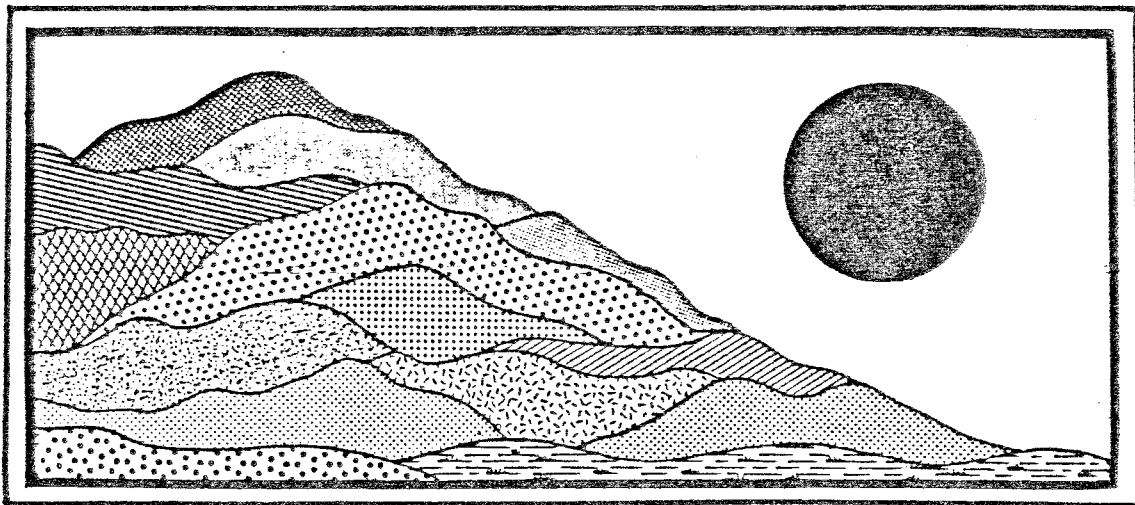


Chesterfield Hills Estates

Montville, Connecticut

April 1987



ENVIRONMENTAL

REVIEW TEAM

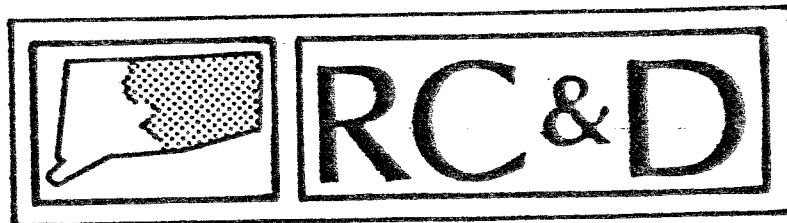
REPORT

Chesterfield Hills Estates

Montville, Connecticut

Review Date: MARCH 10, 1987

Report Date: APRIL 1987



ENVIRONMENTAL REVIEW TEAM

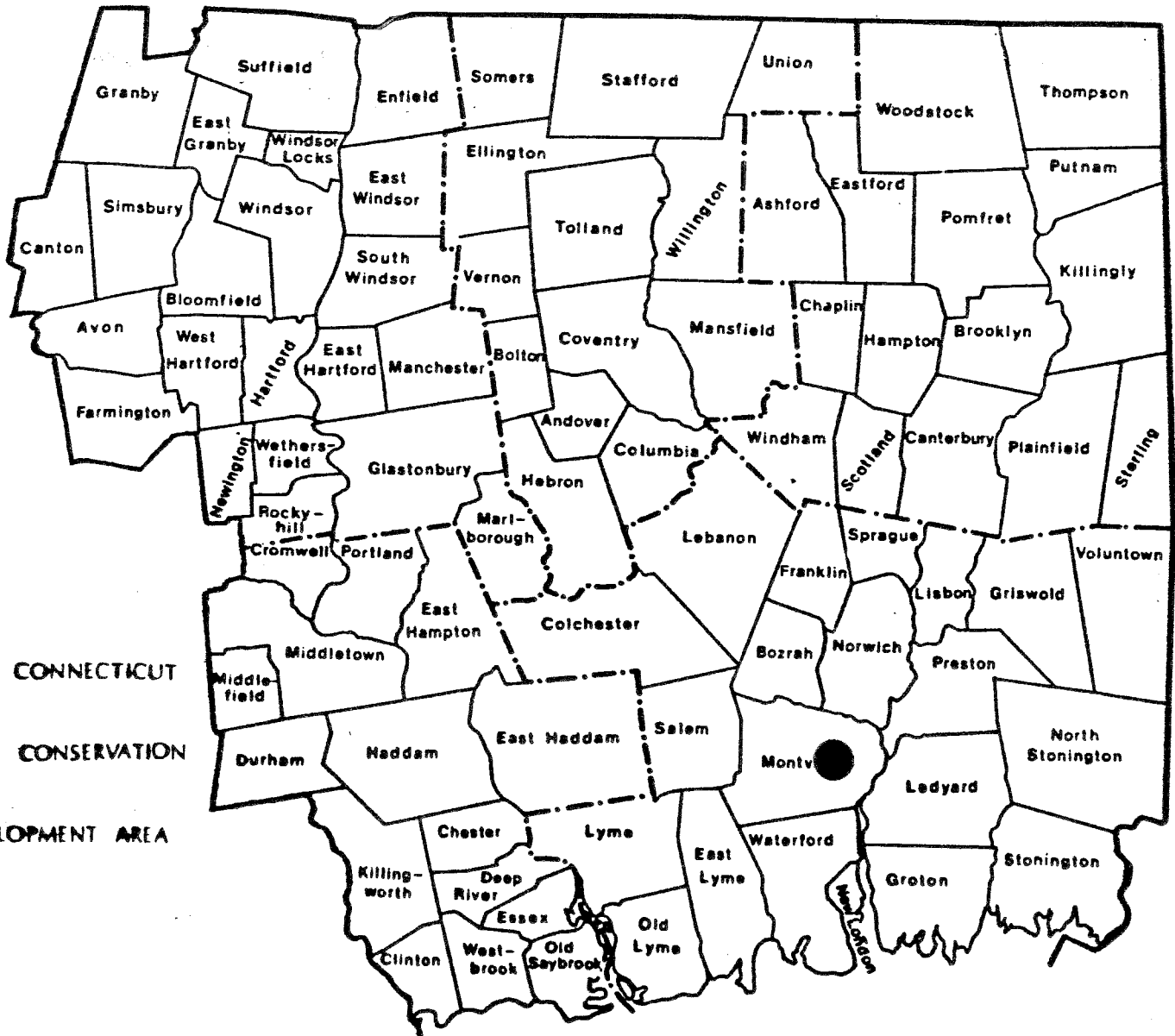
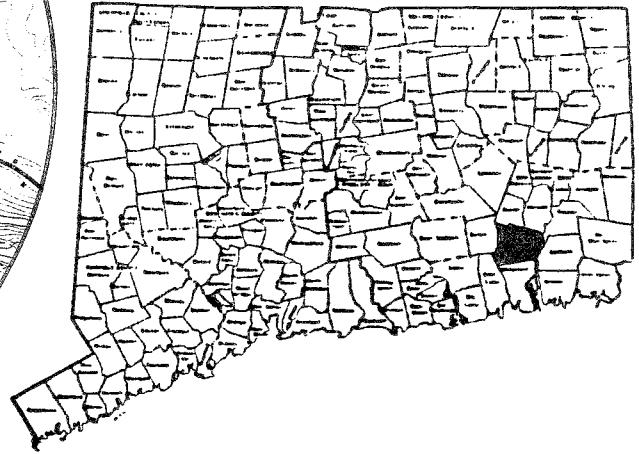
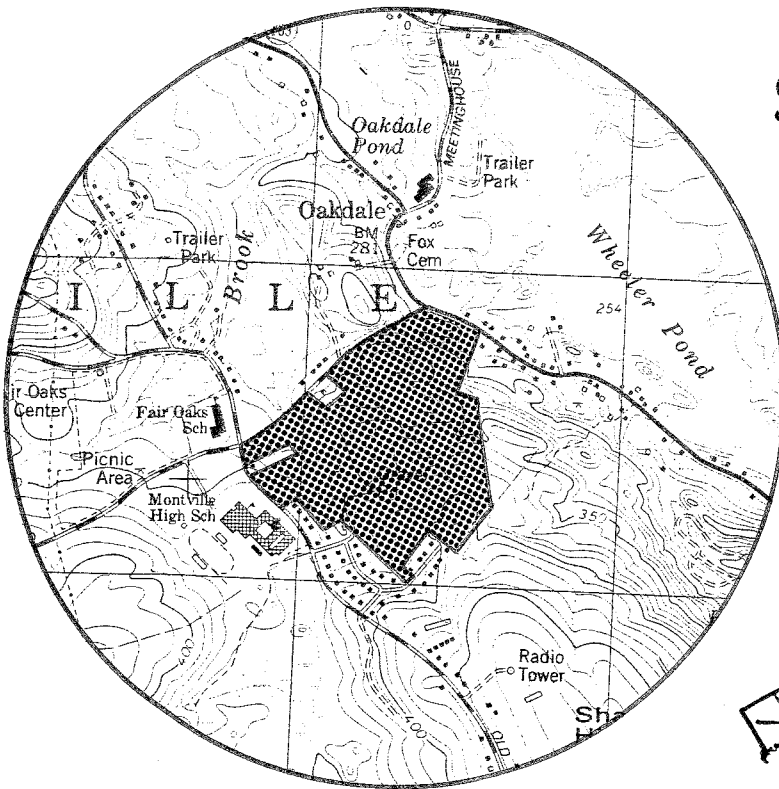
PO BOX 198

BROOKLYN, CONNECTICUT 06234

Site Location

CHESTERFIELD HILLS ESTATES

MONTVILLE, CONNECTICUT



EASTERN CONNECTICUT
 RESOURCE CONSERVATION
 & DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT
ON
CHESTERFIELD HILLS ESTATES SUBDIVISION
MONTVILLE, CONNECTICUT

This report is an outgrowth of a request from the Montville Town Planner and the Planning and Zoning Commission to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Tuesday, March 10, 1987. Team members participating on this review included:

S. R. Hill	--Wildlife Biologist DEP, Eastern District
Pete Merrill	--Forester DEP, Patchaug State Forest
Elizabeth Rogers	--Soil Conservationist U.S.D.A., Soil Conservation Service
Dwight Southwick	--Civil Engineer U.S.D.A., Soil Conservation Service
Elaine Sych	--ERT Coordinator Eastern Connecticut RC&D Area
Bill Warzecha	--Geologist DEP, Natural Resources Center

Prior to the review day, each Team member received a summary of the proposed project, a list of the Town's concerns, a location map, a topographic map, a soils map and drainage calculations. During the field review the Team members were given site plans. The Team met with, and were accompanied by the Town Planner, a member of the Inland Wetland Commission and the engineering consultants. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project--all final decisions and conclusions rest with the Town and landowner. This report identifies the existing resource base and evaluates its significance to the

proposed development, and also suggests considerations that should be of concern to the developer and the Town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC&D Executive Committee hopes you will find this report of value and assistance in making your decisions on this proposed subdivision.

If you require any additional information, please contact:

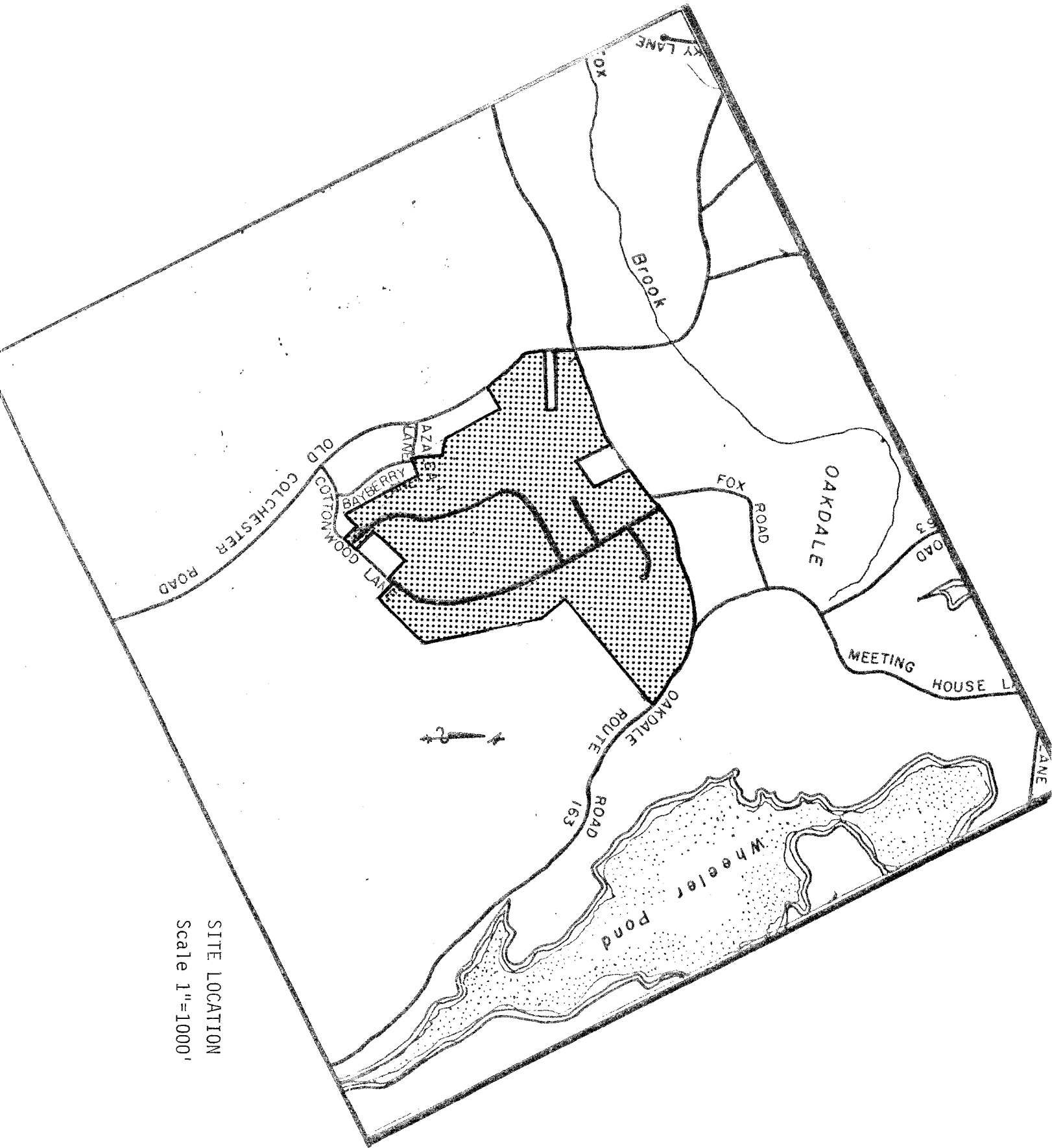
Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P. O. Box 198
Brooklyn, CT 06234
(203) 774-1253

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SITE LOCATION
Scale 1"=1000'

1. INTRODUCTION, TOPOGRAPHY AND SETTING

The Eastern Connecticut Environmental Review Team has been asked to review plans for a proposed subdivision in the Town of Montville. Specific information requested included topography, geology, hydrology, vegetation, wildlife and a review of storm water drainage plans. The following sections of this report will highlight areas of concern, provide information and make recommendations for the Town and developer to consider.

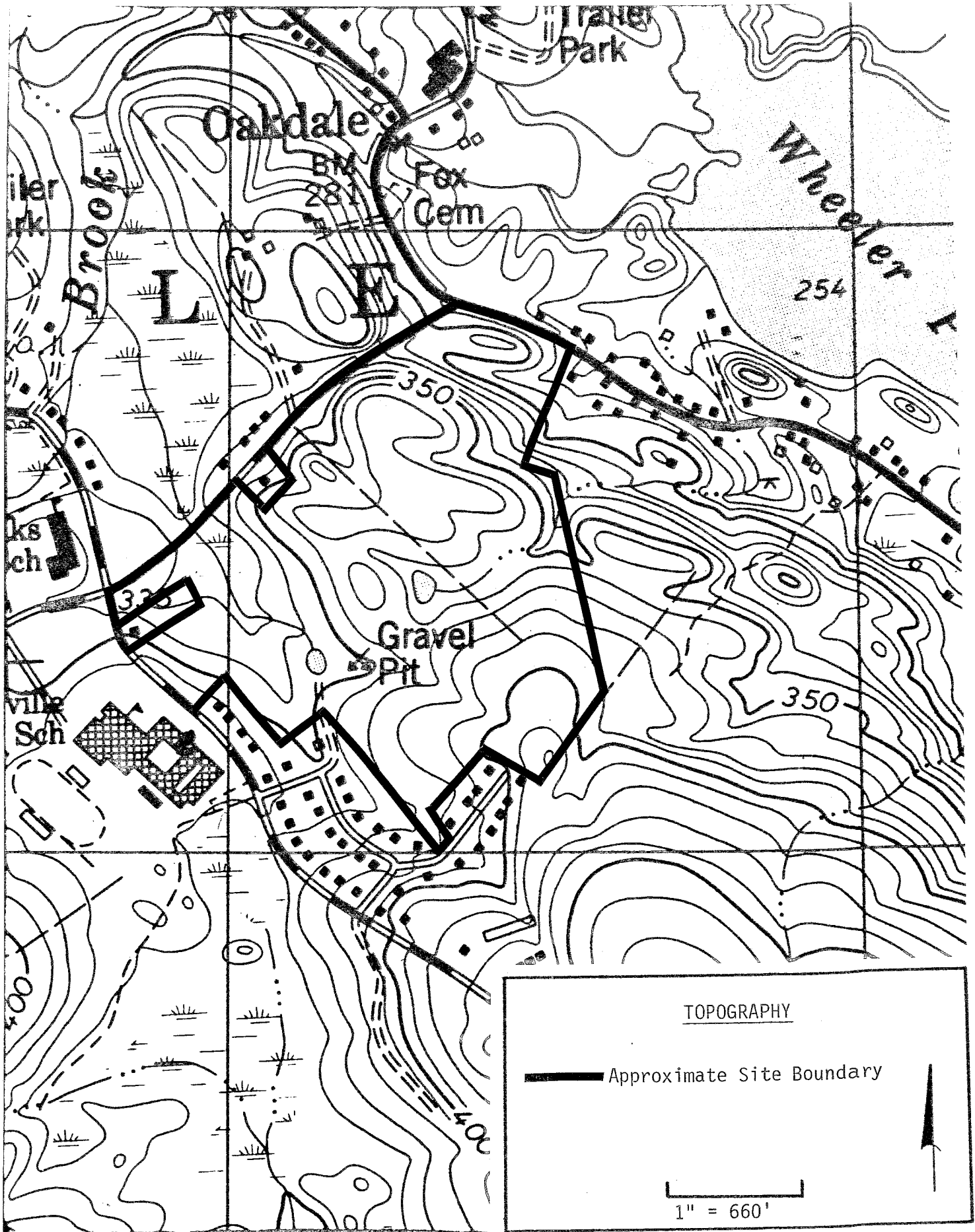
The site consists of a + 85 acre irregularly shaped parcel of land. It is located in central Montville. The proposed cluster development will be accessed off of Cottonwood Lane and Chesterfield Road. Two cul-de-sacs are proposed off the newly proposed extension of Cottonwood Lane.

Topographic conditions on the site are quite diverse. Moderate to steep slopes characterize the eastern half of the parcel. The land surface in this part is controlled largely by the underlying bedrock. The western half of the site is characterized by slopes that range from gentle to moderate. Sand and gravel deposits cover a large part of this area. (See Surficial Geologic map). Based on inspection of air photos, it appears that sand and gravel was mined in this area between 1965 and 1970. The area mined first was along Old Colchester Road, and the material may have been used during the construction of Montville High School. The mined areas in the interior section of the site occurred after March 11, 1965 and were probably coincident with the construction of Country Manor Estates.

Mined areas in the interior sections of the parcel were not reclaimed. Remains of the former sand and gravel removal operation are still visible and include open faced gravel pits, areas of stripped topsoil, stock-pile areas and a few man-made ponds. The latter are coincident with the local groundwater table. Significant regrading will need to take place in areas disturbed by past mining activity in order to make the land developable.

The site contains a major wetland area in the western limits and a natural pond in the central parts. An unnamed tributary to Fox Brook flows in a northerly direction through the wetland mentioned above.

A community well, which was developed to serve houses in Country Manor Estates, is located near the wetlands area in the western parts. The applicant wishes to utilize the community water supply for the proposed 65-house cluster development (See Water Supply section).





2. BEDROCK AND SURFICIAL GEOLOGY

The proposed cluster development site is located in a section of Montville that is included in the Montville topographic quadrangle. A bedrock and surficial geologic map (GQ-609 and GQ-148, respectively, by Richard Goldsmith) of the quadrangle have been published by the U. S. Geological Survey. These maps may be used to supplement the geologic information contained in this report.

Goldsmith has identified three different rock types in the outcrops on the site. Most of rock outcroppings, which occur mainly in the northern half of the parcel, are comprised of a subunit within the Plainfield Formation. These rocks are described as interlayered, thinly bedded quartzites and mica schists of Cambrian geologic age (505-570 million years old).

The term quartzite refers to crystalline, metamorphic (geologically altered by great heat and pressure) rocks which contain a high percentage of the mineral quartz. "Schist" is a term given to rock which is also metamorphic and which was altered in such a way that most of its mineral constituents were aligned parallel to each other. Parting surfaces are usually predominant and give the rock a slabby appearance. This mineral arrangement allows the rock to weather relatively easy.

The central and southern parts of the property are underlain by a more resistant rock known as alaskite gneiss. The adjective "alaskite" means that the rock contains a high percentage of the minerals orthoclase, microcline, quartz and albite. According to Goldsmith, these rocks which are younger in age than the Plainfield Formation are considered to be of igneous origin; those formed by the solidification of molten material in spaces in the older surrounding rocks.

The distribution of the various bedrock types on the site is shown in an accompanying map. The underlying bedrock is the source of water for the community well on the site as well as many homes throughout Montville.

The types of bedrock encountered on the site have implications with regard to the need for blasting and with regard to well-water quality. As mentioned earlier, possible zones of weak schists and quartzite may be encountered in the northern half. Although bedrock may be encountered in this area during construction, i.e., water and sewer lines, foundations, etc., the upper few feet of bedrock may yield easily to a backhoe.



3. HYDROLOGY

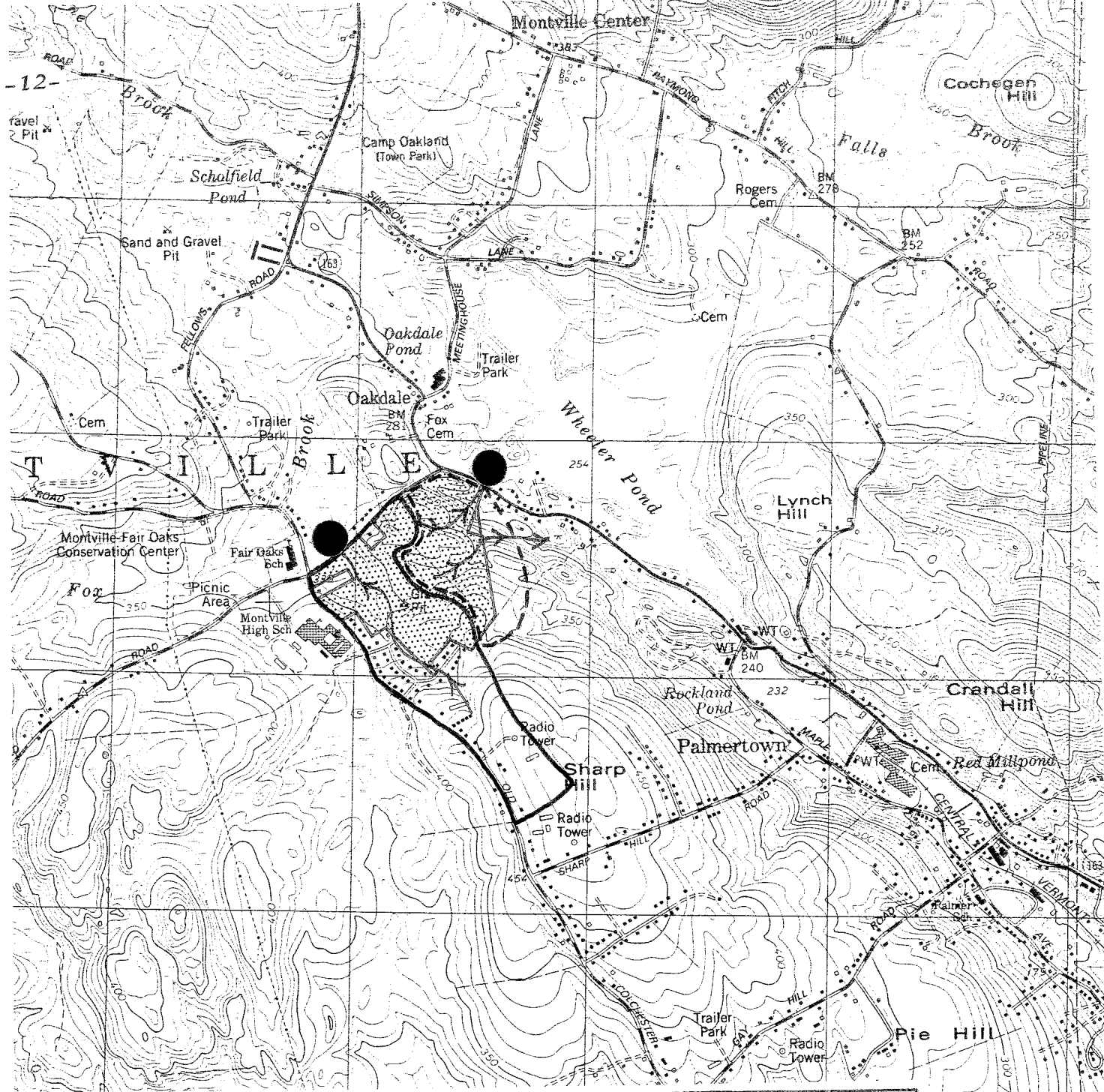
Surface drainage in the western half of the site drains to the unnamed streamcourse flowing through the major wetland corridor in the western parts. The streamcourse is a tributary to Fox Brook. Surface runoff in the eastern half flows via seasonal streamcourses towards Route 163 and ultimately discharges to Wheeler Pond. Fox Brook also empties into Wheeler Pond.

Development of the property as planned would be expected to affect the hydrology of the streamcourses mentioned at least some. This would mainly arise from the proposed storm drainage system for the site and the creation of impervious surfaces created by roof tops, paved driveways, and patios.

Based on present drainage plans, road drainage arising from the proposed project will be artificially collected in catch basins and routed via storm easements to the wetland area in the western parts and the small pond on Lot 51. Because of its geohydrologic setting and because of its topographic position in the watershed, it seems likely that the water table in the pond fluctuates seasonally. As a result, it is probably devoid of water during dry periods. Based on water marks on trees in the pond, it appears that the water table may, in fact, fluctuate as much as 3-5 feet. The point of outflow for the pond is currently on the east side. According to present plans, storm water will be directed into this pond. The proposed outlet for the pond, which is on the north side will be piped along Joy Lane and ultimately discharge to the wetland in the eastern parts.

Wetlands can perform many beneficial hydrological and ecological functions such as absorbing and storing water during times of heavy precipitation, streamflow regulations, erosion control, surface water quality protection and providing habitat for wildlife. In addition, they may have high value for education, research, open space and aesthetics.

Because of the wetlands' close proximity to Montville High School and Fair Oaks School, it might be very useful for educational purposes. From a hydrologic standpoint, the wetland in the western parts is large enough and relatively flat so that it plays an important role in regulating streamflow. During periods of heavy rainfall or snowmelt, the wetland stores surface water temporarily, releasing it more slowly than would otherwise be the case, and thereby, reducing peak flood flows to the unnamed watercourse on the site and other downstream water courses. As the surrounding land in the watershed is developed, the wetland is in a good position to protect the quality of the surface water, both by the dilutive effect of retaining a moderately large undeveloped zone and by the natural biochemical processes



WATERSHED BOUNDARY



Approximate Site



Points of Outflow



Watercourses Showing Direction of Flow



Watershed Boundary for unnamed tributary to Fox Brook at its intersection with Chesterfield Road



Watershed Boundary for unnamed watercourse that drains the eastern half of the parcel at its intersection with Rt. 163

1" = 2000'



INTERCHANGE 78

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VERMONT

that occur in wetlands. For these reasons and the others mentioned above, every effort should be made not to disturb the wetlands. If there is a need to fill the wetlands, the applicant should be required to assess the hydrologic and ecologic effects of such fillings and determine possible alternatives.

It appears that there may be a need to cross some wetland areas with the proposed access road. The latter will undoubtedly require at least some fillings of wetland. As such, the project engineer will need to address the affects of the filling. All wetland road crossings will need to be properly engineered. The road should be constructed adequately above the surface elevation of the wetlands. This will allow for better drainage of the road and also decrease the frost heaving potential of the road. Road construction through wetlands should preferably be done during the dry time of the year and should include provisions for effective erosion and sediment control. These comments also apply to the crossing of wetlands for the proposed water main. Finally, culverts should be properly sized and located so as not to alter the water levels in accompanying wetlands and cause flooding problems. Close examination of all downstream culverts, i.e., along Chesterfield Road and Route 163 is warranted.

Another concern associated with increased runoff from developed sites is the possibility for erosion and siltation problems. Because of the moderately steep slopes characterizing the eastern parts of the site, it is most important that a sound erosion and sediment control plan be developed and closely followed. (See Erosion and Sediment Control section)

Except for the area surrounding the community water supply on the parcel, groundwater on the site has been classified as 'GA' by the Connecticut Department of Environmental Protection's Water Compliance section. The 'GA' classification means that the groundwater is within the area of influence of private on-site wells and potential public wells. Groundwater in a 'GA' area is presumed to be suitable for direct human consumption without need for treatment. The State's goal is to maintain the drinking water quality.

The area surrounding the community water supply in the site is classified as GAA, which means it is an existing or potential public drinking water supply. As mentioned earlier in the report, this well currently services Country Manor Estates and will be expanded to service the proposed Chesterfield Hills Estates. As such, it fits the definition of a community water supply.

The availability of public sewers and the community water supply (see Water Supply section) should help to reduce the chance for significant groundwater contamination on the site.

4. WATER SUPPLY

According to the project engineer, the applicant wishes to utilize the existing community water supply in the western parts of the parcel to serve the proposed 65 lots. There is very little well data available on this well, which was developed to service Country Manor Estates. It currently serves 108 persons. Assuming there is an average of 4 people per residential service, it is estimated an additional 260 customers would need to be served by the community wells. A total of 368 persons would need to utilize the community well following completion of the residential development. Allowing each person 75 gallons of water per day, a total water demand of 27,600 gallons would be required to adequately serve the development. Assuming an 18-hour pumping period, the yield of the well would need to be about 26 gallons per minute. Because bedrock wells typically produce relatively small amounts of water (2-5 gallons per minute), it seems likely that another well will probably need to be drilled to service the total development. Depending upon the location of another well site, and required separating distances, a new well site may lead to a reduction in the number of lots presently proposed. It should be pointed out that this figure does not include requirements for fire protection. It is the responsibility of the water supply owner and design engineer to insure that all applicable federal, state and local fire protection requirements are satisfied.

The proposed community water system would need to be reviewed and approved by the Water Supply Section of the State Department of Health Services and Department of Public Utilities Control. A certificate of convenience and necessity must be issued jointly by the Department of Health Services and Department of Public Utilities Control. It is recommended that the developer or the Country Manor Estates Water Company contact, as soon as possible, the Department of Public Utility Control for an application for the subject certificate, if the community water supply system is to be expanded.

5. ENGINEERING CONCERNS

The following information is based on the plans and calculations and discussions with the Soil Conservationist and Team Geologist.

The size of two detention basins are calculated in the computations submitted, but there is only one shown on the plan. The one shown is at the corner of Joy and Cottonwood Lanes, and has a drainage area of about six acres. The computations show that 8.1 acres drain into this basin. It is also shown that the outflow from this basin is 5.0 cfs for each of the 2-Year, 10-Year, and 100-Year frequencies. It is not clear what kind of an outlet structure is

proposed, but the outlet pipe discharges into the storm drainage system for Joy Lane which receives additional runoff from other areas. This fact makes it very difficult to predict that only five cfs will flow into this system with each of the various storms.

The Team Engineer's estimate shows that this basin does not need to be as large as shown. The computations submitted for the volume of storage required are incorrect. An error was made in converting the V_r in inches to acre feet.

If Detention Basin Number 2 is to be between Lot 35 and 36, there is not room enough. However, it could be in the open space area, but the storm sewer pipe should be carried into this basin. The same error was made in the calculations of Basin Number 2 as in Basin Number 1 of converting the V_r in inches to acre feet. Location and details of Detention Basin Number 2 need to be included.

Runoff from Lots 34 to 41 flows west into the open space land without being detained. The runoff, which isn't being detained from Lots 1-11, contributes to the flow to Wheeler Pond. The storm drain outlet between Lots 18 and 19 should be carried out to the toe of the earth fill and not discharged on the fill. Pipe outlet protection should be included at each pipe outlet.

There are no calculations for the before and after peak discharges. The Team Engineer is not familiar with the method of developing hydrographs as was used. The Soil Erosion and Sediment Control Guidelines have a method of developing hydrographs if hydrographs are needed.

There should be an evaluation of the existing drainage way across Chesterfield Road to be sure it is adequate to safely handle the increased peak discharge. The plan shows an increase in size from a 12" to an 18" storm sewer. There is no detention storage for this area.

The question was asked about the possibility of using Detention Basin Number 1 as a skating pond in the winter months. It would not be advisable to use a detention pond that is connected to a storm drainage system for a skating pond because of the storm water, sand, and salt that will be flushed into the basin from the streets.

6. EROSION AND SEDIMENT CONTROL

The proposed Erosion and Sediment Control Plan for the project included both a written narrative and a site plan map. With the exception of one concern, it is felt that if the plan is installed as presented, it should mitigate any erosion and sediment problems



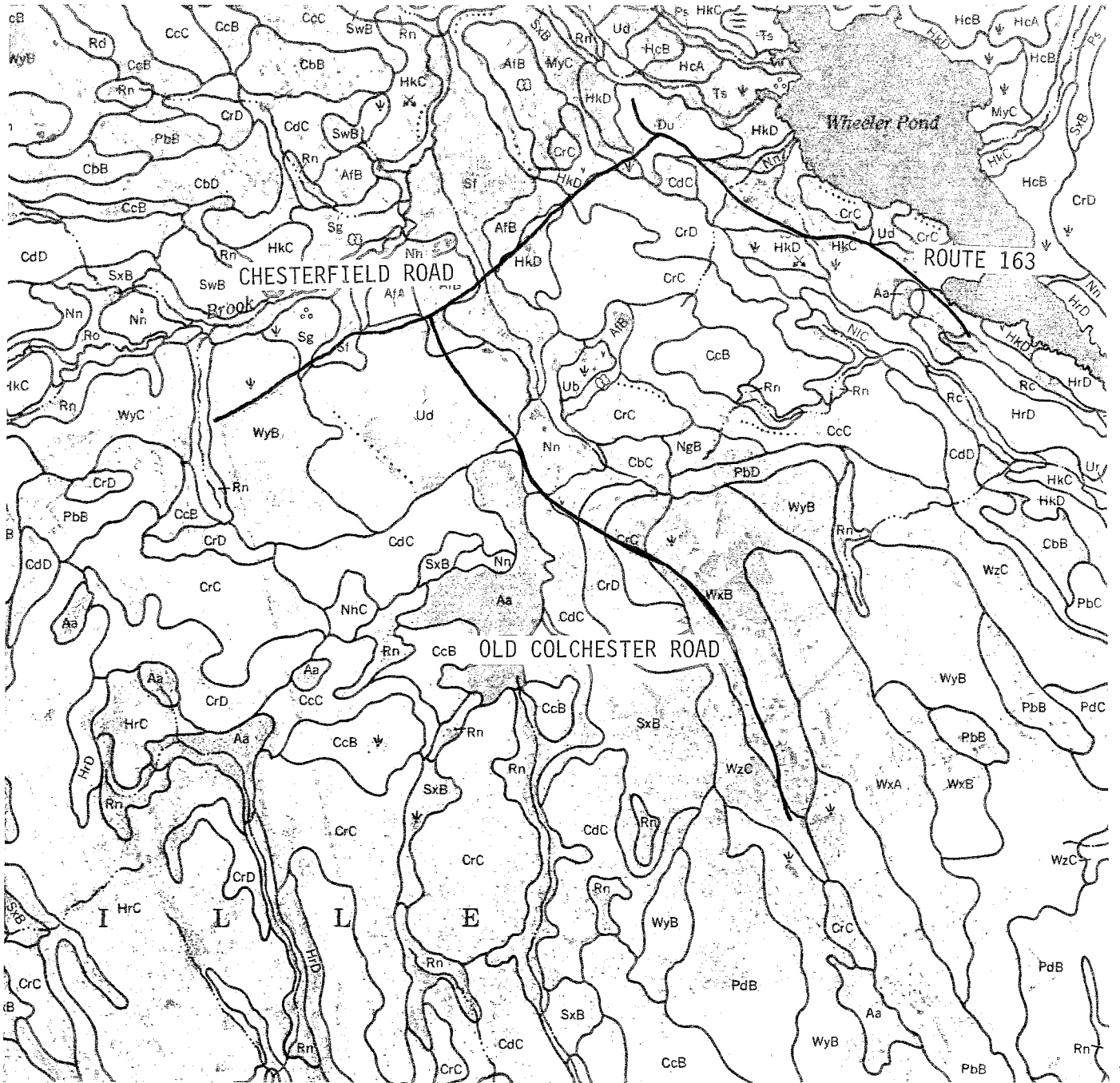
United States
Department of
Agriculture

Soil
Conservation
Service

New London USDA-SCS
562 New London Turnpike
Norwich, CT 06360
887-4163

Scale 1" = 1320'

New London Soil Survey Sheet #53



that could occur at the site.

There is concern that the site plan does not show siltation measures installed along the total length of the wetland areas that are to be disturbed by the water and sanitary sewer lines. It is recommended that measures be taken to protect all of the wetlands areas with silt fencing.

7. VEGETATION

The vegetative cover can be broken into eight distinct types as noted on the vegetation map.

Area #1 is an open swamp with standing water in the spring and other times when groundwater can be expected to be high. Trees around this area are almost exclusively red maple, although some black gum and yellow birch can be expected even though not noted at this time. They are in the adjacent stands #2 and #3.

Spicebush and highbush blueberry make up an intermediate canopy, with swamp sedges (grasses), sweetpepper bush and several of the viburnums (arrowwoods and wild raisins) making a lower canopy.

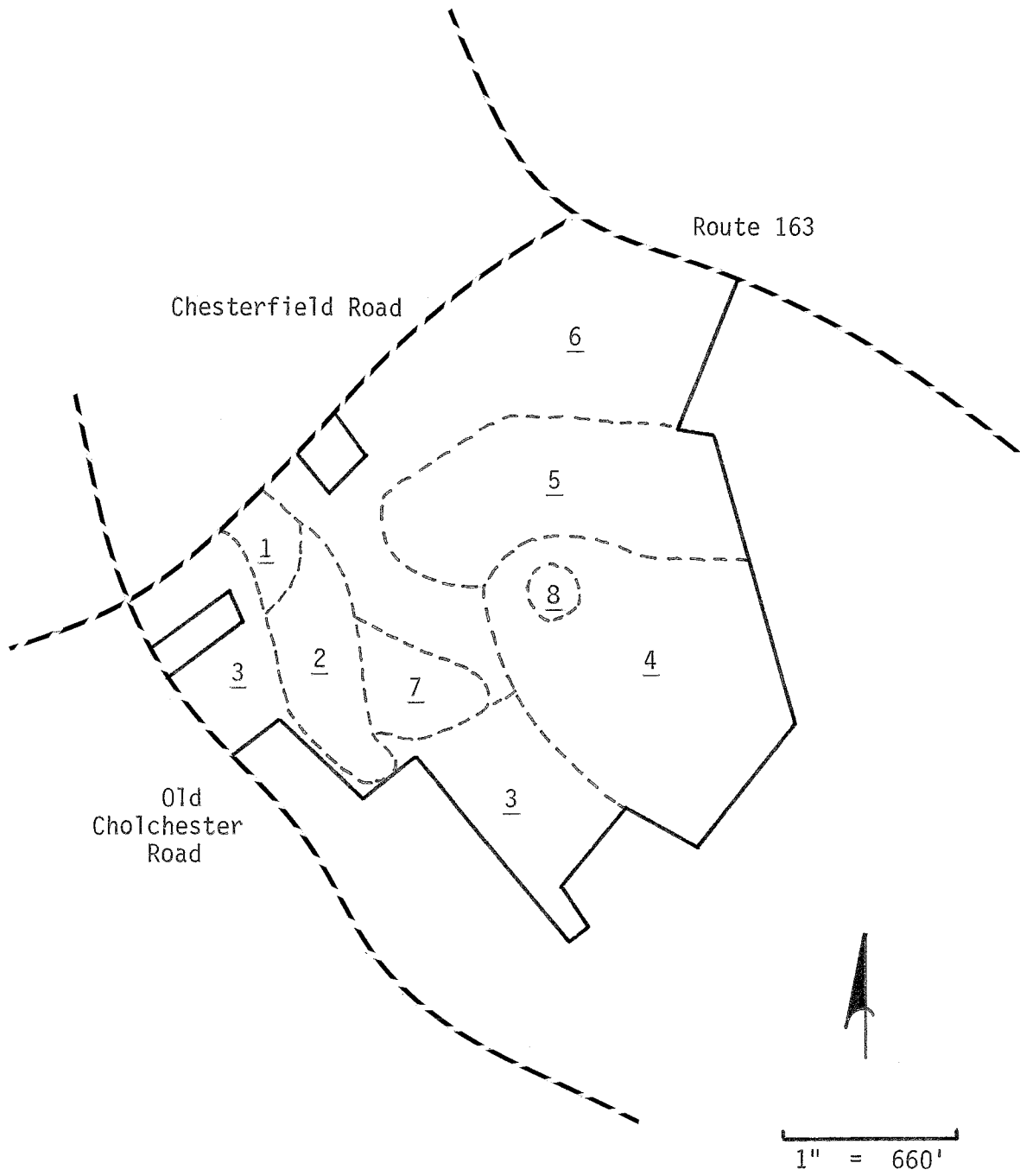
Area #2 Although this is a very wet area, there is seldom standing water in this area. There is a free running brook that runs into Fox Brook which is a major contributory to Wheeler Pond. Most of the overstory is red maple with some yellow birch, a few black gum and some white ash and black oaks along the edges. Spicebush, sweetpepper bush and highbush blueberries dominate in the understory along with lesser amounts of bluebeech and small yellow birch. Greenbrier is present but not in thickets.

Area #3 These are moist sites as separated from the upland oak ridges and as such they have their own species components. The overstory has a wide variety in tree sizes from the 20 plus inch tulip poplars to 6-8 inch red maple and yellow birch. Other species include black oak, black birch, black gum and sassafras. The understory was also quite varied with azalea, highbush blueberry, witch hazel, spicebush, sweetpepper bush and some Mountain laurel, plus seedling and saplings of sassafras, black birch, and red maple. Most of this area is designated as wetlands and will not be built on, although streets will cross through the area.

Area #4 This upper-middle slope is primarily a black-scarlet oak stand in the six to ten inch size class. Other species include white oak, red maple, black birch and both pignut and shagbark hickories. The most noticeable plant in the understory is the thickets of greenbrier. There is not much woody vegetation, but

VEGETATION

Chesterfield Hills Estates



there are highbush blueberry bushes plus some seedling-saplings of black birch, red maple, and bluebeech.

Area #5 is part of the oak ridge complex with several outcroppings of bedrock. Because there was a wildfire in this area a few years ago, most of the larger black and white oak overstory trees were killed or are dying. This has allowed a dense stand of saplings and stump sprouts to invade. There are also many stems of greenbrier and some wild grape, which make some very dense thickets. Tree species included in this area are scarlet oak, white oak, red maple, black cherry, black birch, American chestnut and sassafras.

Area #6 This is an upland oak site where the overstory is composed mainly of black and scarlet oak, with lesser amounts of white oak, red maple, pignut hickory and black birch. Understory is patch, some areas have no underbrush and others have huckleberry and greenbrier. The fire that was so damaging in Area #5 also burned part of this area, but apparently the fire was not as hot and didn't kill the trees, although many are butt damaged and will be a hazard to houses and cars as this area is developed.

Area #7 This area includes the gravel-sand banks and several seasonal ponds. Because the area around these banks was striped to mineral soil, the tree and shrub species present are those associated with the first stages of succession. There are scarlet and red oaks, red maple, trembling aspen, black birch, gray birch, black cherry and several species of willow. Shrubs included silky dogwood, Autumn olive, sweetfern and bayberry. With the proposal to regrade most of this area, these trees and shrubs will be removed.

Area #8 This area includes a small seasonal pond without definite apparent inlet or outlets. It is simply a depressed area that collects water from the surrounding area. There is some button bush in the water area and around the pond it is either red maple or pin oak with the understory of greenbrier and sweetpepper bush.

The impact of this intense development on the whole area will be dependent on the amount of cutting, filling and changing of the water table. If the pond in Area #8 is used as a storm water retention basin, it may be possible to get enough oils from roads and drives to concentrate in this area to be detrimental to the trees around the perimeter of the pond.

Also, the fire damaged trees in the northwest part of Area #6 should be considered a potential hazard.

8. WILDLIFE HABITAT

The major habitat type on this site is mixed hardwoods consisting of red and white oak. The understory is dominated by hardwood tree

seedlings, low bush blueberry, and dense thickets of greenbriar. Wetland sites consist of an oak and maple overstory with a dense understory of swamp azalea, red maple, and highbush blueberry. (See Vegetation section for specifics)

Wildlife species presently inhabiting the area include: white-tailed deer, grey squirrel, raccoon, fox and various small mammals and birds. On-site review revealed numerous deer trails throughout both the upland and wetland area. Other wildlife signs recorded included dusting sites utilized by ruffed grouse, feeding signs along the wetland areas by woodcock, fox scats, owl pellets containing the skeletal remains of two rodent species, and numerous rabbit sign in dense greenbriar thickets.

Wetland Areas

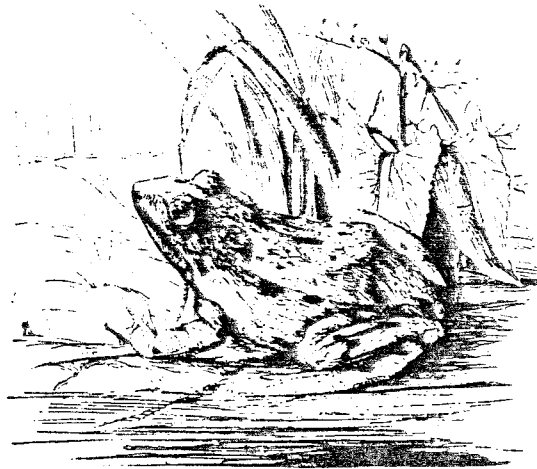
The wetland sites in this area contribute to the overall diversity of the habitat complex. Wetland areas proposed as open space consist of a diversity of plant species and are the most valuable wildlife habitat on the property. There is a good variety of age classes of trees, including several with cavities that provide nesting sites for mammal and bird species. Overall, this area is of high quality wildlife habitat due to the variety of types and structure of vegetation. The greater the diversity of vegetation, the greater the diversity of wildlife that will inhabit the area. Within the wetland areas numerous small potholes containing shallow standing water dot the area and may serve as breeding habitat for a variety of amphibian species.

Wetland areas proposed for open space should contain a buffer strip of a minimum 100 foot width around their perimeters. The proposed 20 foot wide permanent easement for a water main bisecting wetland area E could possibly act as a barrier for the dispersal of certain amphibian species. The wetland sites proposed for filling (area A, B) are of low wildlife value relative to the other wetland sites. Wetland area C located in lots 50, 51 proposed for open space is a valuable wildlife site. The pond was frozen at the time of this review and prohibited its specific evaluation in regard to aquatic vegetation types, depth, and bottom structure in relation to its importance to amphibian and reptile wildlife species. Overall the site adds to the diversity of the area and is of value to wildlife.

The proposal to develop this area into a park-like skating pond can be detrimental to wildlife if natural vegetation is removed along the margin of the pond. This natural wooded understory should be left to develop, as this habitat is used for nesting and feeding by wildlife. A "park-like" or "clean" understory is not a beneficial area for wildlife species. The natural layer of herbs, shrubs, and saplings beneath a canopy of trees will supply a wide spectrum of nesting and feeding opportunities for a variety of birds.

Development

All developments decrease the amount of habitat simply because the land will be cleared and occupied by buildings and roads. Species of birds and mammals that are very sensitive to urban development will no longer inhabit this area. Sensitive birds species that may occupy the area include veeries, ovenbirds, and scarlet tanagers. An undisturbed 60 acre woodland is probably the minimum size necessary to attract the most sensitive forest bird species to an urban area. Common occurring mammal species inhabiting this area such as deer will be forced out due to the development plans. Other mammals such as squirrels, raccoons, and rabbits that will tolerate certain levels of development will move to open space areas, backyards, and may become a nuisance to residents.



About The Team

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

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, a statement identifying the specific areas of concern the Team should address, and the time available for completion of the ERT study. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Elaine A. Sych (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.