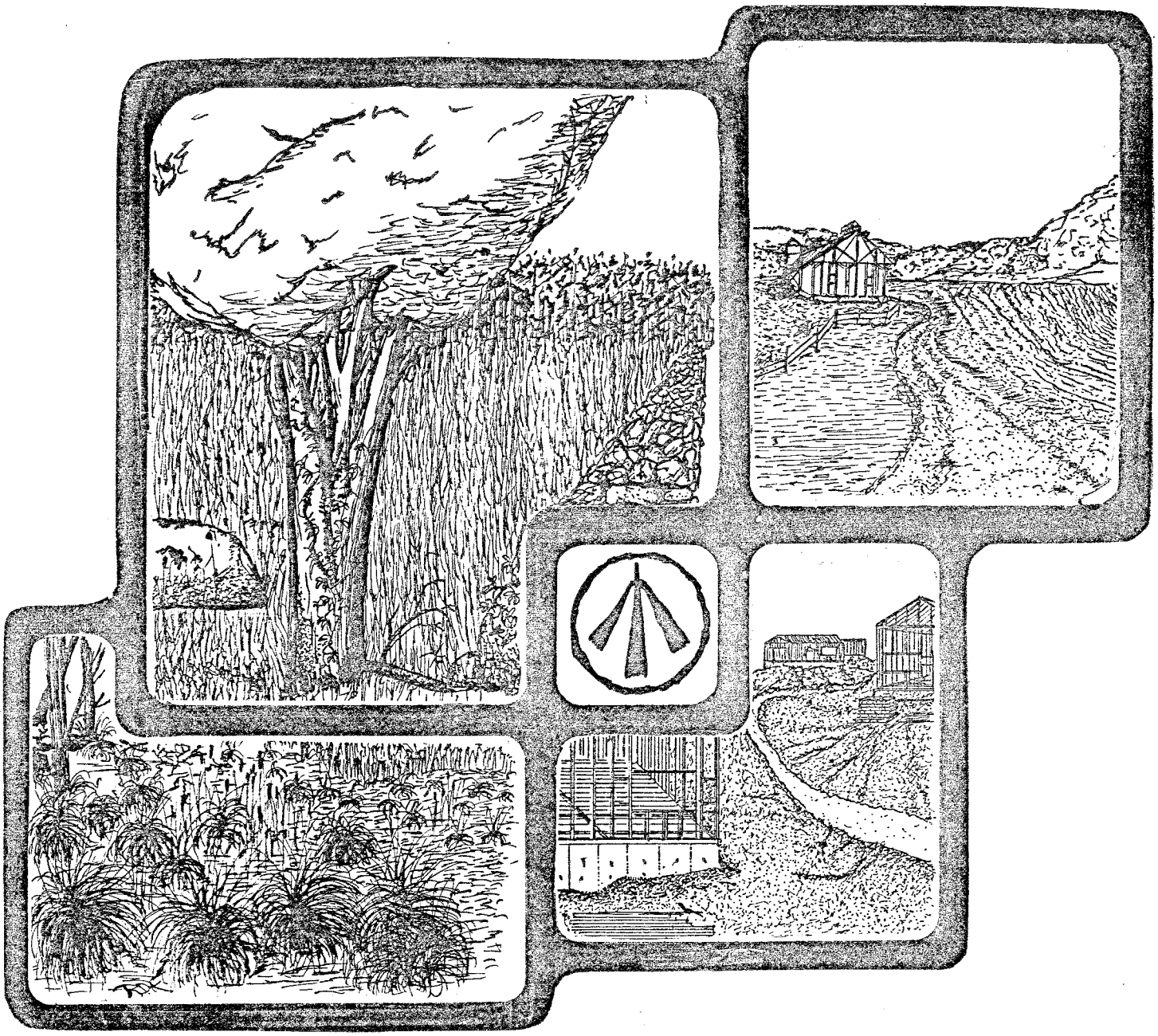
ENVIRONMENTAL REVIEW TEAM REPORT

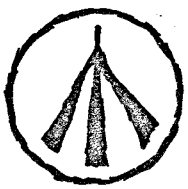


HIGH MEADOWS
WATERTOWN, CT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

HIGH MEADOWS
WATERTOWN, CT
MARCH 1984



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

ACKNOWLEDGMENTS

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

Federal Agencies
U.S.D.A. Soil Conservation Service

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

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

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FUNDING PROVIDED BY
State of Connecticut

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Richard Lynn, ERT Coordinator
Sandra Bausch, ERT Cartographer
Jamie Whitman, Secretary

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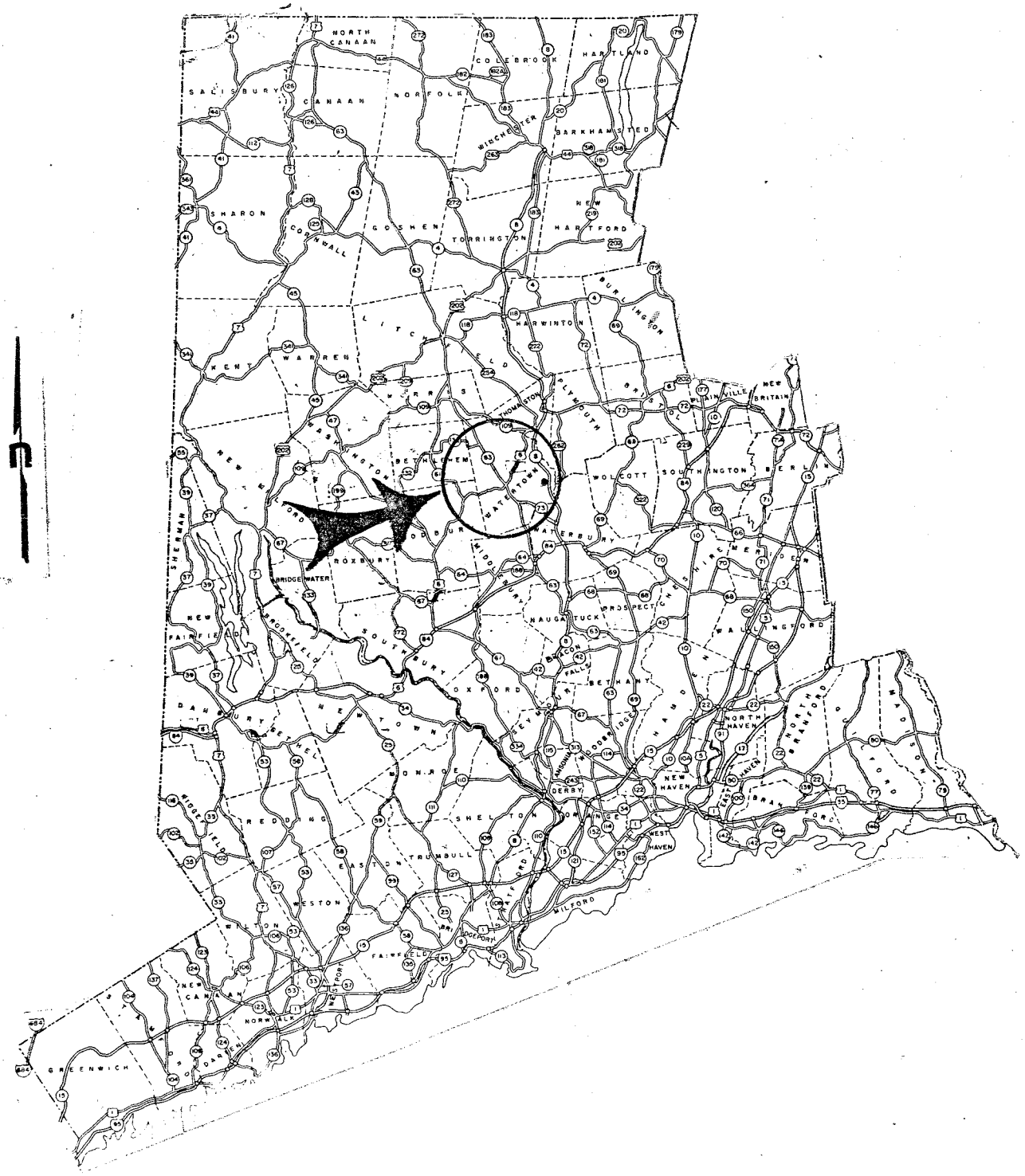

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ENVIRONMENTAL REVIEW TEAM REPORT
ON
HIGH MEADOWS
WATERTOWN, CT

I. INTRODUCTION

The Watertown Planning and Zoning Commission is presently considering an application for residential subdivision of ± 178.8 acres of land.

The subject site is located in the southwestern quarter of town. The land is characterized by moderate to steep slopes and consists of wooded land and open land. Two perennial streams are present on the property together with their associated wetlands. Access to the site is available from the west off Middlebury Road, from the north off Belden Street, and from the east off Oak Drive (see Figure 1).

The proposed project, known as "High Meadows" calls for the construction of 780 dwelling units in 124 separate buildings (see Figure 2). According to the plan, the dwelling units will be a combination of single family detached dwellings, three story condominium units, patio houses (one story condominiums) and town houses (two story condominiums). Several open space areas are proposed, with one area providing two swimming pools, four tennis courts, and a club house. The site is to be served by public sewers and water supply. Storm drainage is proposed to be engineered to result in a "zero" increase in runoff from the property through the use of several retention ponds.

Implementation of this project would require a zone change from the present zoning of the area (R-10 and R-20) to R-20, and then approval of a special use permit under Watertown's "Planned Community District" zoning regulations.

The Watertown Planning and Zoning Commission requested this environmental review to become more aware of the environmental implications of the project. Specifically, the T o w n requested the ERT to 1) provide a natural resource inventory of the site, 2) discuss the suitability of the site for the proposed project, 3) discuss the probable environmental impact of the project, and 4) identify techniques which could be implemented to mitigate any adverse environmental effects. Of major concern to the Commission is the impact of the project on stormwater drainage, inland wetlands, traffic, and municipal facilities including schools and fire/police protection.

Along with submission of the proposed "cluster" plan for the property (i.e., Figure 2), the applicant has also submitted a "conventional" plan (see Figure 3) which could possibly be approved under existing town regulations. The ERT was also asked to compare and contrast the two development proposals from an environmental standpoint.

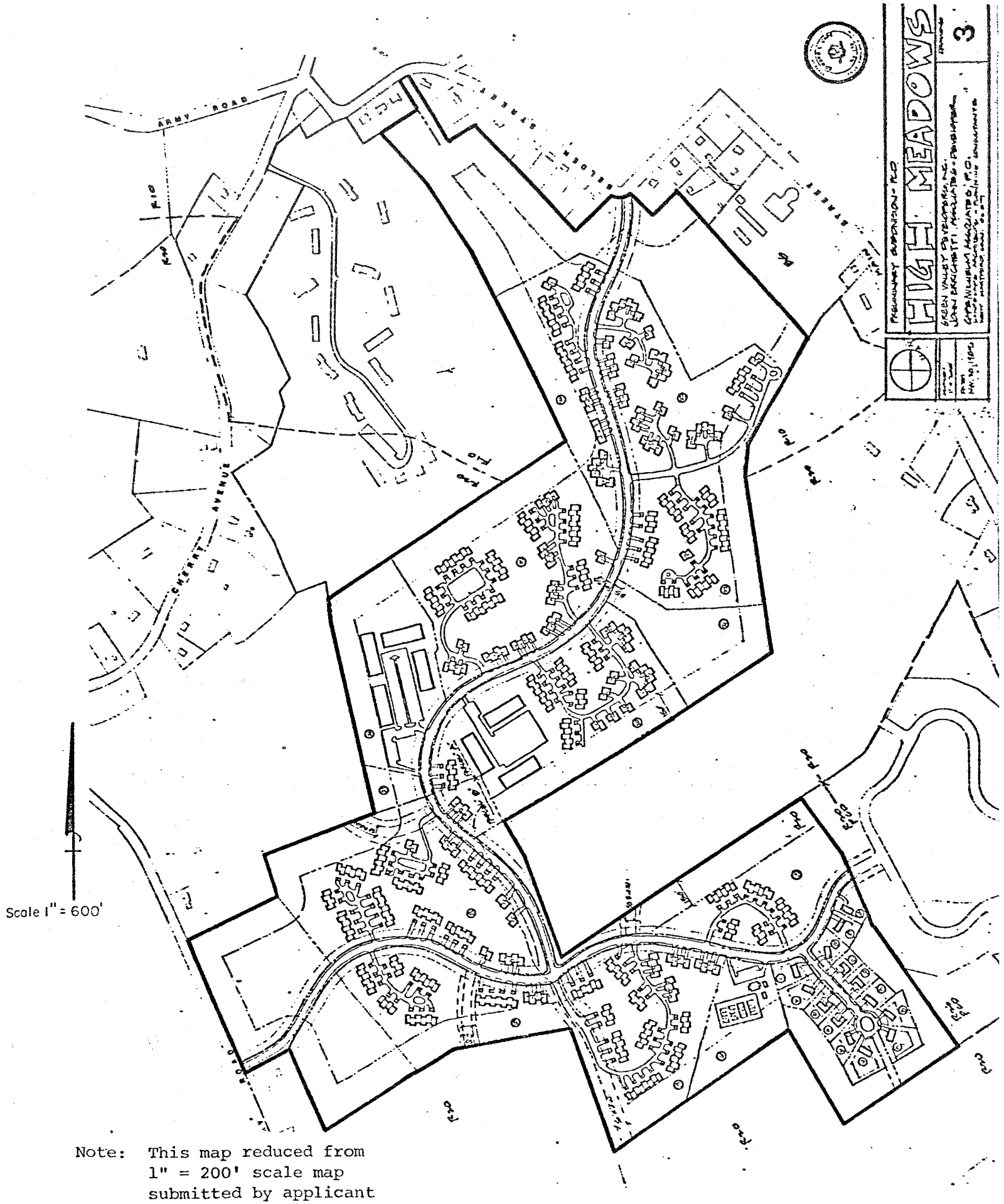
The King's Mark Executive Committee considered the town's request and approved the project for review by the Team.

The ERT met and field reviewed the area on December 21, 1983. Team members for this review included:

Figure 1
TOPOGRAPHIC MAP

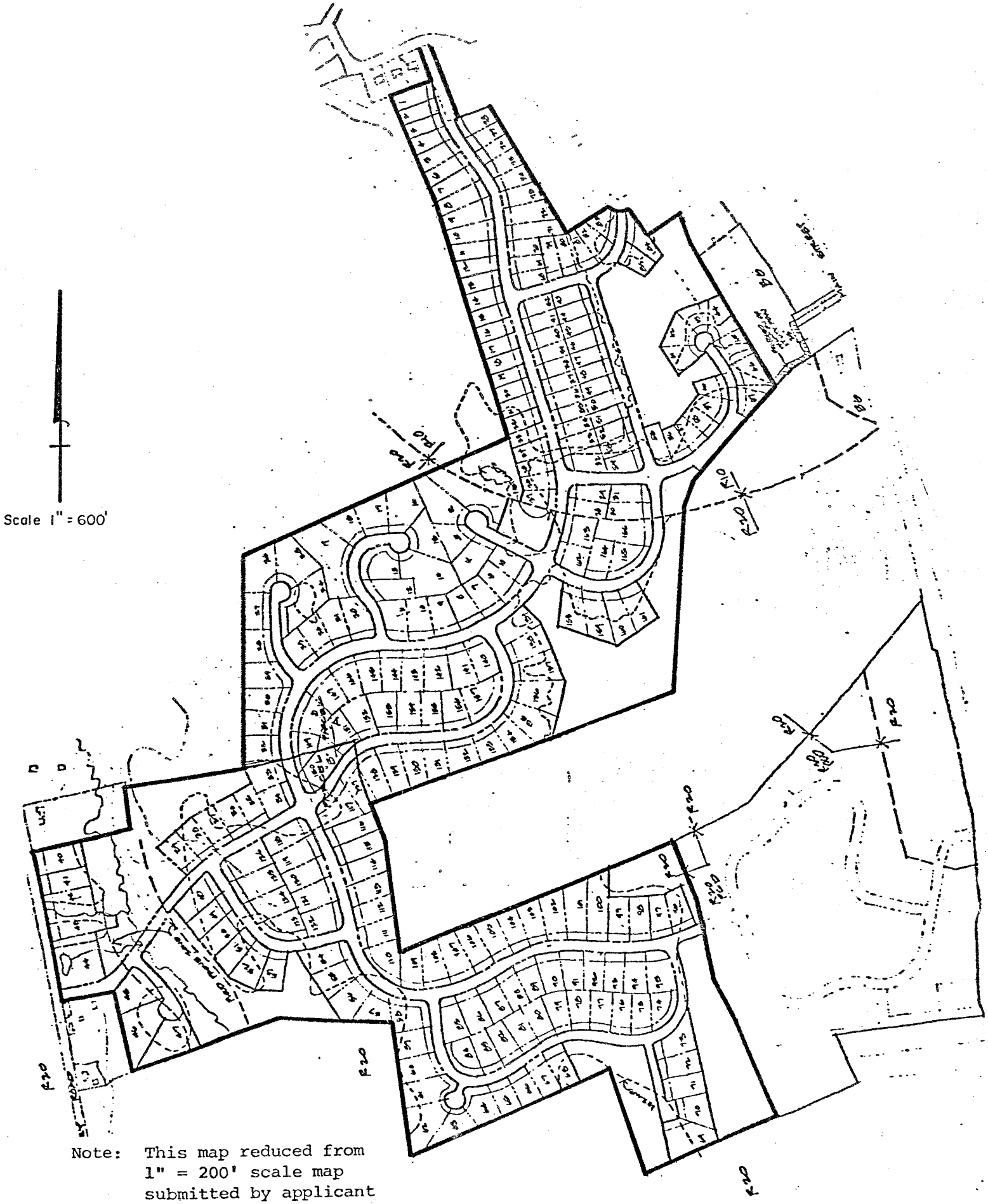
Scale 1" = 1000'

Figure 2
SITE PLAN A - CLUSTER PROPOSAL



Note: This map reduced from 1" = 200' scale map submitted by applicant

Figure 3
SITE PLAN B- CONVENTIONAL PLAN



Note: This map reduced from 1" = 200' scale map submitted by applicant

Arthur Cross	District Conservationist	U.S.D.A. Soil Conservation Service
Larry Johnson	Planner	CT Office of Policy and Management
Paul Rothbart	Wildlife Biologist	CT Department of Environmental Protection
Ralph Scarpino	Forester	CT Department of Environmental Protection
William Warzecha	Geohydrologist	CT Department of Environmental Protection

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 site plan, and a topographic map of the area. The day of the field review, the ERT met with representatives from the Town of Watertown and investigated the study area. 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 the landowner/developer. It is hoped the information contained in this report will assist the Town of Watertown 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, Sackett Hill Road, Warren, CT 06754.

* * * * *

III. TOPOGRAPHY

The "High Meadows" site consists of an irregularly shaped parcel of land ± 178.8 acres in size. As shown in Figure 1, the topography of the parcel is diverse and varies from steep to gently rolling in areas. The land surface in the central portions of the site rises steeply to the top of a bedrock controlled hill. This portion of the property contains numerous bedrock outcrops. Slopes are also moderate to steep in the northern and northcentral portions of the site. Maximum and minimum elevations on the property are 800 and 540 feet above mean sea level, respectively.

Approximately 44 acres or ± 26 percent of the site has been identified as inland-wetlands. This is based on the Soil Survey of Litchfield County published by the U.S. Department of Agriculture, Soil Conservation Service (see Appendix).

The parcel contains two perennial streams and several small intermittent streams. The perennial streams include Wattles Brook, which flows through wetlands in the western limits of the site and an unnamed stream, which flows in a northerly direction for about 500 feet along the eastern limits of the property.

IV. GEOLOGY

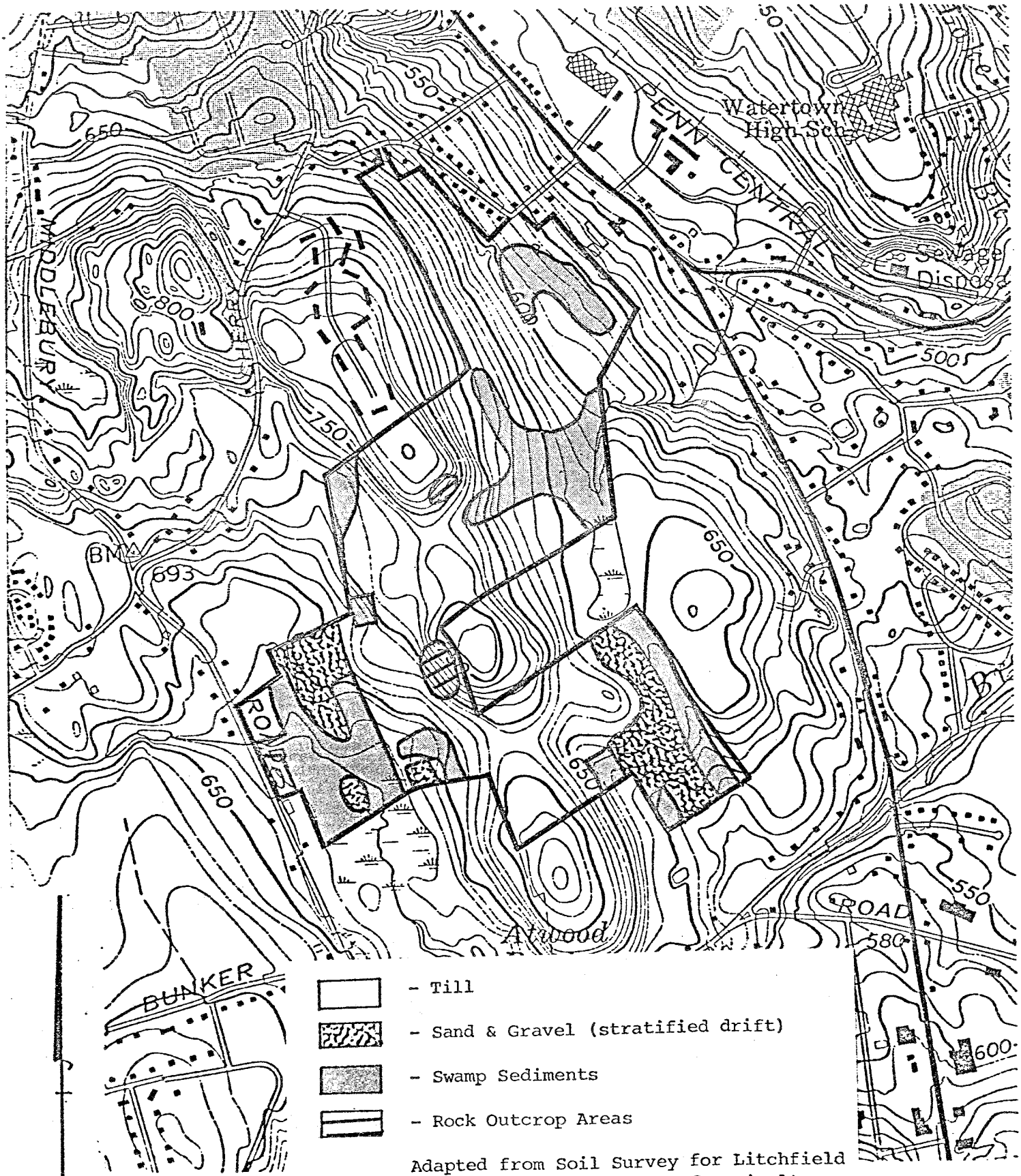
The "High Meadows" property is located entirely within the Waterbury topographic quadrangle. A bedrock geologic map (QR-22) by Robert M. Gates and Charles W. Martin for the quadrangle has been published by the Connecticut Geological and Natural History Survey. For the purposes of this report, the "Preliminary Bedrock Geologic Map of Connecticut" by John Rodgers was also referenced. No surficial geologic map has been published for the quadrangle to date.

The bedrock underlying or cropping out on the "High Meadows" site appears to consist largely of a quartz-mica-feldspar gneiss. Essential minerals in the rock are quartz, oligoclase, biotite, muscovite and garnet. Other minerals include staurolite and kyanite or sillimanite. The term "gneiss" refers to a crystalline rock in which very thin bands of elongate minerals (micas) alternate with bands of minerals (quartz and feldspar) having a rounder or blockier shape.

Bedrock outcrops are visible mainly in the central portion of the parcel. These areas are designated by the symbols HrC (Hollis) and Sh (Shapleigh) on the accompanying soils map (see Appendix) which indicates areas where bedrock is at or near the surface of the ground. Bedrock is also exposed on the slope of the hill which rises towards the "High Gate" condominium site in the north-central part of the site. It appears heavy equipment may have stripped the thin soil cover in this area down to the underlying bedrock. Figure 4 shows the approximate rock outcrop locations.

Almost all of the unconsolidated materials overlying bedrock on the property are of glacial origin. Till, which predominates on the site, consists of rock particles and fragments of various shapes and sizes. These sediments were deposited directly by glacier ice, which formerly occupied the area. Because the till was not reworked by meltwater streams, it is generally non-sorted

Figure 4
SURFICIAL GEOLOGIC MAP



Adapted from Soil Survey for Litchfield County, CT. U.S. Dept. of Agriculture, Soil Conservation District

and non-stratified. The texture of till is generally sandy and loose in the upper few feet; however, at depth it becomes siltier and more compact. Because of its compact texture at depth, groundwater movement through till is usually slow and excavation with hand tools may be difficult. Thicknesses of till deposits are quite variable, ranging from non-existent in rock outcrop areas to probably not more than 10 feet throughout the other areas it covers on the site.

Sand and gravel deposits (stratified drift) are sediments that were laid down by meltwater streams from glacier ice. These sediments were deposited mainly in the valley through which Wattles Brook flows and also in the southeast section of the parcel. These deposits are designated as Hinckley (Hkc) and Merrimac (My) soils on the accompanying soils map (see Appendix). Thicknesses of stratified drift within the site are probably not much more than 10 feet.

In scattered areas throughout the site till, stratified drift or bedrock is overlain by swamp deposits. Swamp sediments consist mainly of partly decomposed organic matter mixed with sand, silt and clay.

Geologic Development Concerns

Despite the fact that the property will be served by public sewers and water supply, which eliminates the need for on site septic systems and wells, there are limiting geologic factors on the site which may pose a problem with regard to developing the site as a residential subdivision. The most limiting geologic factors on the site include: (1) areas where bedrock is at, or is relatively close to, the ground surface in the central portions of the site; (2) the presence of moderate to steep slopes in the northern and northcentral sections of the site; and (3) the presence of wetlands scattered throughout the property. In addition, wetness and frost action may be encountered with some of the till-based soils. This will weigh heaviest in the construction of roads, driveways and building foundations.

In areas where bedrock is at or near the surface of the ground, there certainly appears to be a chance that blasting will be necessary whether for the construction of roads, building foundations, or for the creation of trenches for public water and sewer lines.

Usually in areas where slopes exceed 15 percent, conditions become hazardous for heavy equipment and also require considerable grading. Because the potential for serious erosion problems is high in these areas, particularly if blasting is required, it is recommended that a comprehensive erosion and sediment control plan be formulated and followed closely with implementation of the project.

Wetland areas serve many important hydrological functions. Some of these functions include: (1) serving as important flood and stormwater retention areas, which reduces downstream flood flows during winter/spring thaws and during heavy precipitation; (2) the change of surface water quality through biochemical processes, often resulting in cleaner water; and (3) trapping sediments from upstream areas. In addition to other hydrological functions, wetlands also benefit wildlife by providing valuable habitat. Based on the site plans submitted to Team members, it appears that development under either of the proposals (i.e., conventional subdivision or planned community develop-

ment) would infringe upon wetlands, particularly in the eastern and western limits of the site. As a result, wetland filling and/or modification may be required, whether for building construction, driveways or road crossings. Wetland filling and modifications should be avoided where possible. However, in some instances a small amount of wetland filling may be necessary and justifiable (e.g., wetland filling for a road crossing). From a hydrological standpoint, it is often difficult to assess the risks involved in permitting a portion of a wetland area to be filled. For example, an isolated act of filling may not significantly impact the hydrological functions of a wetland. However, a series of fills or the filling in of a signifcant portion of a wetland on the site could lead to substantial detriment such as flooding and potential erosion. It is therefore recommended that if any wetland filling or modification is proposed under this project that the developer first submit a detailed analysis of the potential effects of the modification together with a detailed plan of the proposed project for review by appropriate town officials. It should be noted that it is particularly important to properly size and place culverts where roads or driveways cross wetlands areas.

Some of the limitations mentioned above may be overcome with proper engineering and planning or simply by avoiding the problem areas altogether. It seems likely that the latter might be more easily accomplished by developing the site under the cluster development (PCD) concept. The cluster concept would allow the developer to leave poorly suited areas undeveloped. Areas left undeveloped, such as rock outcrop areas and wetlands could be left as open space or for recreational purposes. Also, if wetlands were not disrupted, their ability to store surface water during periods of heavy rains or during spring/winter thaws would not be reduced.

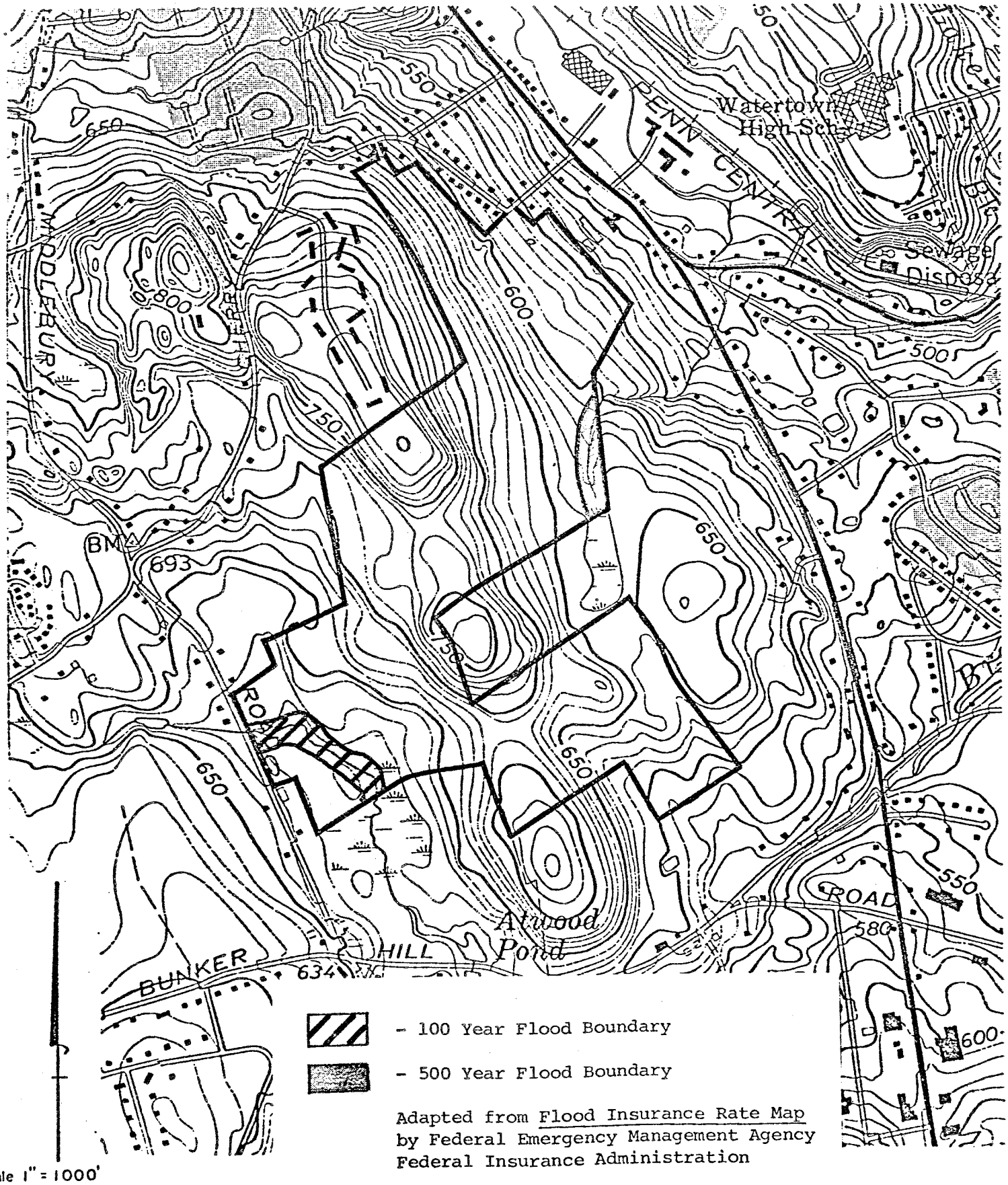
On the other hand, if the parcel is developed under the conventional subdivision plan, it appears that the geology and topography in some areas (i.e., wetland areas, rock outcrop areas, steep slopes) would not be conducive to the high density development presently proposed.

Flood Prone Areas

A Flood Insurance Study was conducted by the Federal Emergency Management Agency/Federal Insurance Administration for the Town of Watertown. This study includes maps which identify areas throughout the Town that are subject to flooding during the 100 and 500 year storms. A '100' year flood is a flood with a one chance in 100 or 1% chance that it will happen in any year. A '500' year flood would have a one chance in 500 or 0.2% chance of occuring in any given year. It should be pointed out that this does not mean a flood of the magnitudes mentioned above will occur only once in a 100 or 500 year period. The probability of occurence remains the same each year regardless of what happened the year before.

A '100' year flood boundary lies along Wattles Brook in the western portion of the site and includes most the wetlands which accompany the Brook. A '500' year flood boundary lies along the unnamed watercourse which flows through the eastern limits of the site. Based on the map, there are no other areas identified within the parcel which would be subject to flooding during the 100 or 500 year storm. However, there may be swampy or topographically low-lying areas within the site that may be subject to wetness and perhaps some flooding during periods of particularly heavy rains. One such area, observed the day of the review, is located in the north/central portion of the site.

Figure 5
FLOOD BOUNDARY MAP



Development within these flood boundaries should be discouraged. If development does occur, it must be in compliance with all applicable state and local requirements.

V. HYDROLOGY

Surface runoff in the western half of the property flows into Wattles Brook. Wattles Brook traverses this section of the site in a southeasterly direction enroute to Atwood Pond. Approximately 26 acres of the parcel in the southeastern corner drains in a south to southeasterly direction into Wattles Brook, also. The remaining portions of the property are drained either by an unnamed watercourse which flows northerly along the eastern limits of the site or by sheet flow into another unnamed tributary to a watercourse which parallels Rtes. 63 and 73. This latter watercourse ultimately discharges into Pin Shop Pond, west of the site.

Construction of the subdivision under either of the proposals will lead to increases in runoff from the site, which in turn may potentially increase the peak flows in the streams mentioned above. The increase in runoff will result mostly from the creation of the impervious surfaces (i.e., roof tops, driveways, access roads, parking areas, etc.) that will be placed on the property.

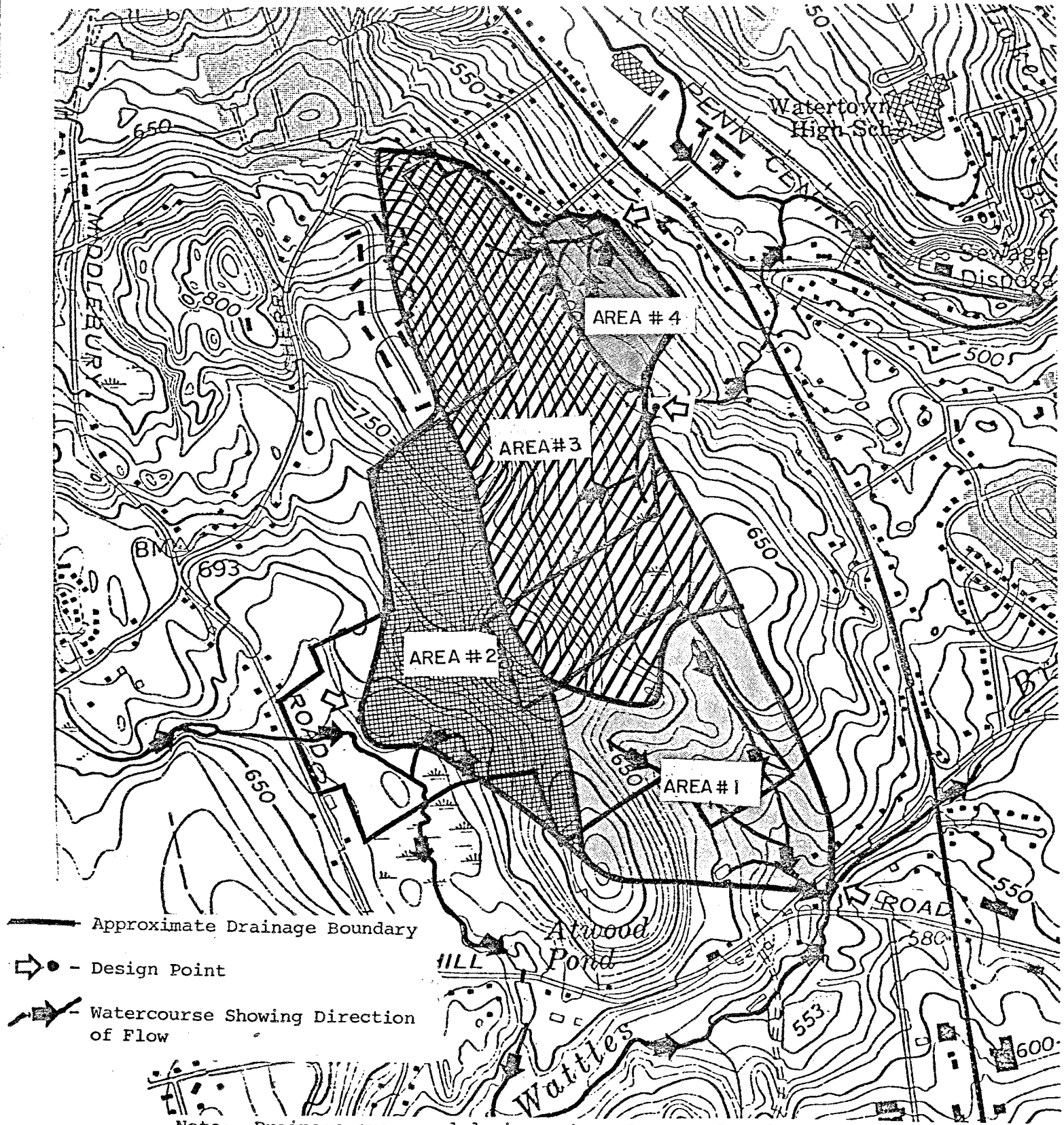
Although the subdivision plan was not, by itself, sufficient to allow the determination of the effects from stormwater routing, an estimate may be made of the runoff change likely to occur from land use modification alone. A simplified version of Technical Release No. 55 of the USDA Soil Conservation Service provides a technique which the Team's geohydrologist used in formulating the estimates. This method involves the determination of "runoff curve numbers" which relate amounts of precipitation to amounts of runoff. It takes into consideration the vegetative cover, land use, slopes as well as other factors.

For the purposes of analyzing the runoff changes likely to occur under either proposal, drainage areas within the parcel were broken down into four areas. These areas are delineated in Figure 6. It is assumed that the project engineer for the development will break the drainage areas down similarly when addressing pre- and post runoff changes, although he or she may address it altogether differently. Each drainage area is based upon a particular point of outlfow and shows all the land from which surface runoff ultimately reaches that point.

It should be noted that the drainage areas and design points shown in Figure 6 do not, for the most part, follow natural conditions. Rather these drainage areas and design points were drawn based on how runoff is presumed to be collected and discharged with implementation of the project.

It should also be noted that a small portion of the property between Wattles Brook and Middlebury Road in the western portion was not included in a drainage area. The reason being is that no development is proposed in this area under the cluster type development. Based on the conventional subdivision plan, eight one-half acre lots are proposed in this area. If the property was developed under the conventional subdivision plan, runoff increase and potential peak flows to Wattles Brook in this area should be addressed by the

Figure 6
DRAINAGE BOUNDARY MAP



Note: Drainage areas and design points do not, for the most part, follow natural conditions. Rather, these drainage areas and esign points were drawn based on how runoff is presumed to be collected and discharged with implementation of the project.

TABLE 1. RUNOFF INCREASES ESTIMATED UNDER THE CONVENTIONAL SUBDIVISION PLAN AND THE CLUSTER SUBDIVISION PLAN

(ALL ESTIMATES RECORDED IN INCHES, CURVE NUMBER IS SHOWN IN PARENTHESIS FOR EACH DRAINAGE AREA UNDER EXISTING OR PROPOSED LANDUSE)

DRAINAGE AREA #1	10-year storm	25-year storm	50-year storm	100-year storm
Under existing conditions Curve number (57)	.95"	1.37"	1.80"	2.31"
Under conventional subdivision plan (R-20) Curve number (71)	1.89"	2.50"	3.06"	3.72"
Percent increase	99%	82%	70%	61%
Under cluster type subdivision plan Curve number (63)	1.32"	1.83"	2.32"	2.91"
Percent increase	40%	34%	29%	26%
DRAINAGE AREA #2				
Under existing conditions Curve number (53)	.7"	1.00"	1.4"	1.9"
Under conventional type subdivision (R-20) Curve number (68)	1.67"	2.24"	2.78"	3.41"
Percent increase	138%	124%	99%	79%
Under cluster type subdivision plan Curve number (62)	1.26"	1.74"	2.23"	2.8"
Percent increase	80%	74%	59%	47%

TABLE 1. continued

DRAINAGE AREA #3				
Under existing conditions Curve number (61)	1.19"	1.68"	2.14"	2.70"
Under conventional subdivision plan (R-10/R-20) Curve number (76)	2.29"	2.95"	3.55"	4.26"
Percent increase	92%	75%	66%	58%
Under cluster type subdivision plan Curve number (65)	1.45"	1.99"	2.50"	3.10"
Percent increase	22%	18%	17%	15%
DRAINAGE AREA #4				
Under existing conditions Curve number (70)	1.81"	2.41"	2.96"	3.61"
Under conventional subdivision (R-10) Curve number (83)	2.91"	3.63"	4.28"	5.02"
Percent increase	61%	51%	45%	39%
Under cluster type subdivision plan Curve number (72)	1.97"	2.59"	3.16"	3.83"
Percent increase	9%	7.5%	7%	6%

project engineer. It is possible that increased runoff from this area could be compensated for when designing detention basins for Drainage Area 2 (see Figure 6).

The results of the runoff calculations performed by the Team's geohydrologist are shown in an accompanying table. It should be noted that these runoff amounts are only estimates and should not be used as exact data for any engineering design purposes. As indicated by the tables, post development runoff increases are significant under either of the proposals. This is mainly due to the proposed high intensity type development. It must be pointed out that these calculations were based on the density shown on the site plans for each proposal. If the density was lowered, the changes in runoff would probably be reduced. In comparing the percent increases, it appears that the cluster type subdivision would have a hydrologic edge over the conventional subdivision. The increases noted are significant and underscore the importance of judicious stormwater management on the site. Because of the expected increases in runoff from the site and because the Town of Watertown requires that off site flows following development be maintained at present levels, it is recommended that the applicant be required to submit detailed hydrological information prior to subdivision approval. This information should include pre- and post development runoff from the site. All estimates should be provided for a 10, 25, 50 and 100 year design. In addition, a plan for stormwater routing should be included with the final subdivision plan, and the effects of the development on downstream culverts and flood prone areas addressed.

Based on the site plans submitted to Team members, stormwater detention basins are proposed at various points throughout the site. Detailed design specifications for all stormwater detention basins should be submitted and reviewed by the appropriate town officials. Rather than locate detention basins in wetlands which have some capacity for natural stormwater detention, the ponds should be constructed on upland type soils. This will minimize wetland impacts while providing the desired detention pond area.

VI. SOILS

A. Soils and Proposed Land Use

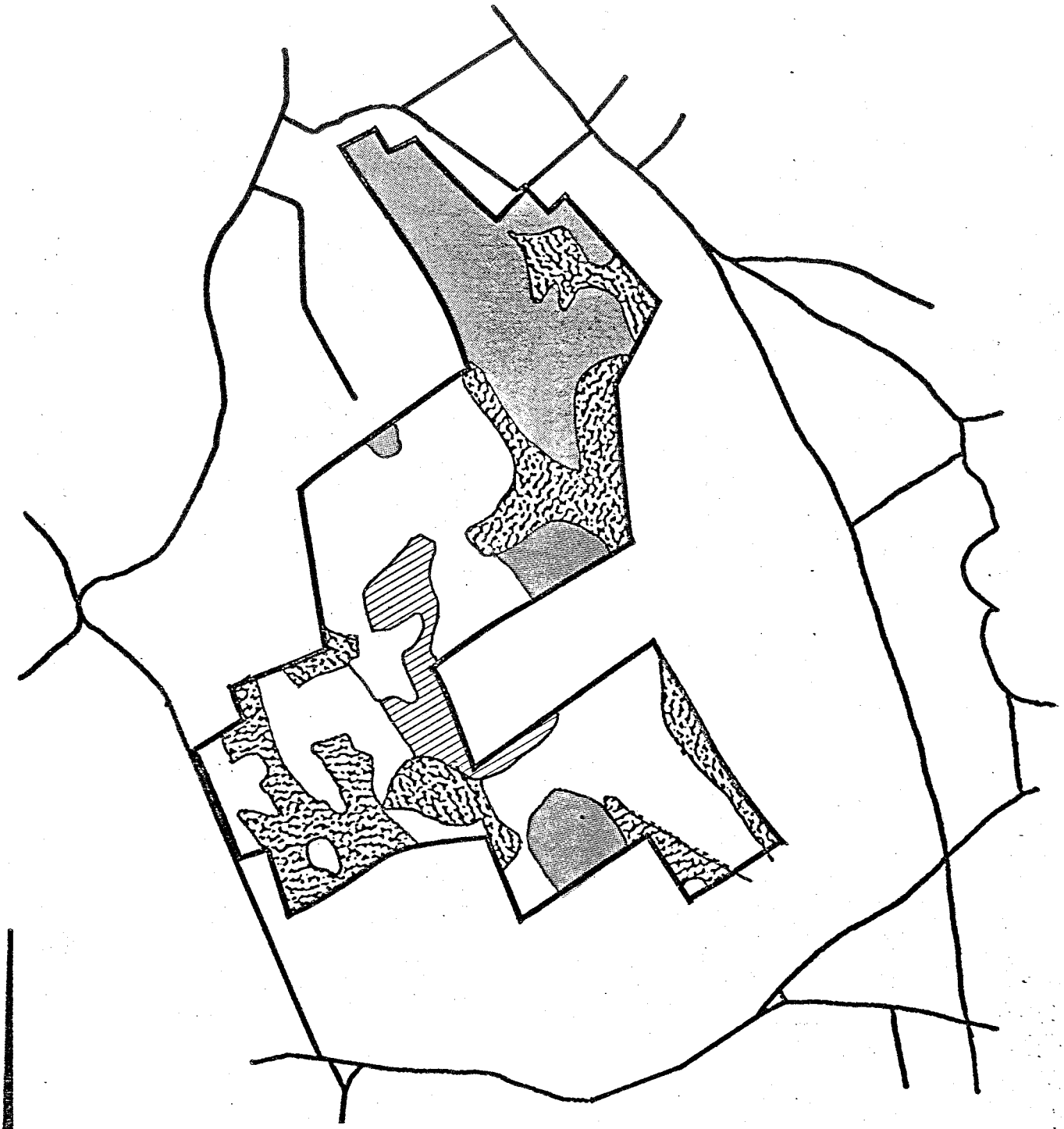
A Soils Map of the subject site is presented in the Appendix of this report. This Appendix also contains a Soils Limitation Chart which describes the limitations of the various soils for alternate land uses. By comparing the Soils Map with the Limitation Chart, the general suitability of the various soils for residential development can be noted.

For the purposes of this report, the soils on the site can be divided into four categories (see Figure 7). These include: hardpan soils, non-hardpan soils, shallow to bedrock soils, and inland wetland soils. The limitations and potential of these various soils is discussed below.

1) Hardpan Soils (these include the Paxton and Woodbridge soils with the following map symbols: PbB, PbC, PbD, PeC, WxB, WyC, and WzC).

As shown in Figure 7, these soils are located primarily in the northeasternmost ± 50 acres of the property. Over half of this area is on slopes of

Figure 7
GENERAL SOILS MAP



SCALE 1" = 1000'

LEGEND

- Hardpan Soils
- Non-Hardpan Soils
- Inland Wetlands
- Shallow to Bedrock Soils

12-19%. In order to construct roads and homes or condominiums, with or without basements, cutting and filling will be necessary. Earthen cuts will expose water seepage layers (i.e., layers where water seeps downhill on top of the hardpan). Furthermore, in these hardpan soils, subsurface drainage measures such as footing drains, curtain drains, and road drains will be necessary to prevent wet basements, heaving of roads and drives, slippage of cut banks, and winter icing of roads. It should be noted that there are considerably more roads proposed for the conventional plan than there are for the cluster proposal.

2) Non-hardpan soils (these include the Charlton, Gloucester, Hinckley, Merrimac, Sutton, and Tisbury-Sudbury soils with the following map symbols: CaB, CaC, CaC2, CaD, CrC, CrD, GaC, GbB, GbC, GeE, HkC, MyB, MyC, SwB, SxC and TwA).

These soils are located westerly and southerly of the ± 50 acre hardpan soil area. Slopes mainly range from 0-25%. With the exception of the Sutton and Tisbury-Sudbury soils, these soils are well to excessively well drained, and limitations for development vary from slight to severe depending on slope. (i.e., the greater the slope, the more severe the limitation).

The Sutton and Tisbury-Sudbury soils have severe limitations for development due to seasonal high water tables. In these areas, drainage measures such as footing and curtain drains are necessary to lower water tables to prevent wet basements, heaving of roads and drives, etc. The soil limitation chart (see Appendix) shows other specific limitations such as large stones for these soils.

3) Shallow to bedrock soils (these include the Hollis and Shapleigh soils with the following map symbols: HrC and SkE). Within the Hollis soil areas, slopes are generally less than 8%. Although deeper pockets of soil may occasionally be found, limitations are mostly severe throughout the areas due to shallowness to bedrock (i.e., bedrock is within 2 feet of the soil surface in most places). The Shapleigh soil area is, in addition to being extremely rocky, very steep (25% slope or greater). It would be best to leave it in its natural state (i.e., woodland). It should be noted that development of this area is indicated on both the proposed "conventional plan" and the "cluster proposal".

4) Inland Wetland soils (these include the following soils: Leicester-Ridgebury-Whitman (soil map symbol Lg), Peat and Muck (soil map symbol Pk), Ridgebury (soil map symbol Rd) and Scarboro (soil map symbol Sf). These inland wetland soils comprise an area of ± 44 acres on this site.

Wattles Brook and associated wetlands are located in the southwestern corner of the property. The 100 year floodway, on the National Flood Insurance Maps, is shown as being 200-300 feet wide from Middlebury Road to where the brook leaves the property.

The "conventional plan" proposes houselots and more roadway within the 100 year floodway and wetland soils than does the "cluster proposal". The proposed entrance road off of Middlebury Road would have much less wetland and 100 year floodway to cross and contend with if it were located ± 650' north of its proposed entranceway.

In general, there are more lots shown within or partly within inland wetland soils on the "conventional plan" than on the "cluster proposal". Both

proposals do not appear to recognize the eastern flowing, intermittent stream that is located in the approximate middle of the property. This stream is tributary to Steele Brook.

Figure 8 of this report indicates the most limited soil areas for development purposes. Serious consideration should be given to avoiding these areas in project design.

Open Space Land/Recreation Land -

The "conventional plan" proposes very little open space land other than wetland soil areas.

The "cluster proposal", in addition to swimming and tennis areas, provides other open space areas (other than wetland soil areas) which have potential for recreational activities such as hiking and jogging, tobogganing, etc.

Some rearrangement of proposed tennis courts, etc., may be necessary, if wetland soil areas are to be avoided.

Erosion and Sediment Controls -

With implementation of either plan, the development should be done in sections and follow a strict erosion and sediment control plan. Properly located sediment basins, installed before earth moving begins, in combination with earthen diversions, waterways, hay bale checks, filter fences, etc. can keep erosion to a minimum, and sediment on site. The Litchfield County Conservation District has the expertise to assist the town or the applicant in the review of erosion and sediment control plans.

Storm Water Management -

Measures installed for erosion and sediment control can be used in the future for storm water management (e.g. earthen, grassed diversions and waterways; sediment basins can become storm water retention basins, etc.). Other measures that could be installed include concrete tanks beneath parking lots, vegetated ponding areas around parking lots, ground water recharge in well drained, non-hardpan soils and dry land, grassed retention basins.

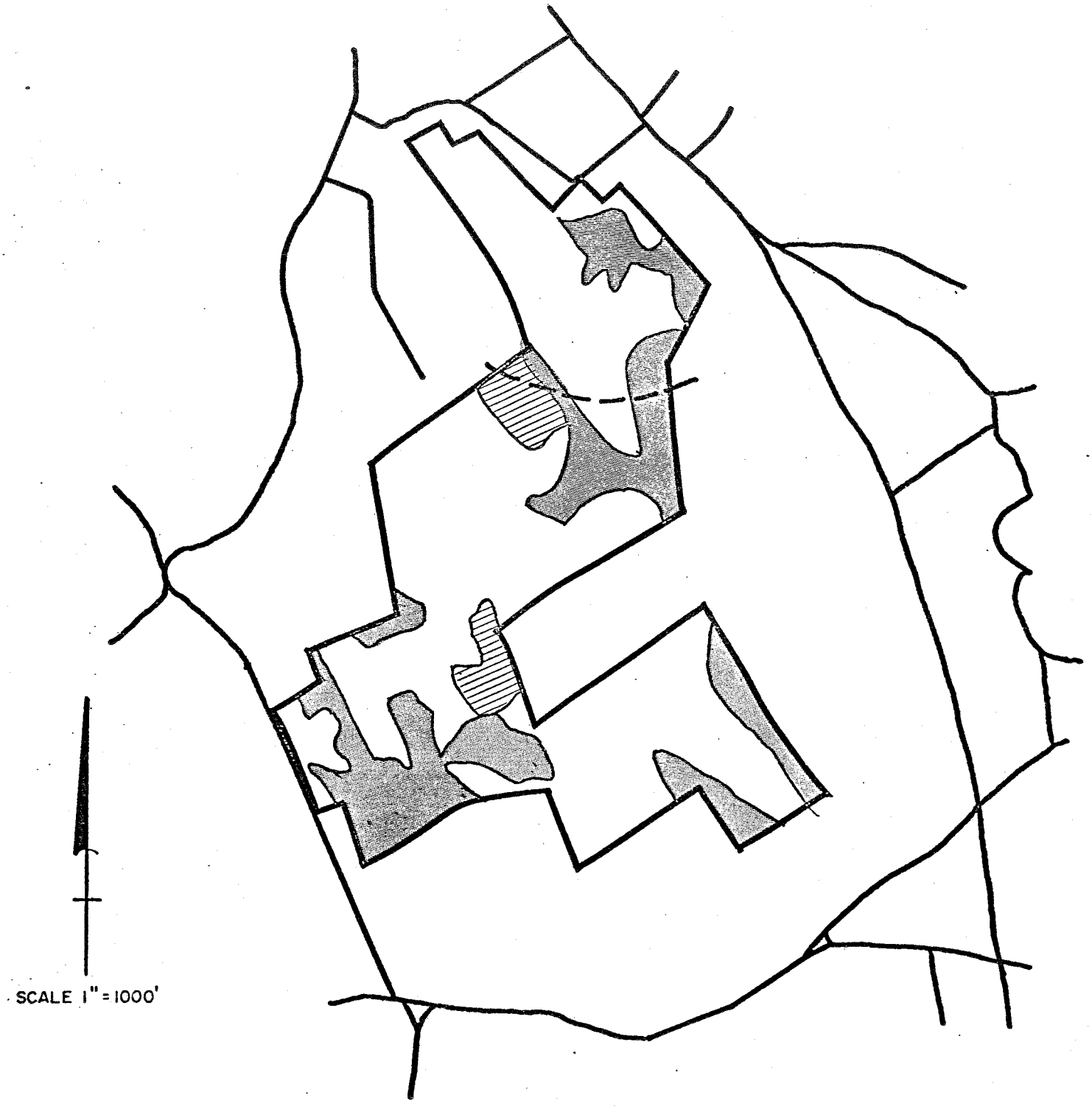
Prime and Important Farmland -

The following approximate acreages of prime and important farmland soils would be lost to development under either proposal:

	Prime Farmland Soils	Important Farmland Soils
Active Farmland (Corn and Vegetables)	7	3.6
Inactive Farmland (In Woodland or shrubs, weeds, etc.)	30	12
	37	15.6

The impact of such a loss of prime and important farmland soils may or may not be significant to the Town. This impact could only be determined

Figure 8
CRITICAL SOIL AREAS



= R-10/R-20 Zone Line (R-10 North of Line, R-20 South of Line)

= Inland Wetland Soils (As per Soil Survey, Litchfield County, 1970)

= Slopes over 25% (Some Shallow to Bedrock)

through a separate study of Watertown's available agricultural lands. Such a study could stem from local interest and needs, and result in a town-wide agricultural land preservation program.

VI. VEGETATION

The vegetation at the High Meadows site consists of mixed hardwood forest, old fields, and open agricultural fields. The various vegetation stands are shown in Figure 9 and discussed below.

In a commercial sense, the value of the wood in the mixed hardwood stands is not high. The forest does however play a key role in other community amenities such as aesthetics, providing a diversified wildlife habitat, and enhancing the water holding capacity of the landscape. As more land becomes developed, these characteristics become increasingly more important.

Vegetative Type Descriptions (refer to Figure 9)

Areas labelled 1-5 are in varying stages of old field succession. Differences exist due to varying moisture conditions and how long ago the field/pasture was abandoned.

Area #1, Old Field. A variety of vegetation exists in this area. The northern most section is practically impenetrable due to heavy concentrations of multiflora rose. Accompanying the rose is barberry, as well as red maple and ash seedlings and scattered dogwood. The eastern section of Area #1 tends to be wet and several drainages traverse the area. Heavy concentrations of grey and red ozier dogwood exist along with smooth and staghorn sumac, multiflora rose, crabapple, hawthorn and some alder. The higher ground in area 1 is more open and dominated by grasses. Other species present include red cedar, hawthorn, crabapple, sumac and dogwood.

Area #2, Old Field. This was probably a drier section of area 6 until much of the wood was removed in an apparent cordwood cut. Tree species include birch, red maple, hickory, and scattered oak.

Area #3, Old Field. This area is dominated by a wide variety of grasses. It appears as though the topsoil was stripped from here and the resulting vegetation is primarily "poverty" grasses.

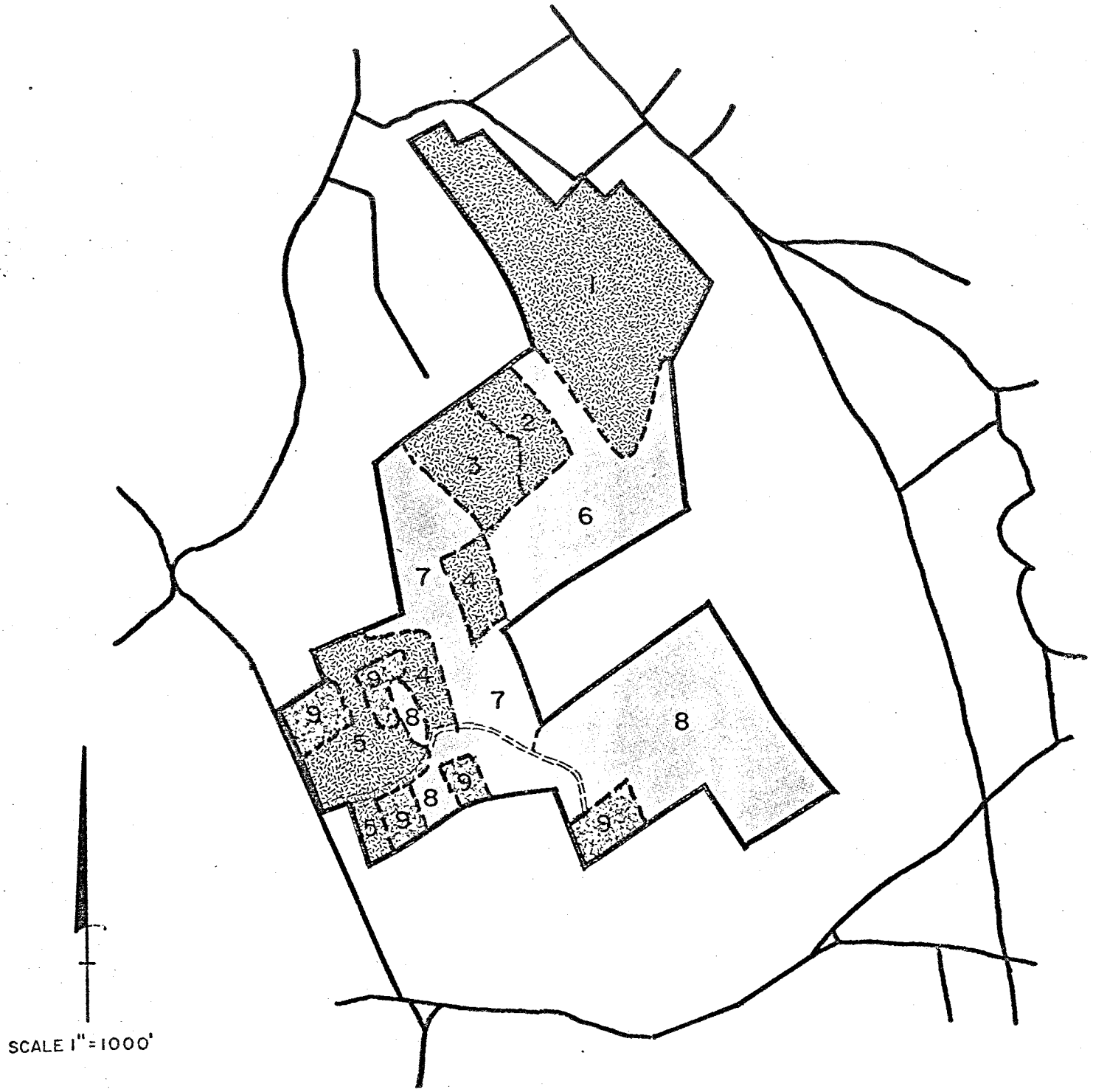
Area #4, Old Field. This area is more typical of "old field" growth than the preceding two areas. Species include red cedar, grey and red ozier dogwood, saplings of ash and red maple as well as scattered clumps of sumac.

Area #5, Old Field. This area is extremely wet and includes both dense stands of red maple swamp and open wetlands of sedges and grasses.

Area #6, Mixed Hardwood Forest. This is a small sawtimber to pole size stand of mixed hardwoods. Primary species include red maple, birch and scattered elm. Drier pockets within this area contain black and red oak and hickory.

Area #7, Mixed Hardwood Forest. This area is dominated by the oak/hickory group. Much of this area is steep with ledge outcrops. Tree growth is restricted due to the shallow soils. Primary species include red and black oak,

Figure 9
VEGETATION TYPE MAP



KEY

= Open Agricultural Fields

= Old Fields

= Mixed Hardwood Forest

Note: See text for specific stand descriptions.

hickory, black birch, red and sugar maple.

Area #8, Mixed Hardwood Forest. Primary species in this area include red oak, the birches, maples and white ash. Some of the northern portions of this stand had much of the commercial timber removed. The residual forest here is made up of poorly formed pole sized timber.

Area #9, Open Agricultural Field. These fields are currently being managed for hay or corn.

Impact of Project on Vegetation

Both site proposals will significantly alter the vegetation cover on the site. Site plan "A" (i.e., the cluster development) will probably have less actual site disturbance than plan "B". The "undeveloped" land in the cluster development won't leave much opportunity for outdoor recreational pursuits as much of this land is wetland and portions are to be used for stormwater runoff control. The 150' buffer strip under the cluster proposal will provide some buffer for urban wildlife, aesthetics and water retention.

Management Considerations

As indicated above, much of the existing vegetation will not be present after this parcel is developed. Wherever feasible, however, efforts should be taken to retain existing vegetation. This is especially important in sensitive areas such as wetlands and ledge outcrop areas. Not only are these areas harder to develop but they are harder to "naturally" landscape. Clumps of vegetation are more desirable than individual stems, as this lowers the possibility of soil disturbance and mechanical injury to the trees. Scattered clumps of natural forest in a variety of sizes and shapes can help keep the landscape attractive. These islands can add beauty to such a development as well as attract urban forms of wildlife.

Trees which are presently unhealthy and not growing vigorously due to overcrowded conditions are most susceptible to further degradation from environmental stresses brought on by development as well as disease, insect infestation and adverse weather conditions. It would be desirable to remove undesirable trees, therefore reducing competition for sunlight, nutrients and water between the residual stems. This improvement thinning can be done even on a small scale (such as clumps) and is designed, over time, to allow residual trees to improve in health, vigor, quality and stability. These thinnings when applied properly can improve the aesthetics value of an area, improve tree health and vigor, improve wildlife habitat, and provide wood products.

Additional landscaping is generally best done by planting native trees and shrubs that are adaptable to the area and can compliment existing trees and shrubs. Berry producing shrubs intermixed with conifers can add to the wildlife habitat and scenery.

Any forest cutting whether it is done for thinnings, unit sites, or for roadways, should be done to take advantage of the high demand for wood products. Firewood will be the main product and is highly sought after. The proper marketing of this product should be a concern and should be planned for.

A public service forester or a private forester may be of assistance in either on the ground planning or the marketing of the wood products.

Rare or Endangered Species

The Natural Diversity Data Base of the Connecticut Department of Environmental Protection does not have any records of rare, endangered, or threatened species at the subject site. However, a detailed biological investigation of the site would be desirable as the area does have potential habitat for such species. The Natural Diversity Data Base would be interested in the findings of any such biologic field investigation, as it would allow them to add to their baseline data.

VII. WILDLIFE

Presently the "High Meadows" site (± 178 acres) may be divided into three major wildlife habitat types. These are openland, mixed hardwoods, and wetlands. Two perennial streams associated with the wetlands are present on the site.

Openland

This habitat type consists of several naturally reverting fields. Vegetation consists of sumac, dogwoods, birch, aspen, crabapple, bayberry, barberry, alder, bittersweet, multiflora rose, cedar, and various herbaceous species. The mixture of cover and fruit producing species make these areas extremely valuable to numerous wildlife species. One cornfield was also located on the property.

Wildlife typically utilizing such sites include deer, fox, cottontails, skunk, song sparrows, rufous-sided towhees, mourning doves, and hawks.

Mixed Hardwoods

This habitat type consists of several young woodlots previously agricultural fields, as well as more mature mixed hardwood stands. Species composition consisted of maple, oak, ash, and black birch. Understory vegetation included barberry, bittersweet, and various herbaceous species.

Wildlife frequenting such sites include deer, fox, skunk, opposum, numerous song birds, and amphibians and reptiles.

Wetlands

The wetland sites are a mixed hardwood/shrub type dominated by red maple and red-osier dogwood. There are two perennial streams associated with the wetland areas.

Wildlife utilizing such areas include songbirds, cottontails, deer, woodcock, raccoon, skunk, and numerous amphibians and reptiles.

Discussion

If the site is developed as planned, there will be an immediate negative impact on wildlife. The primary impact would be a direct loss of habitat due to roads, buildings, driveways, recreational facilities, and walkways. Another impact would be a change in habitat where forest and fields are cleared for lawns. A third impact will be the increased human presence, vehicular traffic,

and number of roaming cats and dogs. This will drive the less tolerant (shy) wildlife species from the site, even in areas where it has not been physically changed.

A number of measures can be implemented to minimize the adverse impacts of the project on wildlife. When developing the road and walkway networks every effort should be taken to keep erosion (silt) out of the remaining wetlands. Culverts should have devices installed to discourage beavers. Retention impoundments could possibly be designed to benefit waterfowl. Beaver nuisance control devices should be installed at impoundments. Subdivision design along the concept of cluster development would reduce negative impacts on wildlife, since more openspace would remain.

To actively encourage wildlife at the site one could:

1. Plant perennial vegetation beneficial to wildlife for food and cover.

2. Leave as many snag/den trees as possible throughout the forest lands (5 to 7/acre) for cavity nesting wildlife.

3. Exceptionally tall trees are utilized by nesting raptors and should be encouraged.

4. Mast trees (oak, hickory, beech) are food sources for a large variety of wildlife and should be encouraged.

5. Trees with vines (produce berries) should be encouraged.

6. Any impoundments could have control structures designed to regulate water levels favorable for waterfowl. Beaver control structures should be installed.

7. Leave buffer strips (50 to 100 feet) of natural vegetation along wetland areas to help filter and trap silt and sediments which might otherwise reach the wetland areas.

To conclude, the proposed project will negatively impact existing wildlife populations. However, the project can be expected to attract more urban adapted wildlife species to the property (i.e., robins, house sparrows, raccoons, skunks).

If any further wildlife related assistance is required by either the town or the landowner/developer, the DEP's Western District Biologist is available at 485-0226.

VIII. PLANNING CONSIDERATIONS

A. Consistency With Existing Plans

The proposed condominium project is located to the west of Route 63 on 178.8 acres of land served by sewer and water. The project calls for 780 units in single family, townhouse and three-story garden apartment-like buildings. The property is presently zoned for single family units on 10,000 square foot (R-10) and 20,000 square foot (R-20) lots. The adjacent residential units are predominantly single family homes, with the exception of the Highgate Condominiums

to the northwest. The site has no direct access to Route 63. Access is available from Belden St., Middlebury Road and Oak Drive. The property has extensive areas with slopes of 15-20% and 20-40%, much of which has been proposed for buildings and roads. There are also extensive Inland Wetland areas and running watercourses. Another feature of the site is that much of it is on open, eastern slopes, and is visible from many other parts of Town. Its visual appearance and visual density should therefore be an important part of plan review at the town level.

The most recent Town Plan of Development, prepared in 1965 by Brian & Panico, proposes high residential density (4-6 units/acre) consisting of detached single family units served by sewer and water for the R-10 portion of the site. The R-20 portion is proposed for moderate density residential use (2-3 units/acre) consisting of single family homes with public water and on-site sewage disposal. While the proposed use is only 4.4 units per acre, the project appears too intense in the opinion of the Team's Planner given the natural limiting factors of the site (i.e., steep slopes, wetlands, high visibility). The use of three-story buildings containing 40 residential units and the related large paved parking lots is also not considered appropriate for this site in the opinion of the Team's Planner.

The State Plan of Conservation and Development, which sets policy for State funded projects, classifies this site for Long Term Urban Development. This would prevent the use of State funds to extend urban services into this area or to develop facilities at urban densities. There are no State funds involved in this project, however, so the Plan's recommendation is not binding. From the Town's point of view, in fact, there are advantages in the basic concept of the developer's cluster proposal. Townhouses could be developed on the site within the 2 to 4 units per acre density proposed in the Plan of Development, and with good design could have less visual and physical impact than a single family subdivision. Townhouses would also tend to return more taxes for services demanded than single family housing would.

B. Proposed Site Plan

The site has many areas of open gentle slopes along with slopes as steep as 40%. In an apparent effort to maximize the number of lots and/or units for both plans A and B (see Figures 2 and 3), many buildings and roads have been proposed on slopes in excess of 15%, and one road on the condominum plan goes across a 25% slope. Plan "A" places housing lots on this slope while Plan "B" takes a road across its steepest part. In the opinion of the Team's Planner, consideration should be given to restricting housing types to townhouses and single family units, and the road network should be revised to take houses and paved areas off of the steepest portions of the site.

Another concern which should be addressed is the limited access provided to the large, nearly landlocked parcel bounded by the project site and Route 63. While the cluster proposal provides a 50 foot right of way to this parcel, the conventional proposal does not. Consideration should be given to providing for future access to this area from the project site under either proposal.

C. Traffic Impact

The project does not have direct access to a State highway, but must still

be reviewed by the State Traffic Commission because it has more than 200 parking spaces and may impact traffic on State Routes 63 and 71. If the proposed 780 units of housing are built, as many as 4,050 trips per day could be generated by the project! Even more traffic could come from the site if one of the main roads were made a public through street. This estimate of traffic impact is based on the State Department of Transportation's estimate of 10.0 trips per day from a single family home and 5.1 trips per day from a condominium unit. The differences are probable due to fewer persons per unit in a condominium, including fewer school age children. The trips per day from an apartment unit is 6.1 according to planning standards. These traffic estimates count the departure to a destination and the return from that destination as separate trips. Even a project of 400 units would generate 2,040 trips per day according to these traffic generation rates.

Another concern is that even though there are three exits from the project, they do not offer good access to and from the site. The Town's subdivision regulations require a minimum right of way width of 50 feet for a local or private street, and a pavement width of 30 feet. If one of these streets were to be a thoroughfare, the right of way requirement is 60 feet, and the pavement width 40 feet. The project does not exit onto roads of this pavement width, and these existing roads are not without their own problems for heavy traffic.

The exit onto Belden St. is at a sharp right-angled corner, and Belden St. has only 27 feet of paved surface. The sharp turn gives good visibility on leaving the site, but presents poor visibility for traffic coming from around the corner to those coming up hill to enter the site. Belden St. is very steep and may pose problems during icy or wet weather. There may be a problem with traffic backing up on Belden St. and Route 63 during peak hours, and a traffic signal may be needed at their junction. Trumbull St., further down Belden, also provides steep access to Route 63. An additional complication is the location of a shopping center entrance with traffic signal about 100 feet to the north of Belden St. on Route 63.

The access onto Middlebury Road has good sight lines in both directions, but the pavement on Middlebury is only 20 feet wide in comparison to the 30 foot minimum required within the project, and many sections of Middlebury Rd. and Cherry Ave. had icy patches on them on the day of the ERT's field review, indicating poor drainage. One spot to the north of the access on Middlebury actually had a sign warning about the icy conditions. This would reduce the effective road width during winter months when there are icing problems. Going south on Middlebury does take one to Bunker Hill Road, which gives good access to Route 63. This would probably be a major route for project residents.

The third exit point is Oak Drive. The right of way here enters the road between two homes on the rear of the loop. The roads in this subdivision are very curvy, and the access onto Route 63 is very steep, with limited visibility north on Route 63. The foot of Oak Drive also had a large icy path on the day of the review. Another interesting point is that during the site review one of the Town officials suggested that the proposed project would serve to provide Oak Drive residents with an exit rather than allow project residents to use Oak Drive as an exit from the project. In any event, Oak Drive residents are bound to be concerned with the possibility of heavy traffic on their streets.

To conclude, there are serious concerns with regard to traffic for this project, and the Town should consider requiring a thorough study from a traffic

engineer. They should also consider implementing the provisions of Section 4.3.10(b) of the subdivision regulations which can require that the developer participate in upgrading roads affected by traffic from the proposed project or can allow the Town to stage development in pace with Town improvement of road capacity.

D. Sewer and Water Service

The developer's propose to serve each unit in the project with public sewer and water. As of this writing, they have not yet submitted their proposal to the Water and Sewer Authority for review. The Authority Superintendent informed the Team Planner that there was an interceptor along Steele Brook east of Main Street, and that they probably could handle the units in the project. He also stated that the system was designed for 3.2 units per acre, and that if more density were served, it could affect sewage flow along particular lines or limit additional development at other places. The project will require some pumping to serve units on the Middlebury Rd. side, and this will be a matter of concern for the Authority.

E. Police and Fire Protection

Although neither department had reviewed the proposal, both Police and Fire Chiefs had knowledge of the proposed development. The Fire Chief did not think that the development would overburden his department, and commented on the availability of fire hydrants as a result of the public sewer and water service. The Chief of Police, however, did think that there could be a problem for his patrols. He is asking for more department staff, but will do so regradless of what happens with this development. (Note: above comments based on telephone conversations with Team Planner).

F. School Impact

One of the major concerns with a development of this size is its impact on school enrollments. This depends upon the type of units built and the number of bedrooms per unit. Condominiums tend to have fewer children than single family housing, and 1 and 2 bedroom units tend to have fewer than 2 or more bedroom units. No data of this type was provided for the ERT's review. Watertown is predominantly a single family unit community. Based on the October, 1984 enrollment data from the Board of Education and the housing data from the 1980 Census, there are 0.48 school children for each occupied housing unit in town, and 1.73 students for each housing unit with school age children. These same ratios would produce an estimated 434 students from the Plan "B" proposal of 251 single family units (using the higher factor, since single family units tend to have more children) and 374 students from the Plan "A" proposal of 780 condominium units (using the lower factor). It should be noted that these estimates may be somewhat high because the student data is for established rather than new housing.

The developers have estimated their student population at 125 to 150 based on their experience with other condominium projects, and have requested an estimate of the impact of this many students from the Board of Education. The Board's Business Manager said that the school system could handle up to 250 students without experiencing capacity problems, but that additional teachers might be needed. This assumes that the students were evenly distributed among each grade. If they were concentrated in the elementary grades, however, school redistricting might be needed. There would be additional problems if this concentration occurred and the Town closed one of its elementary schools.

G. Solar Design Potential

Section 8-25(b) of the Connecticut General Statutes (PA 81-344) requires that passive solar heating be considered in reviewing a subdivision. This includes house orientation, street and lot layout, natural and man made topography and protection of solar access (i.e., prevention of shading solar collector areas). These requirements are covered in detail in: Passive Solar Design: A Planner's Guidebook, published by the Energy Division of the Connecticut Office of Policy and Management and the Central Naugatuck Valley Regional Planning Agency.

Portions of the "High Meadows" site do have potential for passive solar design. To assist the developer and the town in recognizing these areas, the Appendix of this report contains a "Passive Solar Design Checklist". This checklist has been prepared by the Central Naugatuck Valley Regional Planning Agency. Additional assistance in passive solar design is available from the CNVRPA at 757-0535. It should be noted that solar potential depends significantly on such basic things as road orientation and house location. Thus, for solar planning to be effective, solar design issues should be considered early in the project design process, not as an afterthought.

IX. CLUSTER VS. CONVENTIONAL PLAN

The Town of Watertown requested that the ERT compare and contrast the proposed cluster plan with the alternate conventional subdivision plan. From an environmental standpoint, the cluster plan clearly has a number of advantages over the conventional plan. These include:

- more open space and hence enhanced recreational, stormwater management, and wildlife management opportunities
- less wetland and other difficult soil areas disturbed
- fewer roads and developed land on the site
- less vegetation and wildlife habitat disturbed
- less run-off generated and hence fewer stormwater controls needed
- less visual impact
- enhancement of the town tax base (i.e., the proposed cluster development would likely return more in taxes for town services demanded than would a single family subdivision)

Disadvantages of the cluster proposal over the conventional proposal would appear to include:

- greater traffic impact
- greater sewer and water requirements

Of concern under both plans is:

- erosion and sediment control
- loss of prime and important farmland
- stormwater run-off control
- development on difficult soil areas (steep slopes, wetland and floodplain soils, hardpan soils)
- traffic impact
- visual impact of project on surrounding lands

Should the concept of a cluster development be approved by the Watertown Planning and Zoning Commission, the proposed project could be improved by:
1) realigning the roads and building locations to avoid steep slopes and poor soils (this will likely reduce the total number of project units); and
2) replacing the proposed three story apartment structures with fewer town-houses or single family units.

In addition, detailed plans should be required on erosion and sediment control and stormwater management. The on-site traffic generation, and the ability of Town roads to handle the increased traffic is a major concern with this project. The Planning and Zoning Commission should require a thorough traffic engineering study of the project as well as a review and certification by the State Traffic Commission before approving this project.

* * * *

X. APPENDIX

APPENDIX

SOILS MAP


PbC
PbD
WyC
Lg
GaC
WzC
WxC
WxB
PbD
PbB
Rd
PbC
CaC2
PbB
CrD
WxB
CaB
SxC
CaD
Lg
SwB
WzC
GbC
HrC
GbB
GeE
Lg
SxC
WzC
TwA
GaB
MyB
GaC
SkE
GeE
MyC
Sf
Lg
CrC
TwA
Lg
MyB
Sf
MyB
PeC
Wl
HkC
Lg
CaC
PbD
PbB
PbC
SvB
SCALE 1" = 1000'

SOIL LIMITATION CHART - HIGH MEADOWS - WATERTOWN, CT

Map Symbol	Soil Name	Shallow Excavations	Sm. Commercial Buildings	Bldg. with Basements	Local Roads	Lawns Landscaping
CaB	Charlton fine sandy loam, 3-8% slope	Slight	Moderate-Slope	Moderate-slope	Slight	Slight
CaC	Charlton fine sandy loam, 8-15% slope	Moderate-Slope	Severe-Slope	Moderate-slope	Mod.-Slope	Mod.-Slope
CaC_2	Charlton fine sandy loam, 8-15%Eroded	Moderate-Slope	Severe-Slope	Moderate-Slope	Mod.-Slope	Mod.-Slope
CaD	Charlton fine sandy loam, 15-25% Slopes	Severe-Slope	Severe-Slope	Severe-Slope	Sev.-Slope	Sev.-Slope
CrC	Charlton very stony fine sandy loam 18-15% slope	Moderate-Slope	Severe-Slope	Moderate-Slope	Mod.-Slope	Mod.-Slope large stones
CrD	Charlton very stony fine sandy loam 15-35% Slopes	Severe-Slope	Severe-Slope	Severe-Slope	Sev.-Slope	Sev.-Slope
GaC	Gloucester Sandy loam, 8-15% slopes	Severe-Cutbanks cave	Severe-Slope	Mod.-Slope large stones	Mod.-Slope lg. stones	Mod.-Slope sm. stones draughty
CbB	Gloucester stony sandy loam, 3-8% slopes	Severe-Cutbanks cave	Mod.-Large Stones	Mod.-lg. stones	Mod. lg. stones	Mod.-Droughty small stones
GbC	Gloucester stony sandy loam 8-15% slopes	Severe-Cutbanks cave	Mod.-Lg. stones and slope	Mod.-lg. stones slopes	Mod. large stones, slopes	Mod.-Sm. Stones Slope
GeE	Gloucester, very stony, sandy loam 15-35% slopes	Sev.-Cutbanks cave, slope	Severe-Slope	Severe-Slope	Sev.-Slope	Sev.-Slope large stones
HkC	Hinkley gravelly sandy loam 3-15% slopes	Sev.-cutbanks cave	Mod.to severe as slopes increase	Slight to Mod. as Slopes increase	Slight to Mod. as slope inc.	Severe Droughty

Map Symbol	Soil Name	Shallow Excavations	Sm. Commercial Buildings	Bldg. with Basement	Local Roads	Lawns Landscaping
HrC	Hollis, very rocky fine sandy loam, 3-15% slope	Sev.-depth to rock	Sev. Depth to rock (+ slope if 8-15%)	Severe-depth to rock	Sev. depth to rock	Sev.-thin soil layer
Lg *	Leicester, Ridgebury, Whitman - very stony fine sandy loams	Sev. wetness	Severe wetness	Sev. wetness	Sev. wetness Frost action	Severe Wetness
MyB°	Merrimac Sandy loam 3-8% slopes	Sev. cutbanks cave	Moderate slope	Slight	Slight	Slight
MyC●	Merrimac Sandy loam 8-15% slopes	Sev. cutbanks cave	Severe slope	Mod. slope	Mod. slope	Mod., slope
PbB °	Paxton fine sandy loam 3-8% slopes	Mod.-dense soil layer wetness	Mod., wetness slope	Mod.-wetness	Mod.-wet frost action	Slight
PbC ●	Paxton fine sandy loam, 8-15% slopes	Mod.-dense soil layer slope	Severe-slope	Mod.-wetness slope	Mod.-wet slope	Mod. Slope
PbD	Paxton fine sandy loam 15-25% slope	Severe slope	Severe-slope	Sev.-slope	Sev.-slope	Sev.-slope
PeC	Paxton, very stony, fine sandy loam, 3-15% slopes	Mod.-dense soil layer wetness, slope if 8-15%	Mod.-wet Sev. slope if 8-15%	Mod.wetness Severe slope (if 8-15%)	Mod.-wetness Frost action (+slope if 8-15%)	Mod-lg. stones (+slope if 8-15%)
Pk *	Peat & Much	Sev.-excess humus ponding	Sev. ponding low strength	Sev. ponding low strength	Sev. ponding Frost action	Sev. ponding Exc. humus
Rd * ●	Ridgebury fine sandy loam	Severe wetness	severe wetness	sev. wetness	sev. wetness Frost action	sev. wetness
Sf *	Scarboro loamy fine sand	Sev.-cutbanks cave excess humus, ponding	severe ponding	sev. ponding	sev. ponding Frost action	sev. ponding Exc. humus

Map Symbol	Soil Name	Shallow Excavations	Sm. Commercial Buildings	Bldg. with Basements	local Roads	Lawns Landscaping
SkE	Shapleigh very rocky sandy loam, 15-35% slope	Sev. -depth to rock, slope	Sev. depth to rock slope	sev. depth to rock, slope	sev. depth to rock slope	sev. slope, thin soil layer
SwB	Sutton stony fine sandy loam, 3-8% slope	Severe wetness	mod. wetness, slope	Sev. wetness	Moderate Frost Action	Mod. wet large stones
SxC	Sutton very stony fine sandy loam, 3-15% slopes	Severe wetness	mod. wetness (+severe if slopes 8-15%)	Sev. wetness	Mod. Frost Action (Sev. if slopes 8-15%)	Mod. wet (+slope if 8-15%)
TwA o	Tisbury &Sudbury soils 0-3% slopes	Severe wetness cutbanks cave	Sev. wetness	Sev. wetness	Sev. frost action	Mod. wetness
WxB o	Woodbridge fine sandy loam 3-8% slope	Severe wetness	Mod. wetness	sev. wetness	sev. frost action	Mod. wetness
WxC ◐	Woodbridge fine sandy loam 8-15% slope	Severe wetness	Severe slope	Sev. wetness	Sev. frost action	Mod. wetness slope
WyC	Woodbridge stony fine sandy loam, 8-15% slope	Severe wetness	Severe slope	Sev. wetness	Sev. frost action	Mod. wetness lg. stones
WzC	Woodbridge very stony fine sandy loam 3-15% slope	Severe wetness	Mod. wetness, slope (sev. if slope 8-15%)	Sev. wetness	Sev. frost action	Mod. wetness

* Inland Wetland Soil
o Prime Farmland Soil
◐ Important Farmland Soil

Explanation of Rating System:

Slight Limitation - indicates that any property of the soil affecting use of the soil 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 hazards or restrictions that require extensive and costly measures to overcome.

Passive Solar Design Checklist

Concerns	Evaluation
1. Can the streets be oriented to encourage the use of passive solar energy?	Streets can be oriented within 30° of true East. _____ Streets can be oriented 45° off of true East. _____ Streets can be oriented 30° off of true North. _____
2. Will lot lines influence the use of solar energy?	No signficant impact. _____ Lot line orientation has minor influence on solar access. _____ Lot line orientation may prohibit solar access. _____
3. Will existing vegetation affect access to sunlight?	No significant impact. _____ Possible impact from late leaf dropping trees (ie. Oaks). _____ Critical shading from evergreen trees likely. _____
4. Can building be oriented to face south?	Orientation within 30° of true south feasible for long wall of dwelling. _____ Orientation within 30° of true south feasible for short wall of dwelling. _____ No side of dwelling can be oriented within 30° of true south. _____
5. Will slope or topography prohibit or influence the use of passive solar energy?	Flat land or south facing slopes favorable for solar acess. _____

Moderate north facing slopes may influence spacing of dwellings (i.e. slopes of 5 to 15%). _____

Steep north facing slopes may prohibit practual use of solar energy (i.e. slopes greater than 15%). _____

6. Can solar access be protected to dwelling units within the development?

Lot size, setbacks, slopes and vegetation do not interfere with solar access to south wall of dwelling units (i.e. 9 a,m. to 3 p.m. protection on December 21st). _____

Solar access may be affected by either lot size, setbacks, slopes or vegetation but no siginficant loss of solar radiation expected. _____

Solar access seriously reduced by vegetation, slopes, topography or buildings on or off of the development (i.e. less than 75% of available sunlight between 9 a.m. to 3 p.m. on December 21st expected to be available). _____

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 industrical 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.