent sloughing in the spring. The Erosion and Sediment Control Handbook, (DEP, 1985) is an excellent source of information on erosion and sediment control. Specific techniques of erosion and sediment control are detailed in the handbook. Requirements of the law regarding erosion and sedimentation control are also discussed.

Increased runoff can lead to water-related problems such as flooding and streambank erosion and gulying. In view of the moderate to very steep slopes present on the site, it appears that erosion problems could be a major problem, especially if a comprehensive erosion and sediment control plan is not developed covering each stage of the proposed subdivision. If steep slopes are avoided, it will lessen the chance for erosion and siltation problems.

Changes in runoff from the proposed low density subdivision will not be significant overall. Holleran Swamp will buffer any increased rates of runoff. On specific areas of the subdivision, runoff may be a factor on the access road if slopes are long. Therefore, the access road should be sited on the contour as much as is practical. This will serve to minimize erosion during construction and afterward if the access road is not paved. Crowning the road can disperse runoff so that accumulated water does not cause a problem. Driveways also should be placed on the contour as much as is practical.

BIOTA



forests was common practice for over 100 years and provided the raw material needed to make charcoal for a growing industrialized state.

The large expanse of diverse vegetation on this property plays an important role in the aesthetics of the area and enhances the water storage capacity of the landscape. In addition, the woodland provides a rich renewable resource in the form of wood and diversified wildlife habitat. These amenities can enhance the site whether it remains in its natural undeveloped state or is developed as proposed. Subdividing a large parcel complicates alternatives for active forest resource management.

Although the name "Hickory Ridge" was coined for this subdivision, there does not appear to be any large expanse of hickory trees. According to the developer, there are "a few" hickory trees behind the recently constructed house on Elmore Road. These trees were the basis for the title "Hickory Ridge Subdivision."

Vegetative Type Descriptions (see Figure 8)

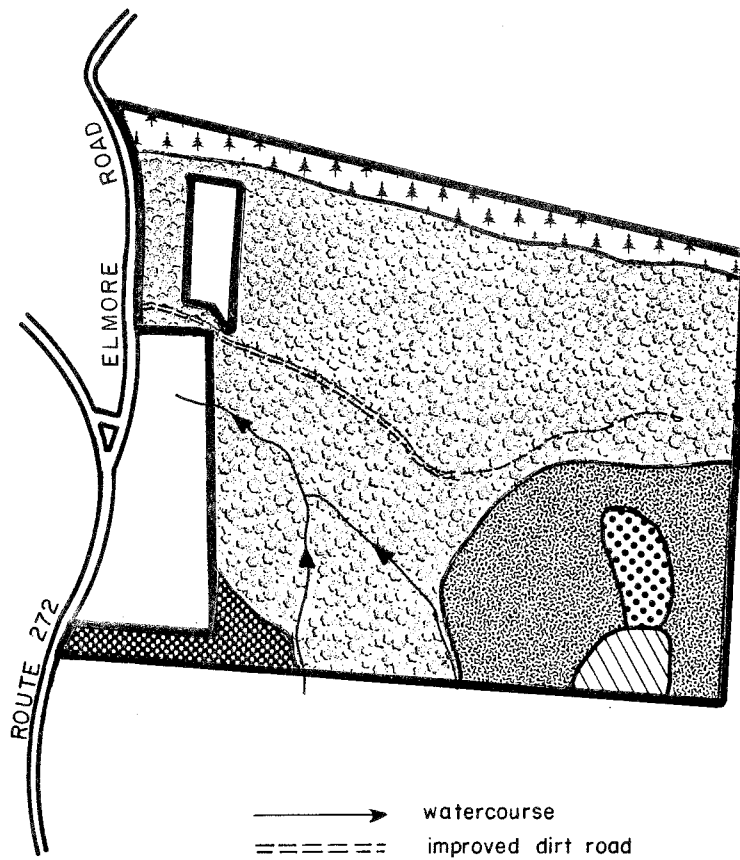
Mixed Hardwood (Stand 1 - Dominated by red oak)

Other species include black cherry, white ash and red maple. Red oak is sawtimber-size (i.e., greater than 12" dbh) and overtops most of the other tree species. This area appears to be an excellent site for tree growth.

Mixed Hardwood (Stand 2 - Dominated by red maple)

This is by far the largest forest stand on the site. Red maple dominates because up to half the area appears to have a high water table and red oak species were cut out of the stand for sawlogs some years back. Other species include black cherry, white ash and an occasional aspen. One can follow the

Figure 8



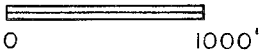
- 
STAND 1 - MIXED HARDWOOD
 (dominated by red oak)
- 
STAND 2 - MIXED HARDWOOD
 (dominated by red maple)
- 
STAND 3 - MIXED HARDWOOD
 (dominated by red oak poles)
- 
STAND 4 - MIXED HARDWOOD
 (dominated by white birch poles)
- 
STAND 5 - MIXED HARDWOOD
 (red oak ; dry, steep, rocky area)
- 
STAND 6 - MIXED HARDWOOD/HEMLOCK

**HICKORY RIDGE
SUBDIVISION**


NORFOLK, CONNECTICUT

FOREST COVER

King's Mark Environmental Review Team



0 1000'



Forest Management Considerations

One of the biggest obstacles in getting more forestland actively managed in Connecticut is that many existing parcels of land have different owners. The subdivision of this property as proposed will complicate the comprehensive forest management potential of the site. With a subdivision of ownership comes varied opinions as to the importance of forest management. Also, as smaller parcels of land are created from larger blocks, the opportunities for forest management diminish. Larger blocks of land simply offer more alternatives for management of forest resources. From a forest management standpoint, larger lots are more desirable than smaller ones.

On an energy conservation note, individual landowners would be able to take advantage of the available fuelwood from their respective lot. Each wooded acre will probably be able to annually grow and produce one-half to three-quarters of cordwood. An annual harvest of poorly-formed and damaged trees will create an improved and healthier woodlot without depleting the resource.

Several factors should be considered in the maintenance of present vegetation. Wetland soils have a high water table close to the surface of the ground. This allows for shallow root penetration of the trees. Additional openings and clearings in and alongside wet areas should be avoided if possible. The vegetation growing on these soils is, on a whole, more sensitive to disturbance than vegetation growing elsewhere.

Alterations in the wetlands which permanently raise or lower the water table and/or restrict natural drainage may have a negative impact on vegetation in the immediate area. Raising the water table may drown root systems causing widespread mortality in the plant community; lowering the water table may result in plant desiccation. These types of situations may occur

when crossing wet areas with roadways or driveways. Care should be taken in the placement of any culverts in wet areas to avoid alteration of the water table.

Any cutting which takes place in the development of this parcel, whether it is for roads or house lots, should be done to take advantage of the demand for all wood products. Firewood would be the main product. The marketing of this product should be planned for. A public service forester from DEP or a private forester may be of assistance in either on-the-ground planning or the marketing of the wood products.

WILDLIFE RESOURCES

Wildlife Habitats

Upland Mixed Hardwood Forest (relatively light understory)

This site is desirable habitat for deer and wild turkey primarily, along with many small birds and mammals. There is little evidence that this habitat is heavily used by wildlife. This area does have a good deal of potential for wildlife habitat combined with forest management which would establish a greater diversity of species and age classes of vegetation. It would naturally follow to have a greater diversity of wildlife.

Wooded Swamp (Holleran Swamp)

This area appears to be of some significance based on the inventory of vegetation by the DEP Natural Diversity Data Base. It is desirable wildlife habitat warranting protection from development. Its large size and location

Creek Pond makes it likely to have a diverse and abundant fauna. Wood Creek Pond has public access making it particularly desirable to retain it in a wild state. It should be managed by no management.

Endangered/Threatened Plant and Wildlife Species

Holleran Swamp is a biologically significant area because of the presence of many "Species of Special Concern." Field investigations conducted in 1985 updated historic reports for nine "Species of Special Concern" (Table 2).

TABLE 2
SPECIES OF SPECIAL CONCERN IN HOLLERAN SWAMP

Three-leaved Solomon's Seal	(<u>Smilacina trifolia</u>)
Early Coral-root	(<u>Corallorhiza trifida</u>)
Red Spruce	(<u>Picea rubens</u>)
Black Spruce	(<u>Picea mariana</u>)
Labrador-tea	(<u>Ledum groenlandicum</u>)
Dwarf Mistletoe	(<u>Arceuthobium pusillum</u>)
Bog Rosemary	(<u>Andromeda glaucophylla</u>)
Bristly Clubmoss	(<u>Lycopodium annotinum</u>)

While no inventory of species use is available, great blue herons (Ardea herodias) were reported nesting in the northern portion of this wetland. This species is considered an infrequent breeder in Connecticut. Suitable, isolated habitat for these species is uncommon in Connecticut and they do not necessarily use the same sites regularly. Since it was used historically for nesting, it may be utilized again at any time. For this reason, it would be desirable to maintain Holleran Swamp in its current state.

The following "Species of Special Concern" were not seen during 1985 field inspection though they were historically present: (1) tall white bog orchid (Platanthera dilatata) and (2) two species of sedge (Carex paupercula var.

pallens) and (Carex limosa). Habitat is suitable for these species and a field survey done at the proper time of year may relocate these species.

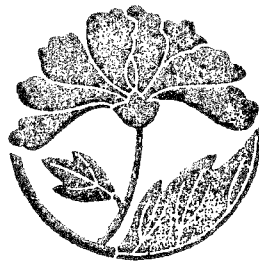
The Natural Diversity Data Base contains the most current biologic data available. On-going research continues to locate additional populations of species and locations of habitats of concern as well as updating existing data.

Wildlife Management Alternatives/Techniques

- (1) Eliminate the potential to manage the area as a whole for wildlife just as with forest management.
- (2) If homes are placed near the proposed road, impacts on wildlife and habitat would be reduced.
- (3) Lot sizes will provide low human densities. Disturbance to wildlife will be based on human activity more than the development itself.
- (4) Wild turkeys will probably not use the area as much. Any nesting attempts on the property will likely be disturbed by human or pet activity.
- (5) Deer use of the area may increase due to clearings, gardens, shrubs, etc. Night access to this area from Holleran Swamp is likely. With development and housing densities, control of deer would be difficult for those with less than 10 acre lots.
- (6) It would be desirable to have a 200-foot buffer zone between Holleran Swamp and lot boundaries included as part of the open space lot. It is not desirable to have an open space area landlocked. Perhaps Lot 4 could be reconsidered or eliminated. Some of the desirable land could be incorporated into Lots 2, 3 and 5. Perhaps the aforementioned buffer zone could be incorporated into Lots 5, 6 and 7 at the same time while adjusting acreage to the desired minimums.
- (7) It would also be desirable from the aesthetics of Wood Creek Pond to avoid any imposing views of the development from the pond.

Management literature for the homeowner/small landowner is available through the DEP - Wildlife Bureau.

**LAND USE
AND
PLANNING CONSIDERATIONS**



LAND USE AND PLANNING CONSIDERATIONS

PLANNING ISSUES

Environmental Considerations

The proposed size of this development requires considerable road construction to provide access to the lots. This may cause siltation and erosion problems during construction which should be addressed with the proper controls. More importantly, once the project is complete there will be two continuing problems that should be mentioned in the wording of the subdivision approval: (1) paved roads will accelerate runoff of water to drainage structures, and in some way, the rate of runoff should remain the same as it presently enters existing streams; (2) gravel roads will be a constant source of siltation into the streams and some protection from those adverse effects should be required.

There is evidence of beaver activity immediately off-site and some consideration to protecting their habitat should be made.

The proposed site plan indicated land to be preserved adjacent to Holleran Swamp. This land may be undevelopable or may be protected by deed restriction limiting the use of the property when it is sold as part of a lot. More important for preservation should be the top of the high hill on the property. This is generally undevelopable because of steep slopes and shallow to bedrock areas, yet provides a scenic vista of Wood Creek Pond and the surrounding area. Also, there is an adjacent hill south of the proposed development site which the Planning and Zoning Commission should consider preserving and developing a footpath between the two hills.

Roads

Although the developer is asking that an amendment be approved allowing the development of this area exclusively with private unpaved roads, the Town should require that some standard roads be built at some point in the development. This gives the Town some control over the area because they have town-accepted roads there and insures that emergency vehicles will have access to a certain point in the subdivision.

As shown on the proposed plan, there is altogether too much road. The length of road can be reduced by the use of at least one cul-de-sac (Figure 9).

For gravel roads, if they are to be approved, specifications should be written out and if not included in the regulations, included in the text of the approval. Some guide to those specifications can be found in Standard Specifications published by the Department of Transportation.

Regulations

If new regulations are to be written allowing development on private roads or new road specifications, they should be written with future developments in mind and not simply for the proposed Hickory Ridge Subdivision.

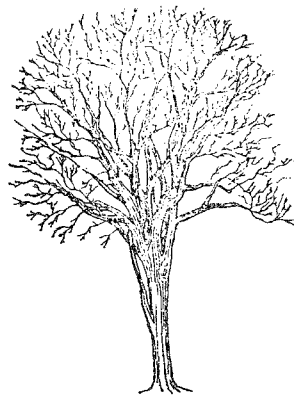
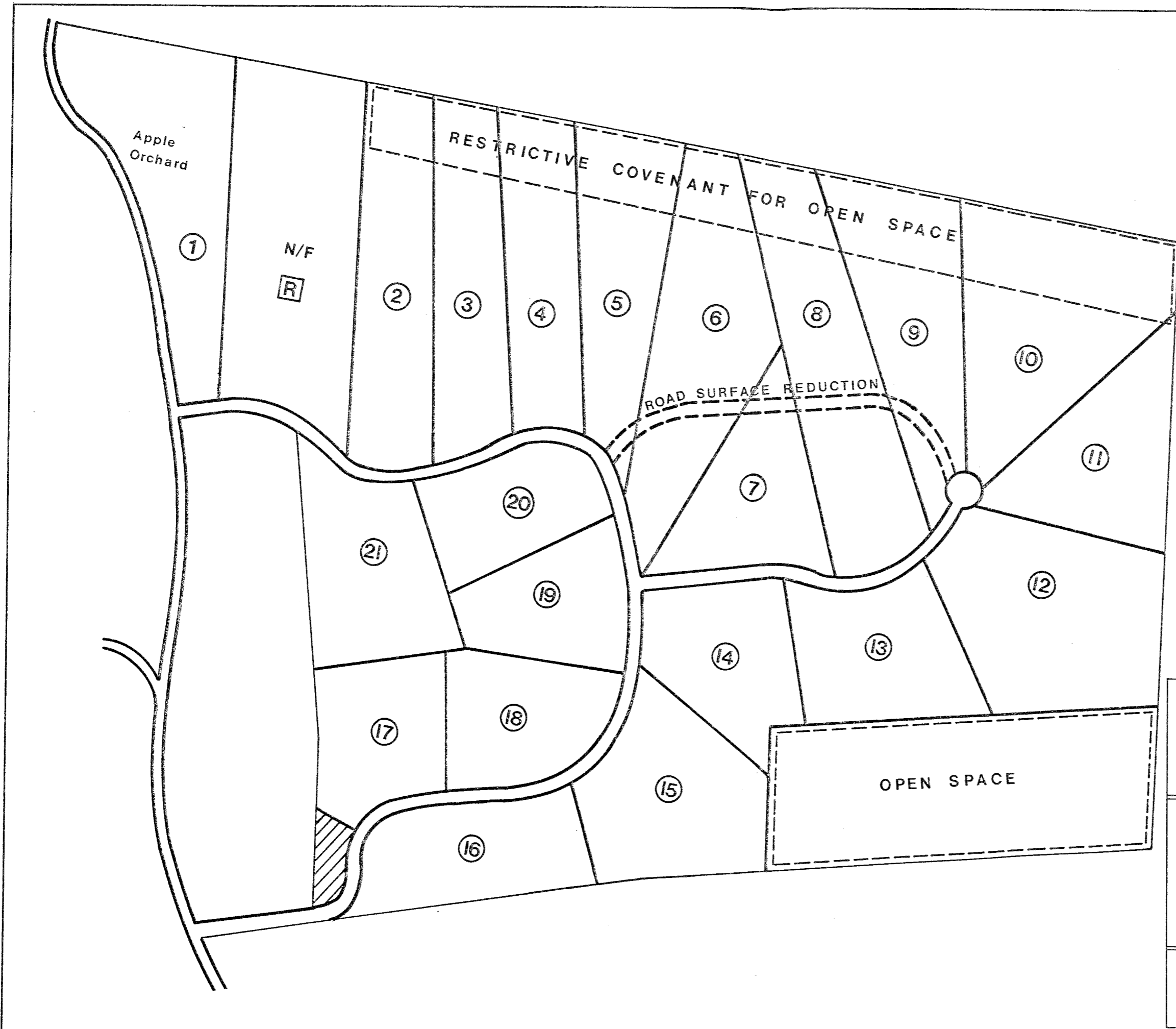


Figure 9

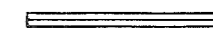


**HICKORY RIDGE
SUBDIVISION**

NORFOLK, CONNECTICUT

**ALTERNATIVE
SITE PLAN**

King's Mark Environmental Review Team



NOTES

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, soil scientists, foresters, climatologists, landscape architects, recreational 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 83 town area serving western Connecticut.

As a public service activity, the Team is available to serve towns and/or developers within the King's Mark RC & D Area - free of charge.

PURPOSE OF THE ENVIRONMENTAL REVIEW TEAM

The Environmental Review Team is available to assist towns and/or developers in the review of sites proposed for major land use activities. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments, and recreational/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 site, and highlighting opportunities and limitations for the proposed land use.

REQUESTING AN ENVIRONMENTAL REVIEW

Environmental Reviews may be requested by the chief elected official of a municipality, or the chairman of an administrative agency such as planning and zoning, conservation, or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District, and the King's Mark ERT Coordinator. This request form 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 investigate. When this request is approved by the local Soil and Water Conservation District and King's Mark RC & D Executive Committee, the Team will undertake the review. At present, the ERT can undertake two (2) reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or Keane Callahan, ERT Coordinator, King's Mark Environmental Review Team, King's Mark Resource Conservation and Development Area, 322 North Main Street, Wallingford, Connecticut 06492. King's Mark ERT phone number is 265-6695.