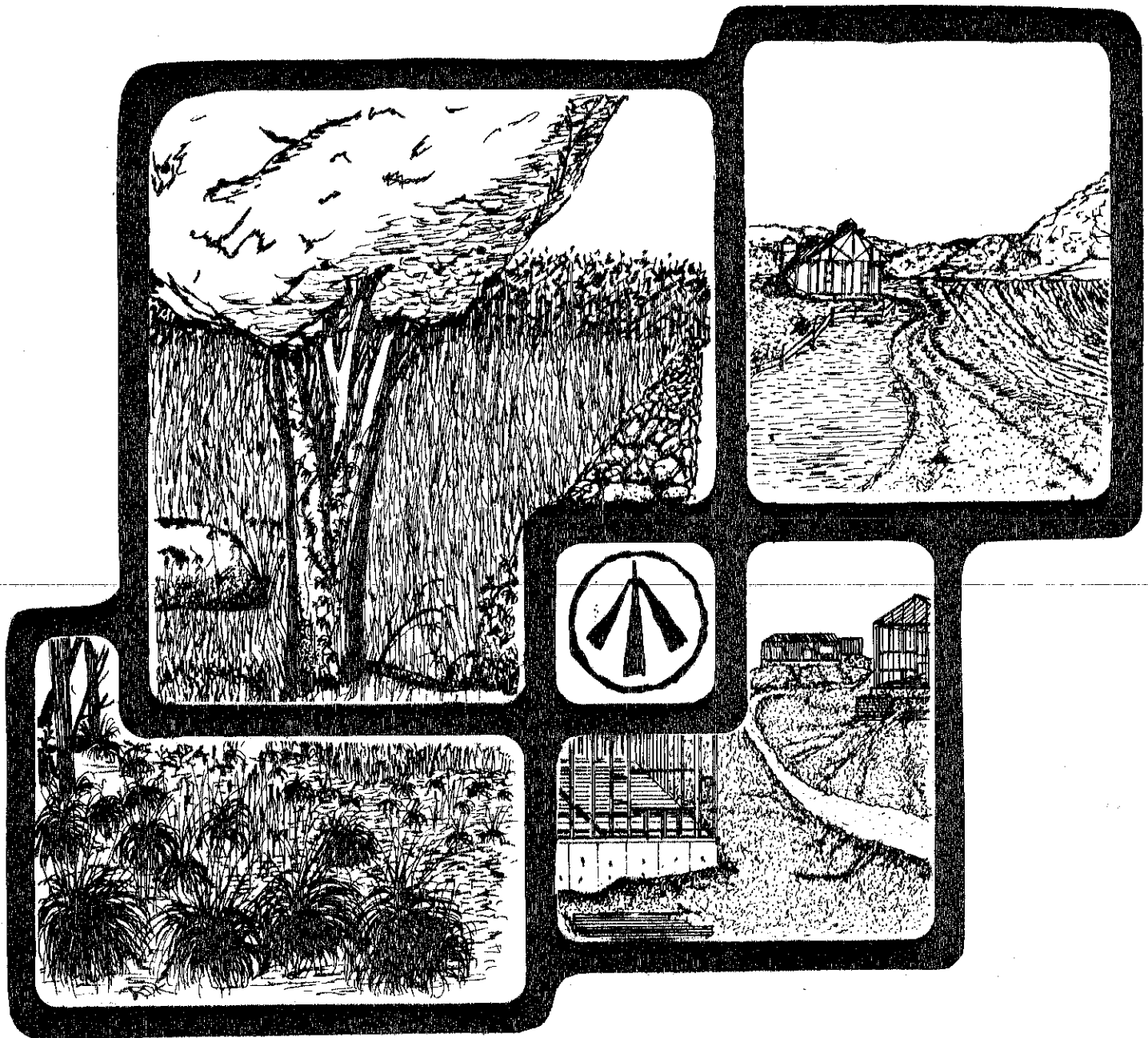


ENVIRONMENTAL REVIEW TEAM REPORT



FAWN RIDGE ESTATES
HARWINTON, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK ENVIRONMENTAL REVIEW TEAM REPORT

ON

FAWN RIDGE ESTATES HARWINTON, CONNECTICUT



JANUARY 1980

King's Mark Resource Conservation and Development Area

Environmental Review Team

P.O. Box 30

Warren, Connecticut 06754

ACKNOWLEDGMENTS

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

Federal Agencies

U.S.D.A. SOIL CONSERVATION SERVICE

State Agencies

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEPARTMENT OF HEALTH

DEPARTMENT OF TRANSPORTATION

UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

Local Groups and Agencies

LITCHFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT

HARTFORD COUNTY SOIL AND WATER CONSERVATION DISTRICT

FAIRFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT

NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY

VALLEY REGIONAL PLANNING AGENCY

LITCHFIELD HILLS REGIONAL PLANNING AGENCY

CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY

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Stanley J. Pac, Commissioner

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KING'S MARK RESOURCE CONSERVATION AND DEVELOPMENT AREA

Victor Allan, Chairman, Executive Committee

Stephen Driver, ERT Committee Chairman

Moses Taylor, Coordinator

Staff Administration Provided By

NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY

Bruce M. Ridgway, Chairman

Thomas A. J. McGowan, Director

Richard Lynn, ERT Coordinator

Rebecca West, ERT Draftsman

Irene Nadig, Secretary

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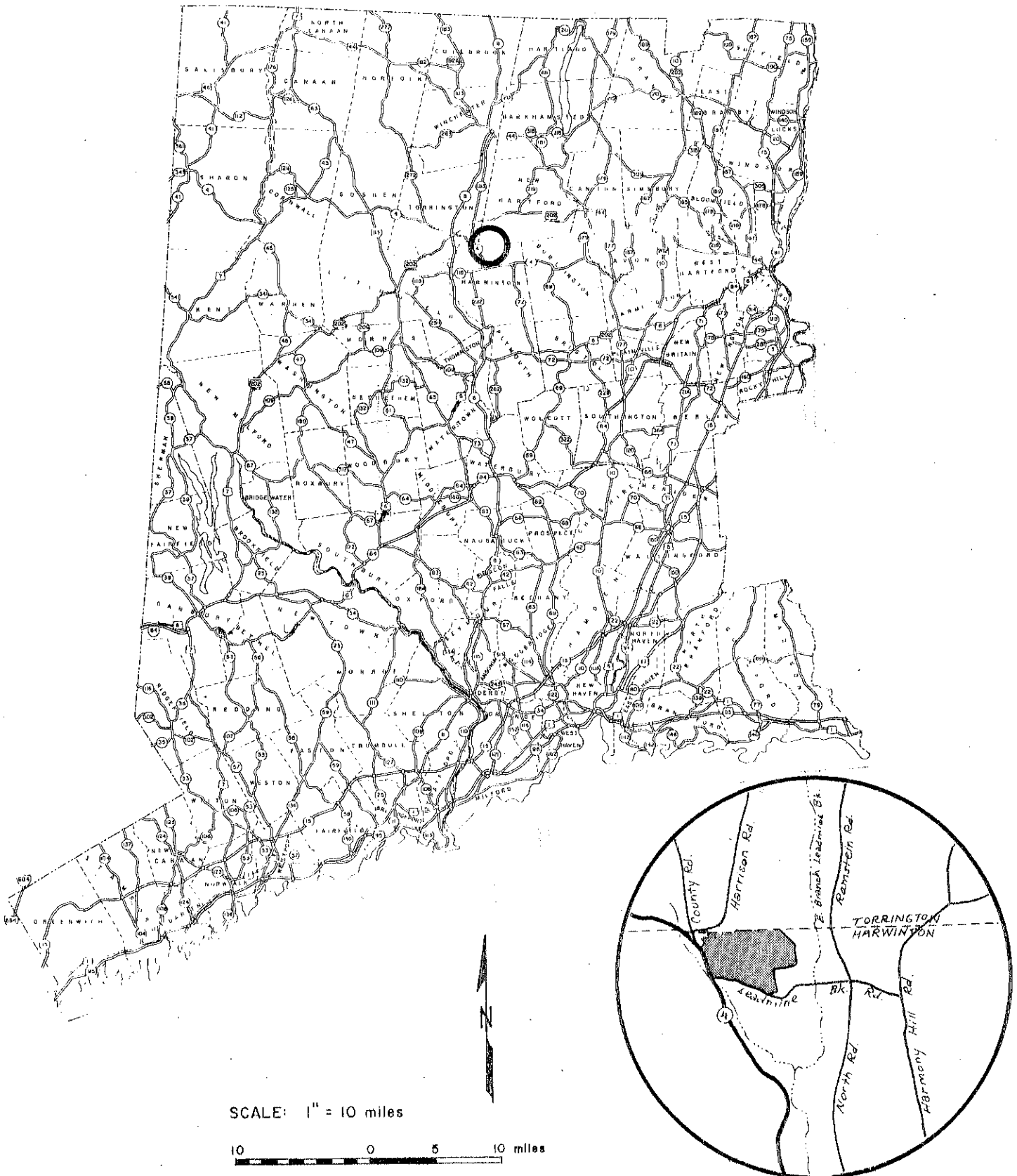
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LOCATION OF STUDY SITE

FAWN RIDGE ESTATES HARWINTON, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
FAWN RIDGE ESTATES
HARWINTON, CONNECTICUT

I. INTRODUCTION

The Harwinton Planning Commission is presently reviewing a proposed plan of subdivision for a \pm 124 acre tract of land in the northcentral portion of town. The subject site is irregularly shaped and bounded more or less by Route 4 on the west, Dutton Hill Road on the north, Lead Mine Brook Road on the south and undeveloped land on the east.

The "Preliminary Subdivision Plan" for the proposed "Fawn Ridge Estates" calls for 34 residential lots plus a large "business zone" lot along Route 4 (see Figure 1). The first section of the Plan, consisting of lots #1-12, has been submitted in final form to the Harwinton Planning Commission. Lots #1-12 are proposed to be serviced by on-site wells and septic systems. Additional lots may or may not be serviced by on-site facilities according to an engineering report prepared on the project as municipal sewers and city water lines exist on Dutton Hill Road in Torrington.

Access to the property is available off Route 4, Dutton Hill Road, and Lead Mine Brook Road. The preliminary subdivision plan would create one new town road off Dutton Hill Road to serve the project.

The Planning Commission from the Town of Harwinton requested the assistance of the King's Mark Environmental Review Team to help the town in analyzing the proposed development. Specifically, the ERT was asked to identify the natural resources of the site and to highlight preliminary land limitation considerations. Major concerns raised by the town in requesting this review included the impact of the project on soils and storm water runoff; and the suitability of the site for septic systems.

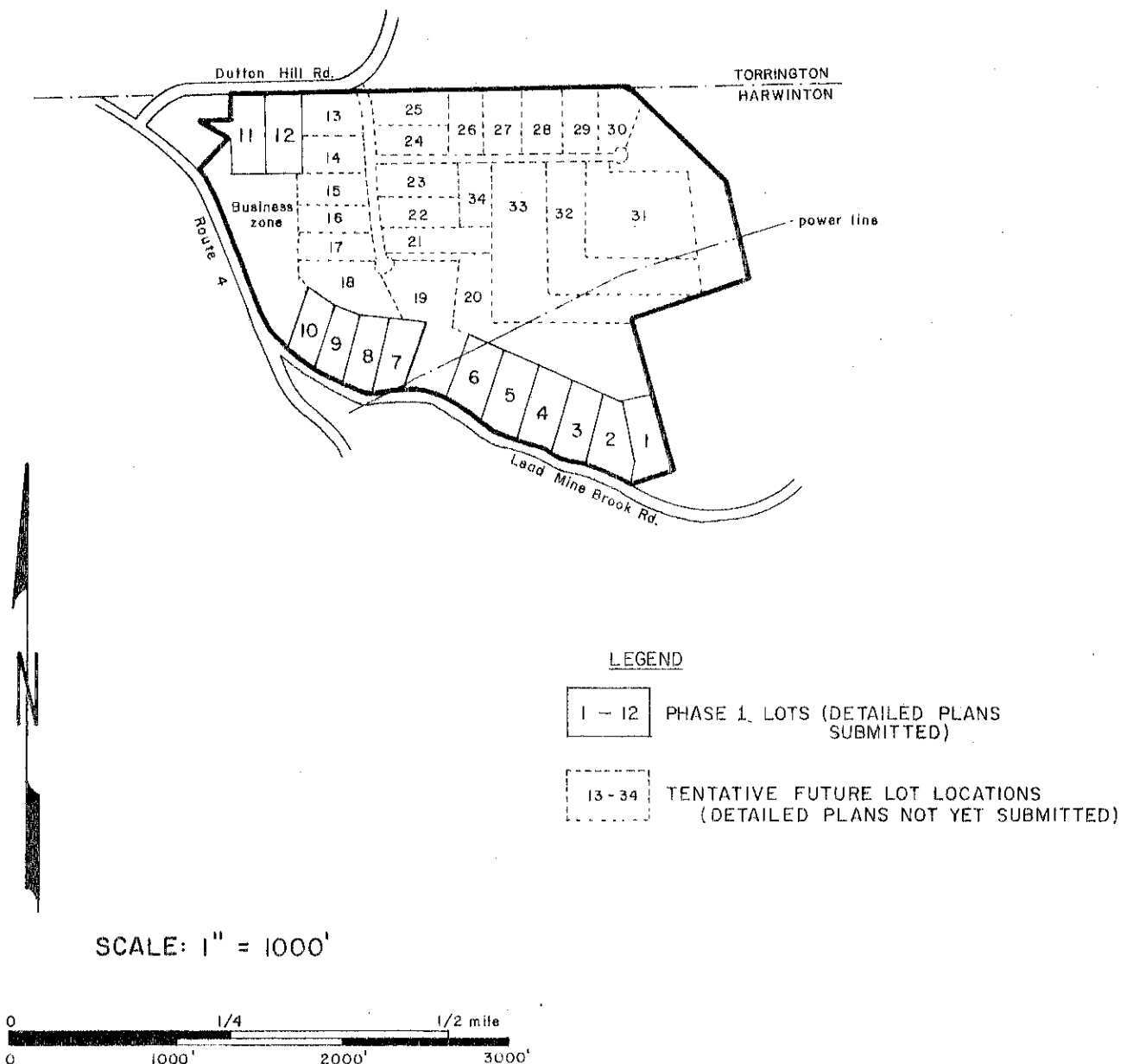
The ERT met and field reviewed the site on December 19, 1979. Team members for this review consisted of the following:

Art Cross.....	District Conservationist.....	U.S.D.A. Soil Conservation Service
Gilbert Roberts.....	Chief Sanitarian.....	Torrington Area Health District
Robert Rocks.....	Forester.....	State Department of Environmental Protection
Richard Serra.....	Regional Planner.....	Regional Planning Agency Litchfield Hills
Michael Zizka.....	Geohydrologist.....	State Department of Environmental Protection

FIGURE 1.

SIMPLIFIED SITE PLAN *

* ADAPTED FROM DEVELOPER'S
PRELIMINARY SITE PLAN



Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, a topographic map, and a simplified site plan of the development proposal. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the team's findings and recommendations. It is important to understand that the ERT is not in competition with private consultants, and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town and developer. It is hoped the information contained in this report will assist the Town of Harwinton and the landowner/developer in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn, (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P. O. Box 30, Warren, Connecticut 06754.

* * * * *

II. SUMMARY

- . Development of the site as planned would lead to increases in run-off volume from given amounts of rainfall. These additional increments of run-off will be reflected in increased peak flows in local streams unless mitigating engineering measures are used.
- . The geology of the site raises concerns for the proper operation of septic systems and their relationship to on-site wells. Current soil maps suggest that a hardpan (compact till) layer exists at shallow depths on much of the property. Such a layer, with its attendant poor permeability, may cause or foster perched or generally high water tables. Septic systems in hardpan areas must be designed to avoid being flooded by groundwater. Since conflicts are apparent between current soil maps and some test pit results for lots along Lead Mine Brook Road, more extensive testing of soils in this area would be desirable. Till textures may vary significantly within short distances, so that a favorable or unfavorable test pit result on one lot may not necessarily indicate similar soil conditions over the entire leaching field and reserve areas. Hardpan occurrences on steep slopes below septic systems are of particular concern, as those conditions may cause effluent "breakout". Wells should be placed upslope from septic systems to reduce the possibility of water-supply contamination.
- . Although the yield from a new bedrock based well on a given site cannot be predicted with confidence, it seems likely that an adequate water supply could be obtained on most lots. Apart from the potential problem of hardness, the natural quality of the groundwater supplied from the site should be good.
- . A detailed topographic survey of the parcel (2 foot contour intervals) is recommended to identify those areas most suitable for homesites.
- . One alternative to the proposed plan which should be considered is the relocation of the interior road to where the present woods road goes upward into the property, off of Lead Mine Brook Road. This alternative would be preferable from an environmental standpoint, however the increased traffic generated by this alternative along Lead Mine Brook Road is a potential hazard and needs to be carefully assessed.
- . According to U.S.D.A. Soil Conservation Service criteria, the majority of the site presents severe limitations for subsurface sewage disposal. In most places these limitations can probably be overcome with appropriate management practices; however it is essential that each lot be carefully evaluated and accordingly planned.
- . Due to steep slope conditions, it is not believed that the straight thru driveways proposed for lots 1-10 reflect what will eventually be installed on the property. It is much more likely that such drives will cross the lots diagonally in an S-shaped curve, necessitating some cutting and filling. Such construction could limit the area for sewage disposal. As a result, it is recommended that septic systems and reserve areas be laid out in the preliminary plans with driveways which reflect this pattern.

- . A variety of vegetation types are present on the 124+ acre tract proposed for development of Fawn Ridge Estates. Eighty-nine acres are at present forested, with the remaining thirty-five either open or vegetated with old field brush species. Efforts should be made, with the development of this property, to preserve where possible the larger, healthier trees, for aesthetics. Care should be taken not to disturb these trees during construction. A light fuelwood thinning in one section of the site would be desirable.
- . The subdivision appears to be consistent with presently accepted state, regional and local plans.
- . There is concern for adequate driveway sight clearance for the ten units proposed on Lead Mine Brook Road. Relocation of the driveways proposed in the plan may be necessary. Modification of Lead Mine Brook Road is another alternative to insure adequate driveway sight clearance.

* * * * *

III. TOPOGRAPHY AND LAND USE

The western and southern portions of the property rise abruptly from Route 4 and Lead Mine Brook Road to the central portion of the property, which is the highest point in Harwinton (elevation 1052). Ground observation in the western half of the property shows that the majority of the slopes are $\pm 15\%$, with some areas less than 15% and some areas greater than 15%. The steepest slopes in this portion of the property are $\pm 25-30\%$.

The eastern half of the property has much more gradual slopes, ranging from $\pm 3\%$ to $\pm 10\%$ (see Figure 2).

The eastern half of the property drains easterly to the East Branch of Lead Mine Brook. The western half of the property drains westerly to the West Branch of Lead Mine Brook.

Most of the property is wooded. Six open fields are located on the tract with three of the fields consisting of hayland (± 8.5 acres) and three of the fields consisting of silage corn (± 8.5 acres). A powerline right-of-way transects the southern half of the property. A perennial stream flows southerly through the northwestern portion of the site en route to the West Branch of Lead Mine Brook.

IV. GEOLOGY

The Fawn Ridge Estates site is located within the Torrington topographic quadrangle. A bedrock geologic map (Connecticut Geological and Natural History Survey Quadrangle Report No. 25, by C. W. Martin, 1970) and a surficial geologic map (U.S. Geological Survey Map GQ-939, by R. B. Colton, 1971) of that quadrangle have been published.

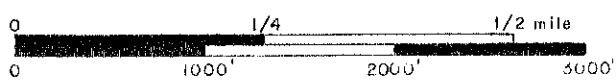
Bedrock underlying the site has been classified as part of the Hartland Formation Unit I. This unit consists largely of fine-to-medium-grained granulites or granulitic gneisses whose major mineral components are quartz, plagioclase, biotite, and muscovite. No outcrops of bedrock were observed on the property, but U.S.G.S. Map GQ-939 suggests that scattered outcrops or very thin soils may be present on the steep slopes along Lead Mine Brook Road, particularly east of the power line, and near the eastern boundary of the site.

Till, an unconsolidated, nonsorted accumulation of rock particles of widely varying shapes and sizes, overlies bedrock on the site. These particles were collected by an ice sheet as it moved southward through Connecticut more than 14,000 years ago, and were deposited directly from the ice without substantial reworking by meltwater. In roadcuts along the southern boundary of the parcel, the till appears to have a gravelly, bouldery, loose texture. Much of the upper few feet of till on the site may contain a similarly loose but somewhat finer-grained texture (i.e. sandier). At depth, the till tends to become more compact, siltier, and less permeable. The long axis of the hill that comprises the major part of the property is oriented in the apparent direction of ice movement. An ice-molded hill of this type is known as a drumlin.

FIGURE 2.
TOPOGRAPHIC MAP



SCALE: 1" = 1000'



V. HYDROLOGY

Development of the site as planned would lead to increases in runoff volume from given amounts of rainfall. These increases would arise from the placement of impermeable surfaces, such as roofs or paved driveways, over parts of the site and from the removal of vegetation. Additional increments of runoff shed from the property during storms of a given magnitude will be reflected in increased peak flows in local streams unless mitigating engineering measures are used.

A calculation was made of peak flows to be expected both before and after development at two points of streamflow near the site. A calculation was also made for a proposed piped-drainage outlet near the intersection of Route 4 and Lead Mine Brook Road. The latter calculation cannot be easily compared against present conditions since a rerouting of drainage flow would be involved. Although a standard hydrologic method was used in the calculations, the results (shown in the following table) should not be interpreted as hard-and-fast data, but rather they should be regarded as guidelines to the potential for hydrologic change from implementation of the proposed project. The sites chosen for peak-flow evaluation and their respective drainage areas are shown in Figure 3.

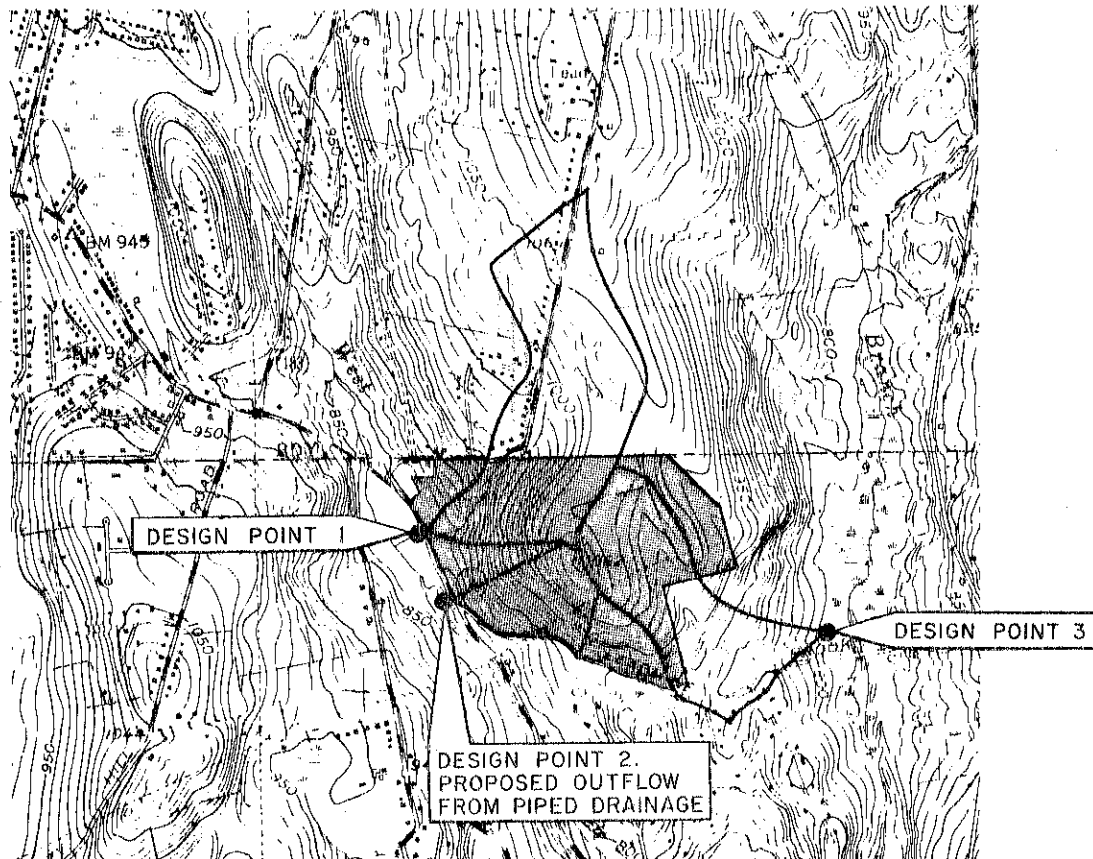
Table 1. Estimated peak flows in cubic feet per second for the three design points, both before and after development.

<u>Design Point #1</u>			
Present conditions	2-year, <u>24-hr. storm</u> 35 cfs	25-year, <u>24-hr. storm</u> 285 cfs	100-year, <u>24-hr. storm</u> 545 cfs
Future conditions	42 cfs	297 cfs	561 cfs
Percent increase	19%	4%	3%

<u>Design Point #2</u>			
Future conditions	2-year, <u>24-hr. storm</u> 23 cfs	25-year, <u>24-hr. storm</u> 150 cfs	100-year, <u>24-hr. storm</u> 281 cfs

<u>Design Point #3</u>			
Present conditions	2-year, <u>24-hr. storm</u> 10 cfs	25-year, <u>24-hr. storm</u> 160 cfs	100-year, <u>24-hr. storm</u> 351 cfs
Future conditions	13 cfs	177 cfs	379 cfs
Percent increase	30%	11%	8%

FIGURE 3.
DESIGN POINTS & DRAINAGE AREAS
FOR PEAK FLOW CALCULATIONS

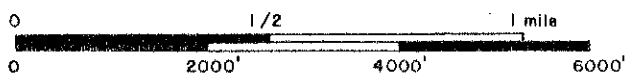


EXPLANATION

● LOCATION OF DESIGN POINT

— DRAINAGE AREA BOUNDARIES (APPROXIMATE)

SCALE: 1" = 2000'



The geology of the site raises concerns for the proper operation of septic systems and their relationship to on-site wells. The till seen in exposures along Lead Mine Brook Road was coarse and loose. This type of soil is generally suitable for leachate renovation. Current soil maps, however, suggest that a hardpan (compact till) layer exists at shallow depths on much of the property. Such a layer, with its attendant poor permeability, may cause or foster perched or generally high water tables. Septic systems in hardpan areas must be designed to avoid being flooded by groundwater. Since conflicts are apparent between current soil maps and some test pit results for lots along Lead Mine Brook Road, more extensive testing of soils in this area would be desirable. Till textures may vary significantly within short distances, so that a favorable or unfavorable test pit result on one lot may not necessarily indicate similar soil conditions over the entire leaching field and reserve areas. Hardpan occurrences on steep slopes below septic systems are of particular concern, as those conditions may cause effluent "breakout". Wells should be placed upslope from septic systems to reduce the possibility of water-supply contamination.

VI. WATER SUPPLY

Water to the first 12 lots would be provided by on-site wells. Water for subsequent lots may or may not be provided by Torrington's public water lines along Dutton Hill Road. If on-site wells are used, they most likely would tap the bedrock aquifer. Although large-diameter wells in till have occasionally been used as water sources, supply from such wells may vary with seasonal weather conditions. In addition, recharge rates to wells in compact till may be exceedingly slow. Nevertheless, in a location at which the till is 30 feet thick or more and the water table is relatively high, a till well might be feasible. Some thick-till areas may be present at the northern end of the site.

Bedrock-based wells generally supply small but reliable yields of groundwater. A survey of this type of well in the lower Housatonic River basin was made for Connecticut Water Resources Bulletin No. 19. This report indicates that, of the 135 wells surveyed that penetrated a bedrock type similar to the bedrock underlying the site, approximately 90 percent yielded 2 gallons per minute (gpm) or more and approximately 66 percent yielded 5 gpm or more. These yields would be sufficient to serve an average family's needs. Although the yield from a new bedrock-based well on a given site cannot be predicted with confidence, it seems likely that an adequate water supply could be obtained on most lots.

Connecticut Water Resources Bulletin No. 19 indicates that the Fawn Ridge site lies within an area in which some bedrock wells have yielded moderately hard to hard water (water containing 61 mg/l or more CaCO_3). If the hardness of water from any well is greater than about 120 mg/l CaCO_3 , the water will probably have to be softened for household use. Apart from this potential problem, the natural quality of the groundwater supplied from the site should be good.

VII. SOILS AND SOIL RELATED CONCERNS

A Soils Map of the property is presented in the Appendix of this report together with a Soils Limitation Chart. The Soils Map identifies the location of all soils identified on the property. The Soils Limitation Chart identifies the restrictions imposed by the various soils for alternate land uses.

The majority of the site (+ 69%) consists of Paxton soils. These well drained soils developed in glacial till and have a compact layer at a depth of about 2 feet. They are moderately permeable on the surface layer and subsoil but slow to very slow in the substratum. Most use limitations are associated with slow percolation rates, seasonal wetness, and large stones.

About 23% of the site consists of Charlton soils. These are deep, well-drained soils that developed in friable to firm glacial till. Permeability of these soils is moderate to moderately rapid. Except where slope and stoniness are problems, they are well suited for residential development.

Approximately 8% of the site is characterized by Woodbridge soils. These soils consist of moderately well drained, nearly level to sloping soils which developed in compact glacial till. These soils are underlain by a compact layer, or hardpan, at a depth of about 24 inches. Their permeability is moderate in the surface layer and subsoil but is slow in the substratum. Most use problems are related to seasonal wetness and slow percolation.

The suitability of the soils on this site for septic system waste disposal is a significant concern. The following table summarizes the potential and limitations of the soils on the site for waste disposal. The table also identifies management practices which can be implemented to overcome limitations.

In addition to the management practices listed in the following table for on-site sewage disposal, the following practices are also needed in the hardpan soils (Paxton and Woodbridge):

1. Footing drains to prevent seepage into basements.
2. Subsurface drains along roads and drives to prevent frost heaving and icing.
3. Subsurface drains and proper sloping (3:1 or less) to prevent soil slippage and seepage on road cuts.

Interior Road and Lot Layout vs. Soils/Slopes

On lots 1-10, a detailed topography survey could reveal less sloping areas for homesites. The present "Business zone" (see Figure 1) contains several potential homesites with fewer slope limitations than some of the lots 1-10. Eliminating the "business zone", widening lot widths, and siting homes/septic systems in less sloping areas would also provide opportunity to put driveways in on more gradual grades with less land disturbance. This is an alternative which should be considered.

The interior road, as proposed, crosses a perennial stream south of Dutton Hill Road. Extensive cutting and filling, subsurface drainage measures and a large sized culvert with headwalls would be necessary to construct this road. Erosion and sediment controls (including grading, seeding, and mulching) would also be required to prevent sediment from reaching the stream and Lead Mine Brook.

An alternate location to the proposed interior road would be where the present woods road goes upward into the property, off of Lead Mine Brook Road (see Figure 4). Advantages of this alternative are:

1. Less cuts and fills, stream not a factor.
2. Opportunity for storm water management basin for road water runoff.

TABLE 2. SUITABILITY OF SOILS FOR ON-SITE WASTE DISPOSAL

SOIL NAME	APPROX. % OF SITE*	LIMITATION RATING: PRIMARY REASON ¹	POTENTIAL ²	MANAGEMENT PRACTICES TO OVERCOME LIMITATIONS
Charlton* (slopes 3-15%)	23	Slight to Moderate	High	<ul style="list-style-type: none"> . Enlarge leaching area . Avoid construction when wet . Serial tile distribution (on slopes 8-15%)
Paxton (slopes 3-15%)	46	Severe: Percolates slowly due to hardpan at + 2 ft.	Medium	<ul style="list-style-type: none"> . Percolation tests at wettest times of year . Interceptor drains over hardpan . Large field, sand filter, or mound system . Avoid construction when wet . Serial tile distribution
Woodbridge (slopes 0-8%)	8	"	"	"
Paxton (slopes 15-25%)	23	Severe: Percolates slowly due to hardpan at + 2 ft.	Medium	<ul style="list-style-type: none"> . All of above for Paxton and Woodbridge Soils + . Land shaping and/or stone removal . Locate less steep areas, then determine lot boundaries

- SLIGHT LIMITATION: indicates that any property of the soil affecting use is relatively unimportant and can be overcome at little expense.
MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
SEVERE LIMITATION: indicates that the use of the soil is seriously limited by restrictions that require extensive and costly measures to overcome.
- Potential ratings from "Soil Interpretations for Waste Disposal", Bulletin 776, Connecticut Experiment Station, June 1979.
- * On-site observation of the Northeast Area, mapped as Charlton, very stony fine sandy loam, 3-15% slopes (CrC) reveals that most of area is 0-8% slopes.

3. Access would be into the middle of the less sloping soil areas with higher residential development potentials. Soil symbols in this area include CrC, ChB, PdB. These soils have slight to moderate soil limitations for dwellings with basements, roads, and driveways.

If this alternate interior road suggestion is adopted, of course, it would mean a different lot layout for the site. However, it appears that the same number, or even greater number, of lots could be accommodated which would ultimately be more compatible with the soils and slopes on the property. Although not related to the "environment" this alternative would also allow for more manageable lots shapes to be created in the interior of the tract (note lots 20, 32, 33 under the current plan).

One drawback to this alternative which must be considered is the increased traffic which would be generated on Lead Mine Brook Road. According to two recent studies, one by the Institute of Traffic Engineers, the second by the Traffic Statistics Unit of the Connecticut Department of Transportation, a median range of between 10 and 10.6 one way traffic movements can be expected per dwelling unit per week day for single family detached housing. Using these figures, it is estimated that the projected 34 lot development would generate between 340 and 360 vehicular trips per day. If access to the interior of the parcel is provided via Lead Mine Brook Road, an assessment should be made of the suitability of Lead Mine Brook Road to safely handle the increased traffic loads.

Erosion and Sediment Controls

With the proposed large lot sizes, relatively simple erosion control measures should be planned and implemented, such as:

1. Logical overall sequence of operations.
2. Least land disturbance as possible.
3. Timely permanent and/or temporary seedings; mulching.
4. Hay bale checks around catch basin.

Storm Water Management

The proposed subdivision design shows a storm water system along the edge of Lead Mine Brook Road. The need for this system should be re-examined as soil is excessively drained along the road. Increased runoff from lots along the road may not be significant. In the event storm drains are to be put in, it may be necessary to rip-rap outlet, install energy dissipator or retention basin at outlet on west side of Route 4 due to increased flows caused by piping.

If the alternate interior road location off Lead Mine Brook Road is adopted, runoff from it could be retained and slowly released in a Storm Water Retention Basin. A potential location for this Basin is north of Lead Mine Brook Road between lots #2 and #3.

VIII. SEPTIC SYSTEMS

The preceding section of this report discussed the general suitability of the soils on the site for subsurface sewage disposal. As noted in that section, the majority of the site presents severe limitations for subsurface sewage disposal. The Torrington Area Health District has reviewed Section 1 of the proposed Fawn Ridge Estates and offered the following comments in a letter addressed to the developer dated December 20, 1979.

"Although our general impression of the feasibility of the lots (i.e. Section 1 lots) for subsurface sewage disposal is favorable, it is impossible for this office to accurately evaluate the properties on an individual basis without test pit locations and property lines identified in the field in accordance with our subdivision review requirements. With this in mind, we are requesting that the following information be provided:

1. All test pit, percolation holes and proposed septic areas must be identified in the field. Front corners of the lots should also be identified.
2. A minimum of two deep test pits located in the general area of the proposed septic system must be provided.
3. A proposed well site for each lot should be shown on the site plan. The location of the well serving the property adjacent to Lot #11 on Dutton Hill Road (N/F Persechino) should also be indicated.
4. There is a small brook originating from a catch basin system on Dutton Hill Road, which flows across Lot #11. The location of this watercourse should be noted on the plan.

Areas of concern -

The slopes of the lots east of the power lines on Leadmine Brook are quite steep. These grades could present some problems in the installation of subsurface sewage disposal systems. It is noted that there may be moderately sloped sections on the lots which are not indicated on the U.S.G.S. Contours. These areas should show up on the 2' Contour Map which is to be submitted.

We do not feel that the straight thru driveways shown on the steeply sloped lots reflect what will eventually be installed on the properties. It is much more likely that such drives will cross the lot diagonally in an S-shaped curve, necessitating some cutting and filling. Such construction could limit the area for sewage disposal. We are requesting that the septic systems and reserve areas be laid out in the preliminary plan with driveways which reflect this pattern.

This review should not be construed as an approval of the subdivision, but merely a guideline for submission of additional information so that a more thorough evaluation can be made."

IX. VEGETATION

A variety of vegetation types are present on the 124+ acre tract proposed for development of Fawn Ridge Estates. Eighty nine acres are at present forested, with the remaining thirty five acres either open or vegetated with old field brush species. The chart on the following page describes each of the vegetation types present on the property (refer to Figure 4).

TABLE 3.
VEGETATION TYPE DESCRIPTIONS

STAND TYPE	ACRES	*MAIN STAND SIZE CLASS	STOCKING LEVEL	MAIN STAND QUALITY	MAJOR COMPONENTS OF: OVERSTORY	UNDERSTORY	GROUND COVER
A. Mixed Hardwoods	52	Pole-size with occasional sawlog-size	Variable due to recent harvest; ranges from under to fully-stocked.	Good	Red oak, sugar maple, white ash, mockernut hickory, American beech, occasional hemlock and red maple.	Hardwood tree seedlings, occasional hemlock seedlings, mapleleaf viburnum, witch hazel, shadbush.	Club moss, Christmas fern, Huckleberry.
B. Open Fields	22	Trees along stone walls pole-size.		Medium	White ash, sugar maple.	Viburnum.	Grasses, Goldenrod, milkweed.
C. Softwood Hardwood	19	Pole to sawlog-size	Fully-stocked. Multiple tops in pine-Hardwoods with damage and large dead branches.	Poor	White pine, black birch, red maple, white oak, shagbark hickory. Occasional large sawlog size white oak & white ash of poor quality.	Hardwood tree seedlings, blue-beech, witch hazel, mapleleaf viburnum.	Club moss, grasses, huckleberry.
D. Old Field	7	Seedling to sapling-size.	Under-stocked.	Poor to medium.	Eastern red cedar, apple trees, gray birch, occasional sawlog size shagbark hickory.	Sweet fern, arrowwood, steeplesbush, multiflora rose, highbush blueberry, barberry, witch hazel, old field juniper, red-osier dogwood, seedling size hardwoods and white pine.	Grasses, goldenrod, hairy cap moss.

TABLE 3.
VEGETATION TYPE DESCRIPTIONS CONTINUED

STAND TYPE	ACRES	*MAIN STAND SIZE CLASS	STOCKING LEVEL	MAIN STAND QUALITY	MAJOR COMPONENTS OF:		GROUND COVER
					OVERSTORY	UNDERSTORY	
E. Mixed Hardwoods	8	Sapling to pole-size with well scattered sawlog size trees.	Fully-stocked	Medium	White oak, white ash, sugar maple, red maple, black birch, shagbark hickory, aspen, gray birch, apple trees.	Iron wood, hardwood tree seedlings, high bush blueberry, witch hazel.	Grasses, club moss.
F. Streambelt/ wetland	10	Pole-size	Over-stocked	Poor Small broken crowns, many defects.	Red maple in clumps and white ash.	Spice bush, mapleleaf viburnum.	Cinnamon fern.
G. Old Field	6	Sapling to pole-size.	Over-stocked.	Medium, however gray birch are breaking apart.	Gray birch, occasional white ash & yellow birch.	Seedling size sugar maple, red maple, and white pine, maple leaf viburnum.	Grasses, club moss, hayscented fern, cinnamon fern, golden-rod.

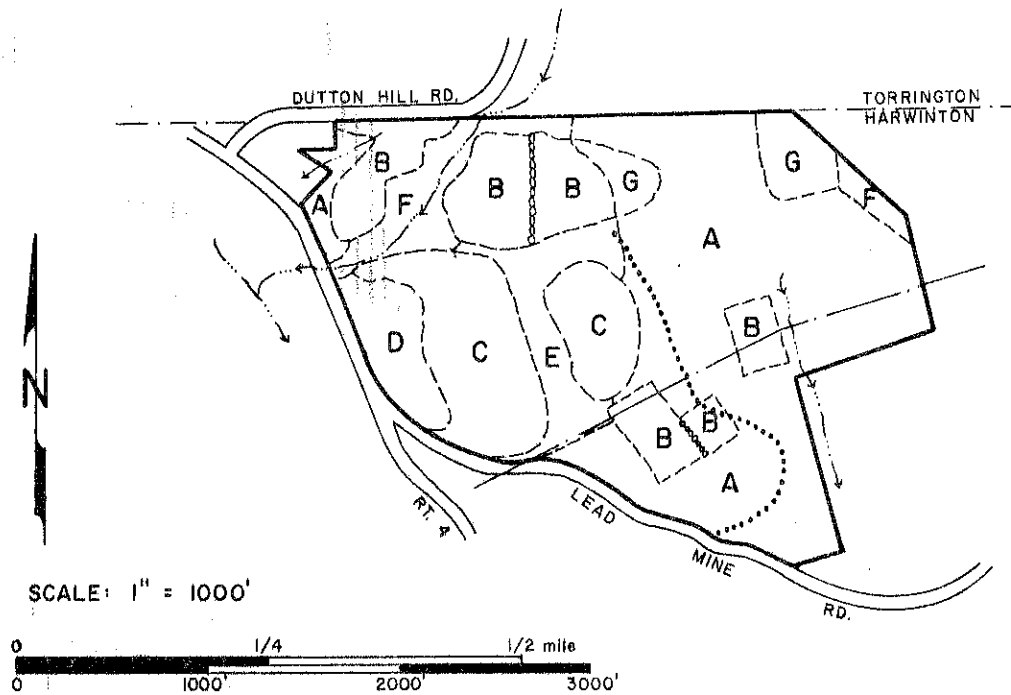
Seedling size - trees less than 1 inch in diameter at 4½ feet above the ground (d.b.h.)

Sapling size - trees 1 to 5 inches in d.b.h.

Pole size - trees 5 to 11 inches in d.b.h.

Sawlog size - trees 11 inches and greater in d.b.h.

FIGURE 4.
VEGETATION TYPE MAP



VEGETATION TYPE DESCRIPTIONS

- TYPE A Mixed Hardwoods, under to fully stocked pole-size with occasional sawlog-size, 52-acres.
- TYPE B Open Fields, 22-acres.
- TYPE C Softwood/Hardwood, fully-stocked pole to sawlog, 19-acres.
- TYPE D Old Field, under-stocked, seedling to sapling-size, 7-acres.
- TYPE E Mixed Hardwoods, fully-stocked sapling to pole-size, 8-acres.
- TYPE F Streambelt/Wetland, over-stocked pole-size, 10-acres.
- TYPE G Old Field, over-stocked, sapling to pole-size, 6-acres.

LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Stream
- Powerline
- Town Line
- Stonewalls Between Fields
- Existing Woods Road

Aesthetics and Preservation

No unusual or exceptionally valuable vegetation types or conditions were observed on this tract. As with other subdivisions in forested areas the large (sawlog-size), high quality (without damage or excessive defects) trees have high value for aesthetics and should be preserved to the greatest extent possible. This is especially true on this tract, because the recent timber harvest in Stand A has removed most of the sawlog-size trees and the other stands on the property have either no healthy sawlog-size trees or only a limited number of them.

Several of the stone walls which divide the open fields (vegetation type B) have medium quality sugar maple and white ash growing along side them. Many of these trees are highly aesthetic, provide shade, and also act as wind and vision barriers between the fields. The preservation of these stone walls and the trees growing near them will help to preserve the rural atmosphere of this town.

Recent research has shown that quality trees on a house lot may enhance the value of that house lot by as much as twenty percent.

Potential Hazards and Mitigating Practices

Excavating, filling and grading for construction of roadways, buildings and septic systems may disturb the balance between soil aeration, soil moisture levels and soil composition. Trees are very sensitive to changes in these soil conditions within the entire area under their crowns. Soil disturbances and direct mechanical injury may cause a decline in tree health and vigor, potentially causing death within three to five years. Dead trees reduce aesthetics and may become hazardous and expensive to remove if near roadways, buildings or utility lines. Care should be taken not to disturb trees that are to be preserved. In general, healthy and high vigor trees should be favored over unhealthy trees because they are more resistant to the environmental stresses brought about by a development of this nature. Where possible, trees should be saved in small groups or islands. This practice lowers the chances of soil disturbances and mechanical injury. Individual trees and islands of trees should be temporarily but clearly marked so they may be avoided during construction.

Many of the larger hardwood trees in Stand C (softwood-hardwood) are very poor in quality. They have broken tops and large dead branches which may present a hazard if roads or buildings are located near them. Ideally these trees should be removed prior to development of the area.

Suggested Management and Resource Utilization

As roads and house lots are developed, trees cleared from these areas should be utilized as fuelwood. Dead and poor quality trees which are not causing a potential hazard may be utilized as fuelwood by property owners on an individual lot basis if the subdivision takes place.

The trees present in Stand F (streambelt/wetland) are in very poor condition as a result of being over-crowded. A light fuelwood thinning, removing perhaps one fourth of the total number of trees, will improve the condition of this stand over time by reducing competition between trees. This thinning should favor tree species other than red maple, and focus on removing the poorest one-quarter of the trees in the stand. To avoid irreversible soil damage this thinning should be implemented during the winter when the ground is frozen or the summer when the ground is relatively dry. A publicly employed service forester may be contacted to help mark the trees that are to be removed if this thinning is agreed to.

X. PLANNING CONSIDERATIONS

State Plan

The State of Connecticut Conservation and Development Policies Plan 1979 - 1982 adopted in 1979 enunciates broad and meaningful goals and strategies for those policy and investment decisions of the State government which concern the future growth and development of the State and the conservation of its natural and man-made resources. While the proposed subdivision is outside the realm of required review relative to the Conservation and Development Plan, it is nevertheless useful to evaluate the proposal within the context of the State's development policies to determine the degree to which this proposal serves to further those policies.

The land area of the Fawn Ridge Estates proposal is designated a "Conservation Area" under the State plan. According to the State Office of Policy and Management, this property has been designated a "Conservation Area" because the land is located in a potential public water supply watershed.

The "State Action Strategy" for a conservation area is to "plan and manage for the long term public benefit the lands contributing to the State's need for food, fiber, water and other resources, open space, recreation and environmental quality, and insure that changes in use are compatible with the identified conservation values".

It appears that the proposed project would be consistent with the State Plan as long as environmental quality, particularly water quality, is not significantly degraded in the subject area as a result of the project.

Regional Plan

In May, 1976, the Litchfield Hills Regional Planning Agency adopted its Regional Plan of Development. The document's Land Use Plan Map is a map of existing and recommended land uses for the region. The Fawn Ridge Estates area is designated "Rural Residential" by the Regional Plan, which is an average of one family per one to four acres.

The subdivision proposal does not seem to be inconsistent with the LHRPA Regional Plan.

Local Plan

The projected proposed land use for this site and the surrounding area is "Town Residential Area".

This subdivision seems to be consistent with presently accepted local plans for this area in Harwinton. Housing density of the proposed subdivision types is now in the area, with a higher density mixture just north of the area in the City of Torrington.

First Phase Considerations

TRAFFIC

The access to lots 1 - 10 of this subdivision will be via Lead Mine Brook Road. This road borders the property on the south and runs east from Route 4

to North Road, a north-south road in Harwinton. The access to lots 11 and 12 will be via Dutton Hill Road. This road borders the property on the north and runs east from Route 4 to Harrison Road, a north-south road in Torrington. Both Lead Mine Brook Road and Dutton Hill Road are local streets.

While traffic volumes calculated by counter are presently not available, it is estimated that the traffic generated as a result of these additional twelve units will have no adverse affect on traffic conditions in the area, and that the ADTs (average daily traffic counts) on these roads will still be below maximum capacity.

Additional road network comments are listed under Site Plan.

SITE PLAN

Review of the Fawn Ridge Estates site plan has resulted in a number of concerns for the proposed development.

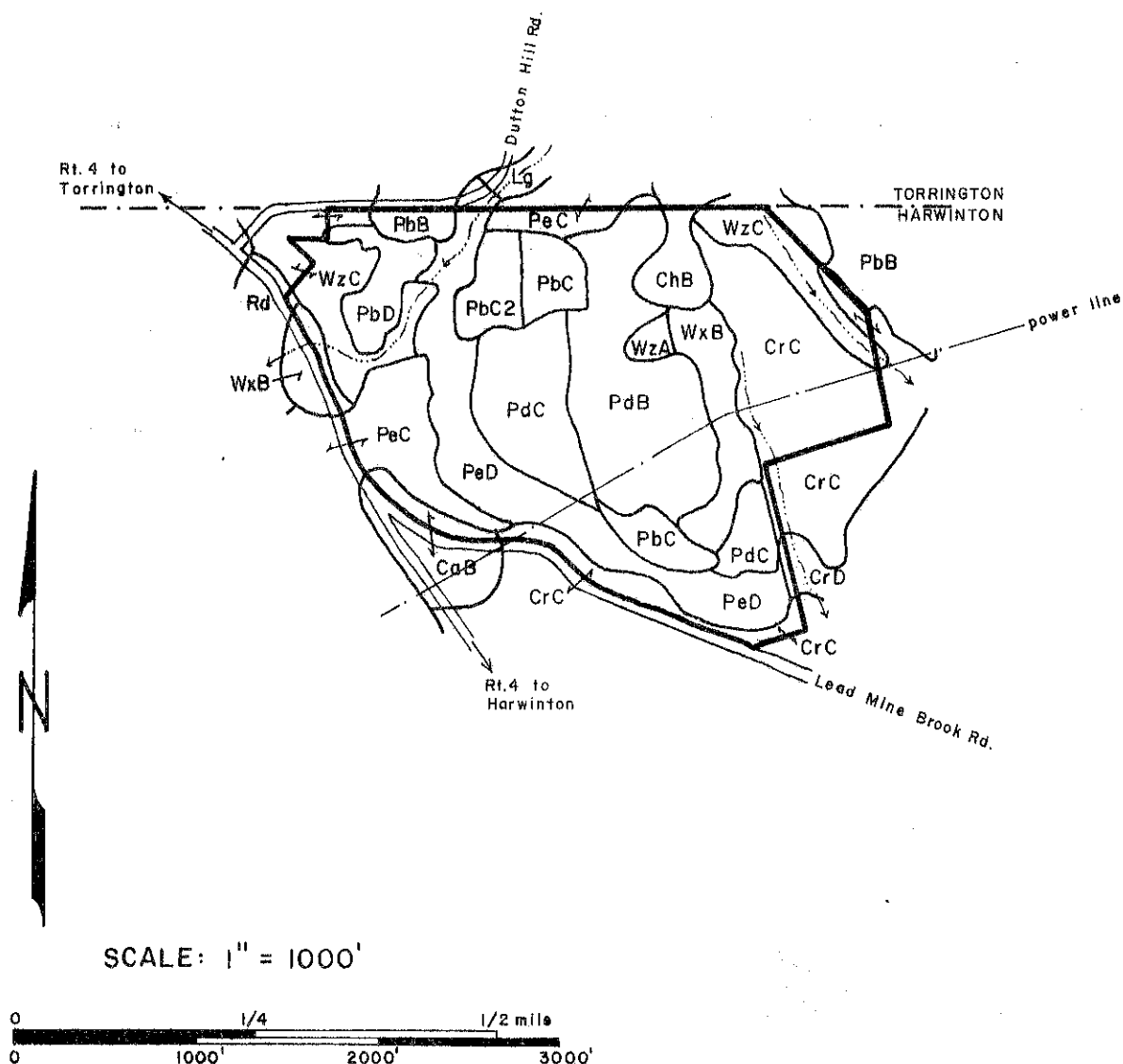
In the description of the First Phase of development, there is concern for adequate driveway sight clearance for the ten units on Lead Mine Brook Road. The removal of shrubs and trees to assist driveway sight clearance for vehicles entering driveways from Lead Mine Brook, and exiting onto Lead Mine Brook Road, is a necessity. In addition, consideration should be given to the possible relocation of the driveways proposed in the plan, especially in areas where the curve of Lead Mine Brook Road may hamper necessary sight clearance. Also, the possible modification to the curve of Lead Mine Brook Road itself should be reviewed as a means to insure adequate driveway sight clearance.

In regard to the Long Range Project Plan, detailed technical plans showing cul de sac size, road width, radius at intersections, etc. are required to adequately evaluate the interior roads shown entering the subdivision from Dutton Hill Road. Possible sight clearance problems exist at the curve of Dutton Hill and Harrison Roads, along with possible drainage problems in the interior of the subdivision and at the gully which runs parallel to Dutton Hill Road on the north side of the subdivision.

APPENDIX

SOILS MAP

ADAPTED FROM LITCHFIELD COUNTY
SOIL SURVEY, U.S.D.A. - S.C.S.



SOILS LIMITATION CHART

"FAWN RIDGE ESTATES", HARWINTON, CT.

MAP SYMBOL (ACRES OF AREA)	SOIL NAME	SEPTIC SYSTEM LEACHING FIELDS	DWELLINGS WITH BASEMENTS	ROADS AND DRIVEWAYS	LANDSCAPING
CaB (3 acres)	Charlton fine sandy loam, 3 to 8% slopes	Slight	Slight	Slight	Slight
ChB (4 acres)	Charlton stony fine sandy loam, 3 to 8% slopes	Moderate: large stones	Moderate: large stones	Slight	Moderate: large stones
CrC (22 acres)	Charlton very stony fine sandy loam, 3 to 15% slopes	Moderate: large stones	Moderate: large stones, slope	Slight - Moderate: slope	Moderate: large stones
CrD (0-1 acre)	Charlton very stony fine sandy loam, 15 to 35% slopes	Severe: slope	Severe: slope	Severe: slope	Severe: slope
PbB (2 acres)	Paxton fine sandy loam, 3 to 8% slopes	Severe: percs slowly	Moderate: wetness	Moderate: frost action	Moderate: small stones
PbC (8 acres)	Paxton fine sandy loam, 8 to 15% slopes	Severe: percs slowly	Moderate: wetness	Moderate: frost action	Moderate: small stones
PbC2 (5 acres)	Paxton fine sandy loam, 8 to 15% slopes, eroded	Severe: percs slowly	Moderate: wetness	Moderate: frost action	Moderate: small stones
PbD (5 acres)	Paxton fine sandy loam, 15 to 25% slopes	Severe: slope	Severe: slope	Severe: slope	Severe: slope

SOILS LIMITATION CHART

"FAWN RIDGE ESTATES", HARWINTON, CT.

MAP SYMBOL (ACRES OF AREA)	SOIL NAME	SEPTIC SYSTEM LEACHING FIELDS	DWELLINGS WITH BASEMENTS	ROADS AND DRIVEWAYS	LANDSCAPING
PdB (22 acres)	Paxton stony fine sandy loam, 3 to 8% slopes	Severe: percs slowly	Moderate: wetness, large stones	Moderate: frost action	Moderate: large stones
PdC (13 acres)	Paxton stony fine sandy loam, 8 to 15% slopes	Severe: percs slowly	Moderate: wetness, large stones	Moderate: frost action	Moderate: large stones
PeC (7 acres)	Paxton very stony fine sandy loam, 3 to 15% slopes	Severe: percs slowly	Moderate: wetness, large stones	Moderate: frost action	Moderate: large stones
PeD (23 acres)	Paxton very stony fine sandy loam, 15 to 35% slopes	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Rd (0-1 acres)	Ridgebury fine sandy loam	Severe: percs slowly wetness	Severe: wetness	Severe: wetness, frost action	Severe: wetness
WxB (8 acres)	Woodbridge fine sandy loam, 3 to 8% slopes	Severe: percs slowly	Severe: wetness	Severe: frost action	Slight
WzA (2 acres)	Woodbridge very stony fine sandy loam, 0 to 3% slopes	Severe: percs slowly	Severe: wetness	Severe: frost action	Moderate: large stones

SOILS LIMITATION CHART

"FAWN RIDGE ESTATES", HARWINTON, CT.

MAP SYMBOL (ACRES OF AREA)	SOIL NAME	SEPTIC SYSTEM LEACHING FIELDS	DWELLINGS WITH BASEMENTS	ROADS AND DRIVEWAYS	LANDSCAPING
WzC (12 acres)	Woodbridge very stony fine sandy loam, 3 to 15% slopes	Severe: percs slowly	Severe: wetness	Severe: frost action	Moderate: large stones

EXPLANATION OF RATING SYSTEM

1. SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.
2. MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
3. SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

NOTE: Limitation Ratings Based Upon U.S.D.A. Soil Conservation Service Criteria.

ABOUT THE TEAM

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

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

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

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

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

