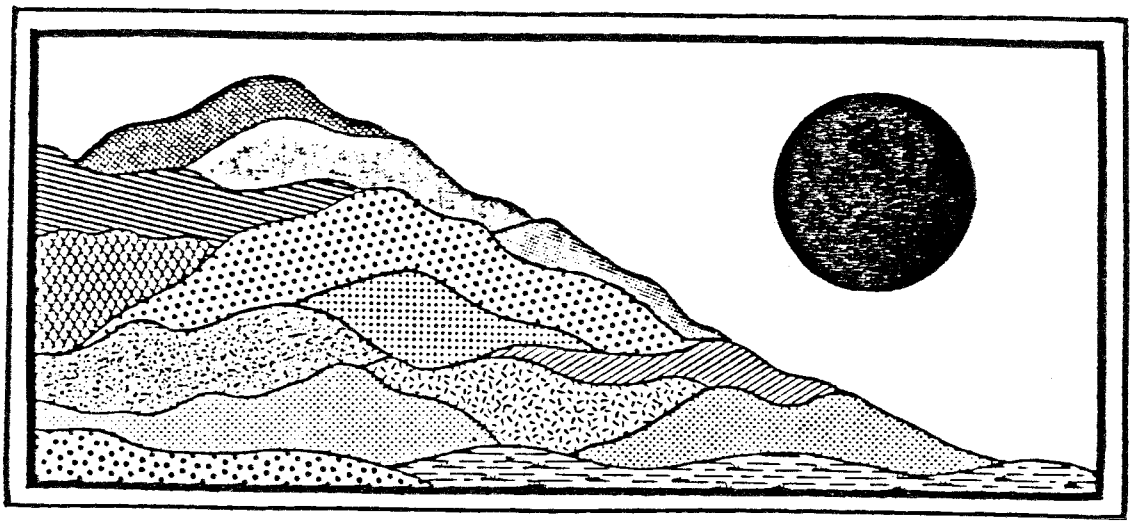
Middle School

Montville, Connecticut

October 1987



ENVIRONMENTAL REVIEW TEAM REPORT

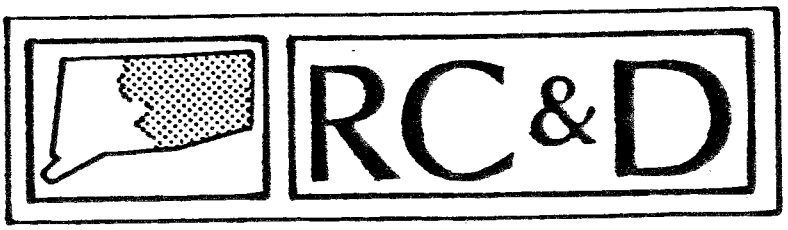
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Middle School

MONTVILLE, CONNECTICUT

Review Date: OCTOBER 1, 1987

Report Date: OCTOBER 1987

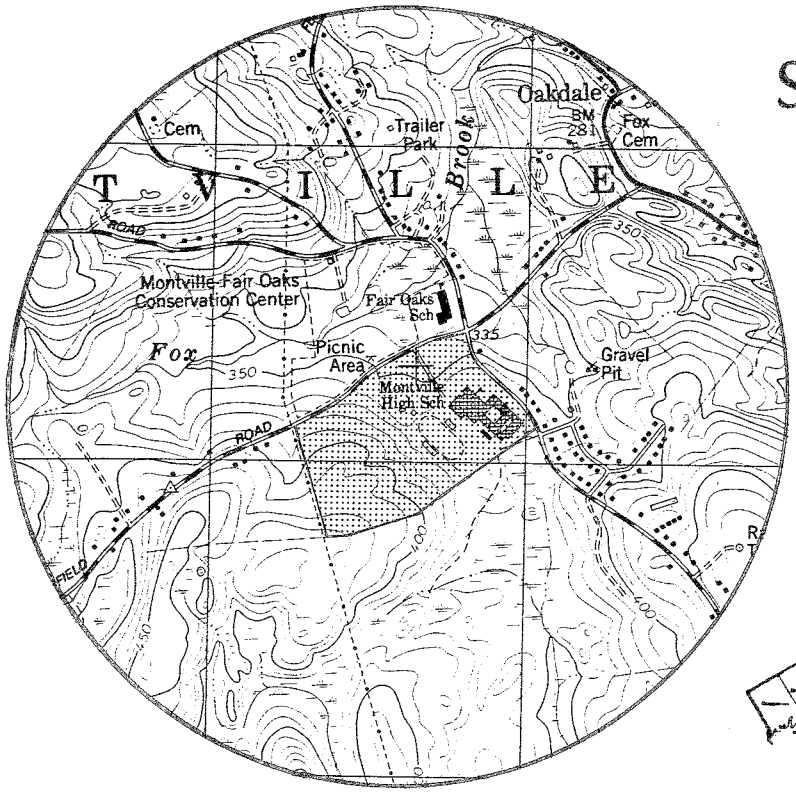


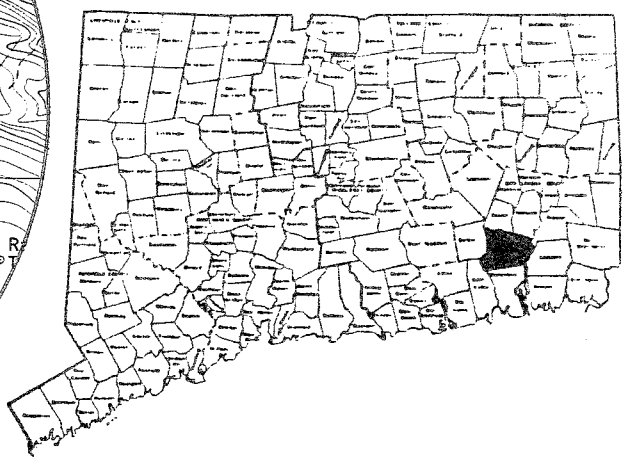
ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234

Site Location

NEW MIDDLE SCHOOL

MONTVILLE, CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT

ON

PROPOSED MONTVILLE MIDDLE SCHOOL

MONTVILLE, CONNECTICUT

This report is an outgrowth of a request from the Montville First Selectman and the School Building Committee 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 Thursday, October 1, 1987. Team members participating on this review included:

Liz Rogers	--Soil Conservationist U.S.D.A. - Soil Conservation Service
Richard Serra	--Regional Planner Southeastern CT Regional Planning Agency
Elaine Sych	--ERT Coordinator Eastern CT 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 and a soils map. During the field review the team members were given the Town Planner's report and a sketch map of the proposed facility. The Team met with, and were accompanied by the Town Planner and the Superintendent of Schools. 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 school site.

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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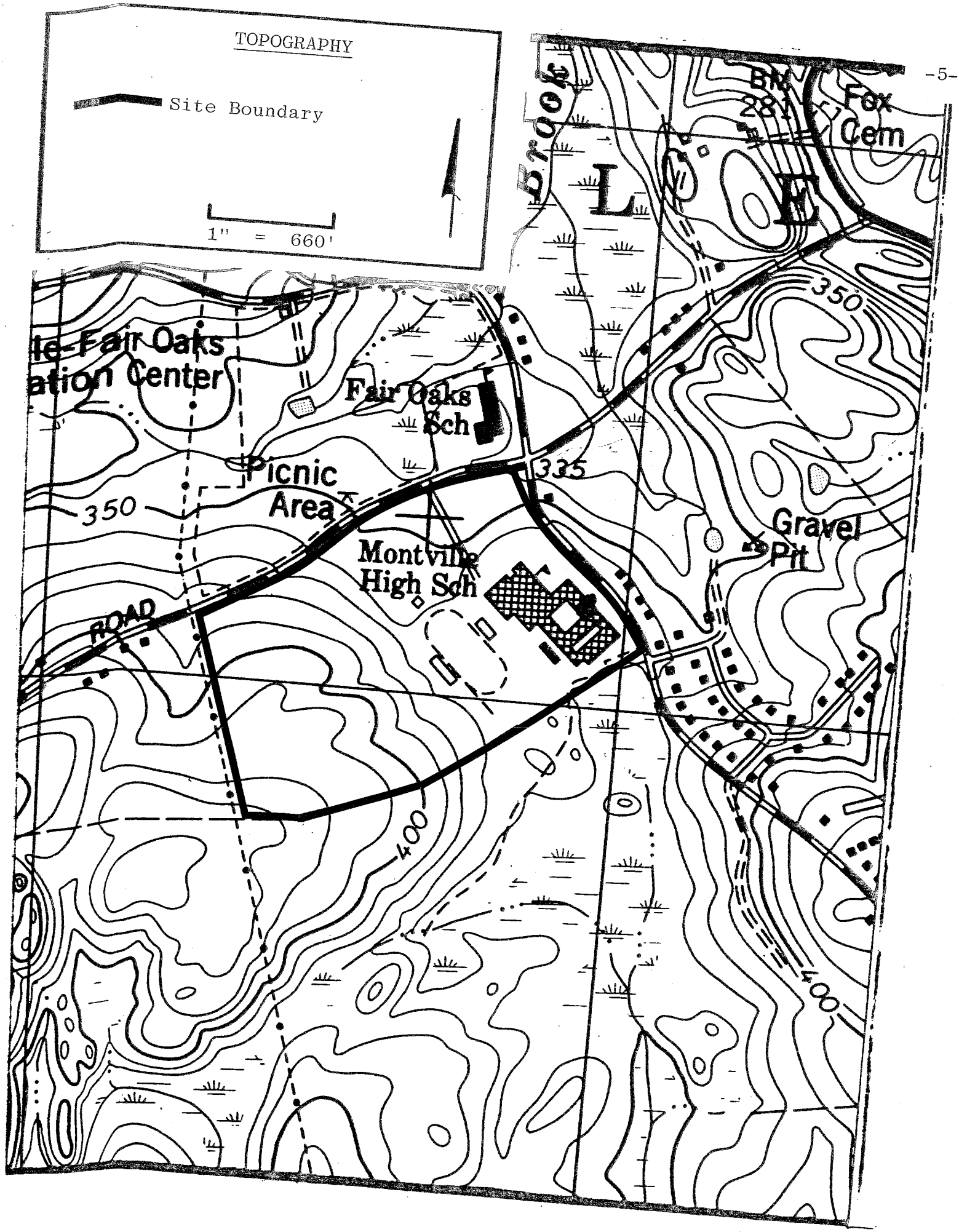
LOCATION
Entire Site Location
(+69 acres)
1" = 2000'
Oxoboxo Lake
Oxoboxo Brook
McAlpine Brook
Paris Pond
Scholfield Pond
Camp Oakland (Town Park)
Oakdale Pond
Oakdale
Wheeler Pond
Dolbeare Hill
MONTVILLE
Montville-Fair Oaks Conservation Center
Fair Oaks Sch
Picnic Area
Montville High Sch
Fox Brook
Deep Hollow
Four Corners
Murphy Sch
Oakdale Sch
Sharp Hill
Radio Tower
Radio Towers
Trailer Park
Gravel Pit
Sand and Gravel Pit
Cem
Baker Cem
Fox Cem
Rockland Pond
CHESTERFIELD ROAD
BLACK ASH ROAD
OLD COLCHESTER ROAD
SHARP HILL
SIMPSON LANE
MEETINGHOUSE LANE
FELLOWS ROAD
WILLIAMS ROAD
FIRE STREET
RIDGE
BM 580
BM 431
BM 281


TOPOGRAPHY
Site Boundary
1" = 660'
Brook
Fox Cem
Fair Oaks Sch
Picnic Area
Montville High Sch
Gravel Pit
ROAD
350
335
400

1. INTRODUCTION

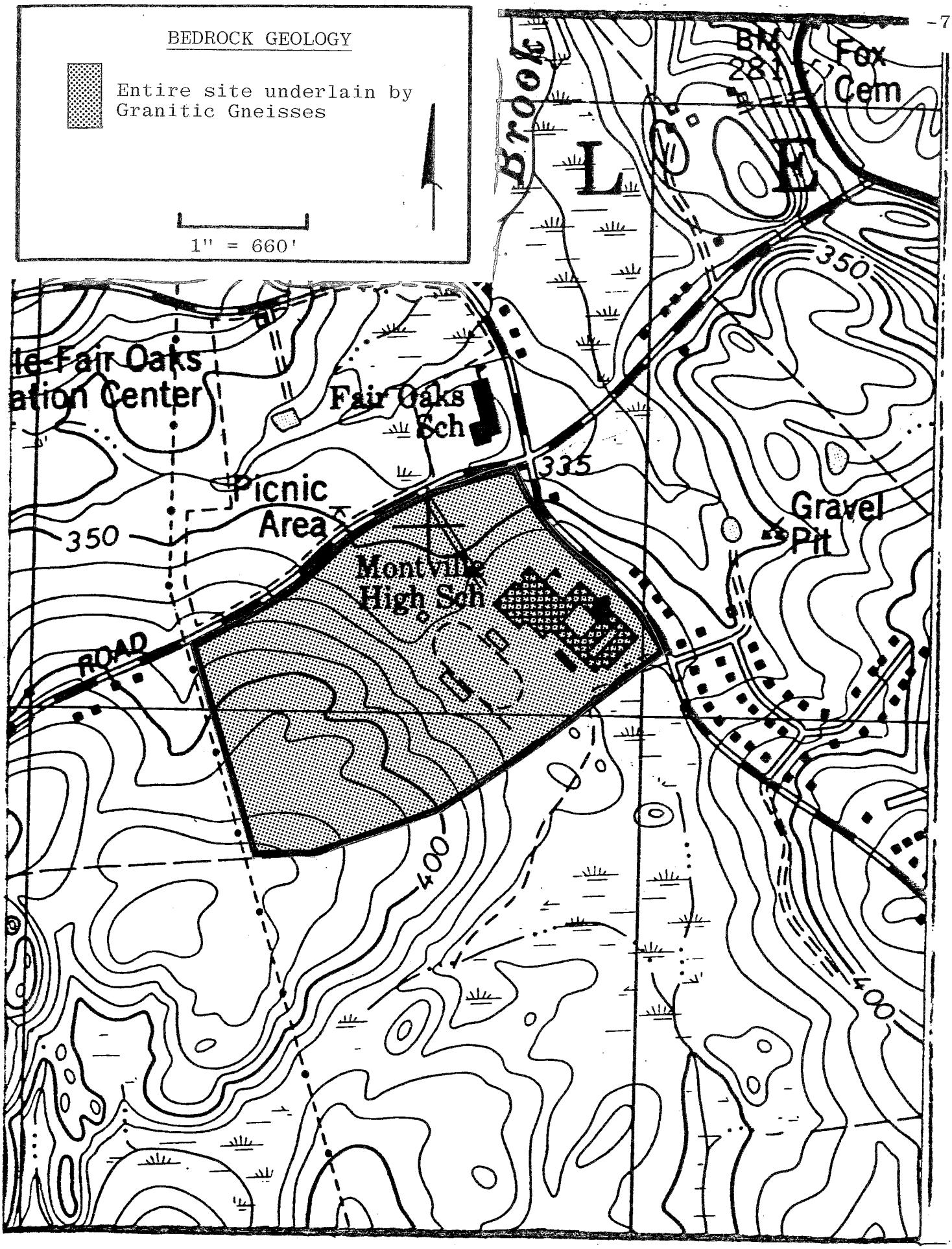
The potential middle school site consists of about ±29 undeveloped acres (total site is ±68 acres) located in central Montville. The site, which is mostly undeveloped and wooded is bounded on the north by Chesterfield Road, on the west by Connecticut Light and Power high tension lines, on the south by a combined driveway and former access route to the high tension lines and east by the Montville High School Property. It is understood that the potential middle school, which would be accessed off of Chesterfield Road, might be located just west of the existing Junior Varsity (J.V.) baseball diamond in the eastern part.

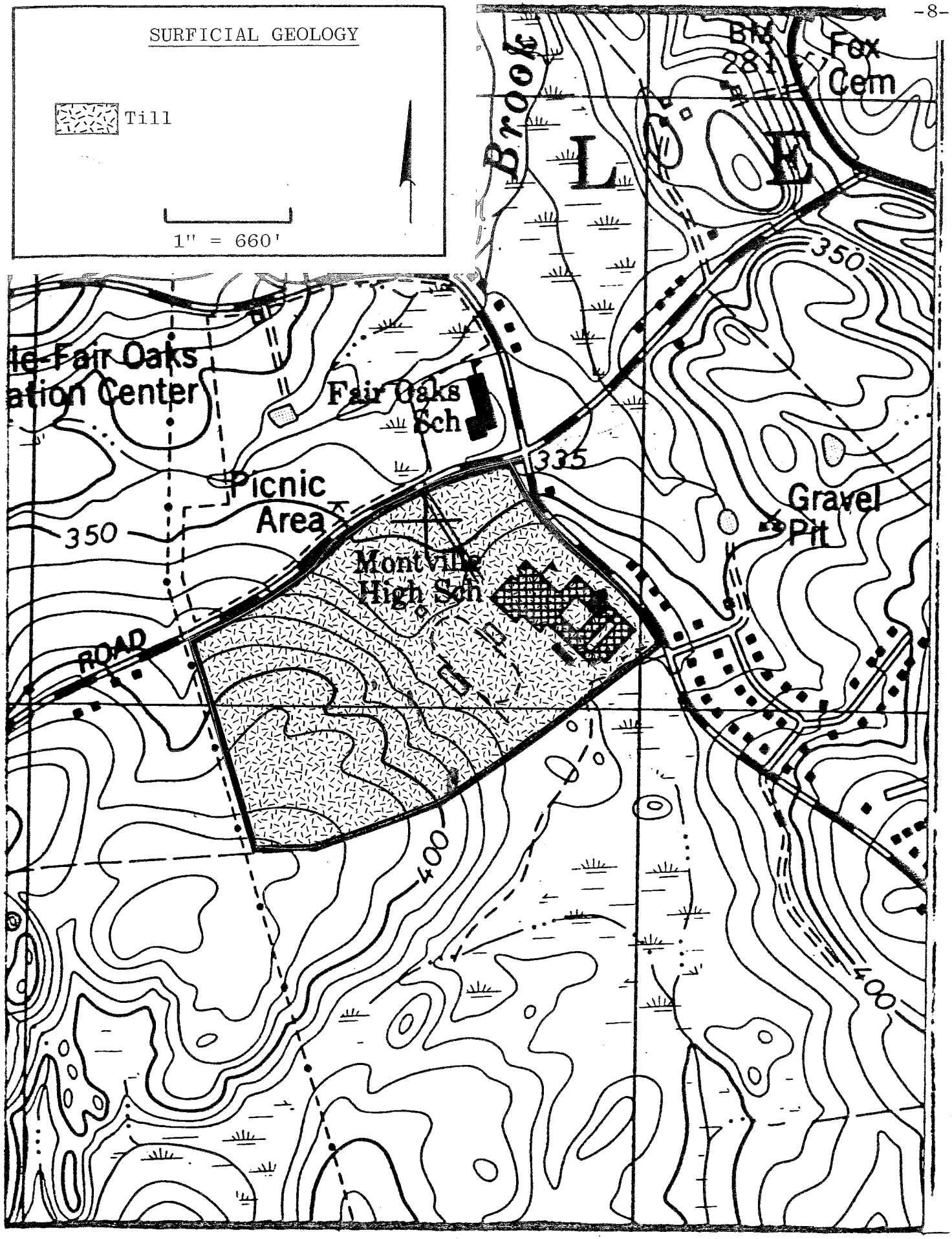
A municipal sewer line along Chesterfield Road is accessible for tie-in should the site be approved for the school. Since a municipal water line is not available to the area, it seems likely that the two options presently available for water to the potential school site would be to (1) develop a bedrock well(s) on the site or (2) tie into an existing community bedrock-well that serves a subdivision southeast of the High School. It is understood that efforts are being made by the Southeastern Connecticut Water Company to take over the existing community water supply.

2. HYDROGEOLOGIC SETTING

The site flanks the east side of a gently sloping bedrock-cored hill. The unconsolidated material covering the bedrock consists of ground-up rock particles and fragments plastered directly onto the crystalline bedrock by a moving ice sheet. This material, known as glacial till, is commonly referred to as "hardpan" due to a compact zone encountered about 1.5 feet below ground surface. Small exposures of the bedrock surface were visible just west of the baseball diamond and were probably encountered during the construction of the field.

According to the Soil Survey of New London County, Connecticut, the till covering the entire site contains a relatively shallow "hardpan" zone below the weathered and rooted surficial soil zone. Because the hardpan layer has a relatively low permeability, a seasonally high water table is common with this variety of till. During the rainy spring months, the permeable soil zone above the hardpan layer commonly becomes saturated with groundwater resulting


BEDROCK GEOLOGY
Entire site underlain by Granitic Gneisses
1" = 660'
Brook
BM 281
Fox Cem
L O E
350
335
Fair Oaks Sch
Picnic Area
Gravel Pit
Montville High Sch
ROAD
400


SURFICIAL GEOLOGY
Till
1" = 660'
Brook
Fox
Cem
350
Fair Oaks
Fair Oaks
Sch
335
Picnic
Area
Gravel
Pit
350
Montville
High Sch
ROAD
400
400

in high groundwater tables and seeps on slopes of hills. The thickness of the till on the site probably does not exceed much more than 10 feet throughout the study area.

The bedrock geology for the site is well described in GQ-609 Bedrock Geologic Map of the Montville Quadrangle, New London, Connecticut, by Richard Goldsmith, 1987. It is described as light pink to gray, medium to very coarse grained granitic gneisses. The underlying bedrock is the source of water to many domestic wells in Montville and may end up being the source of water to well or wells serving the potential school. (See Water Supply Section).

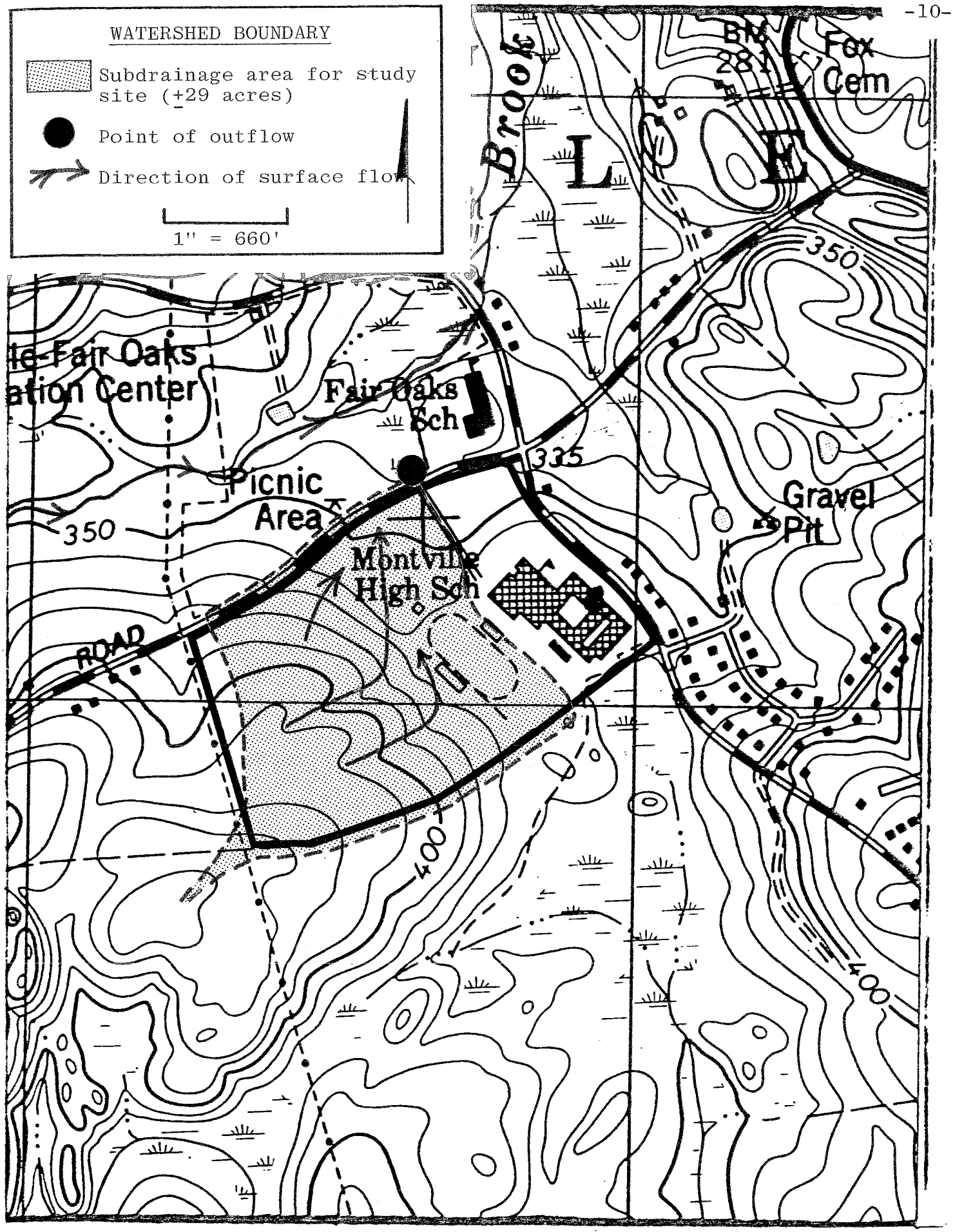
3. HYDROLOGY

Surface drainage as well as subsurface drainage on the subject site lies within the Fox Brook watershed. The construction of a school and ancillary parking facilities will lead to increases in runoff from the site.

The two major concerns in terms of increased runoff is the potential for flooding and erosion (siltation) problems. With respect to flooding, it seems likely that any increase in runoff from the site would be attenuated by the natural detention capabilities of the wetland area located between the tennis courts and the J.V. Baseball Field and by the construction of on-site detention basins. This will all need to be addressed in the stormwater management plan, once plans become more definite. Also, close examination of pipes passing under Chesterfield Road is warranted to ensure that they can handle post-development flows and flooding problems do not arise.

4. EROSION AND SEDIMENT CONTROL

On July 1, 1985, Connecticut passed P.A. No. 83-388 (Connecticut Soil Erosion and Sediment Control Act). As a result, a detailed erosion sediment control plan for the proposed school will be required. The presence of gentle slopes and silty soils justifies the need for such a plan. Any well-run activity should contain and filter disturbed water so that environmental damage and complaints from neighbors do not arise.


WATERSHED BOUNDARY
Subdrainage area for study site (±29 acres)
Point of outflow
Direction of surface flow
1" = 660'
Brook
Fox Cem
350
Fair Oaks Sch
335
Picnic Area
Gravel Pit
Montville High Sch
ROAD
400

When a site specific plan is completed, which includes an erosion and sediment control plan, the Soil Conservation Service, working through the New London County Soil and Water Conservation District, will be available to provide a further review of the project at the Town's request.

5. SOILS

AfB - Agawam fine sandy loam, 3 to 8 percent slopes

This gently sloping, well drained soil is on stream terraces and outwash plains. Permeability of the Agawam soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. This soil warms up and dries out rapidly in the spring. Unless limed, the soil is strongly acid or medium acid. This soil is well suited to cultivated crops. This soil is in capability subclass IIe.

Sf - Scarboro mucky fine sandy loam

This nearly level, very poorly drained soil is on stream terraces and outwash plains. Slopes range from 0 to 3 percent. The Scarboro soil has a high water table at or near the surface for most of the year. Permeability is rapid in the organic layer and rapid or very rapid in the mineral surface layer and substratum. The available water capacity is low. Runoff is very slow, or the soil is ponded. Scarboro soil is very strongly acid through medium acid. This soil is not suited for cultivated crops because of wetness. This soil is in capability subclass Vw.

Sg - Sudbury sandy loam

The Sudbury series consists of moderately well drained soils that formed in water-sorted sands and gravel. Sudbury soils are on outwash plains and stream terraces. Slope ranges from 0 to 5 percent. Top layers of this soil are 18 to 30 inches thick and consist of very dark brown, dark yellowish brown, medium brown sandy loam and light brownish gray mottles. Coarse fragments make up 0 to 15 percent of the soil in the upper layers. Upper layers are friable and, unless limed, Sudbury soils are strongly to medium acid. This soil is in capability subclass IIw.

Ud - Udorthents & Urban Land Complex

This complex consists of excessively drained to moderately well drained soils that have been disturbed by cutting or filling and areas that are covered by buildings or pavement. Most areas were cut or filled in order to smooth sites for community developments, recreational facilities, and roads. This complex requires onsite investigation and evaluation for most uses.

WyB - Woodbridge, very stony fine sandy loam

This nearly level to gently sloping (0 to 8% slope), moderately well drained soil is on drumloidal, glacial till, upland landforms. Stones and boulders cover 1 to 8 percent of the surface. Typically, this Woodbridge soil has a very dark brown, fine sandy loam surface 6 inches thick. The subsoil is yellowish-brown, light olive brown and grayish-brown, mottled fine sandy loam and sandy loam 22 inches thick. The substratum is very firm, brittle, olive sandy loam to a depth of 60 inches or more. The Woodbridge soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate in surface and subsoil layers and slow or very slow in the substratum. Runoff is medium and the soil warms up and dries out slowly in the spring. This soil is in capability subclass VIs.

SOIL MAP

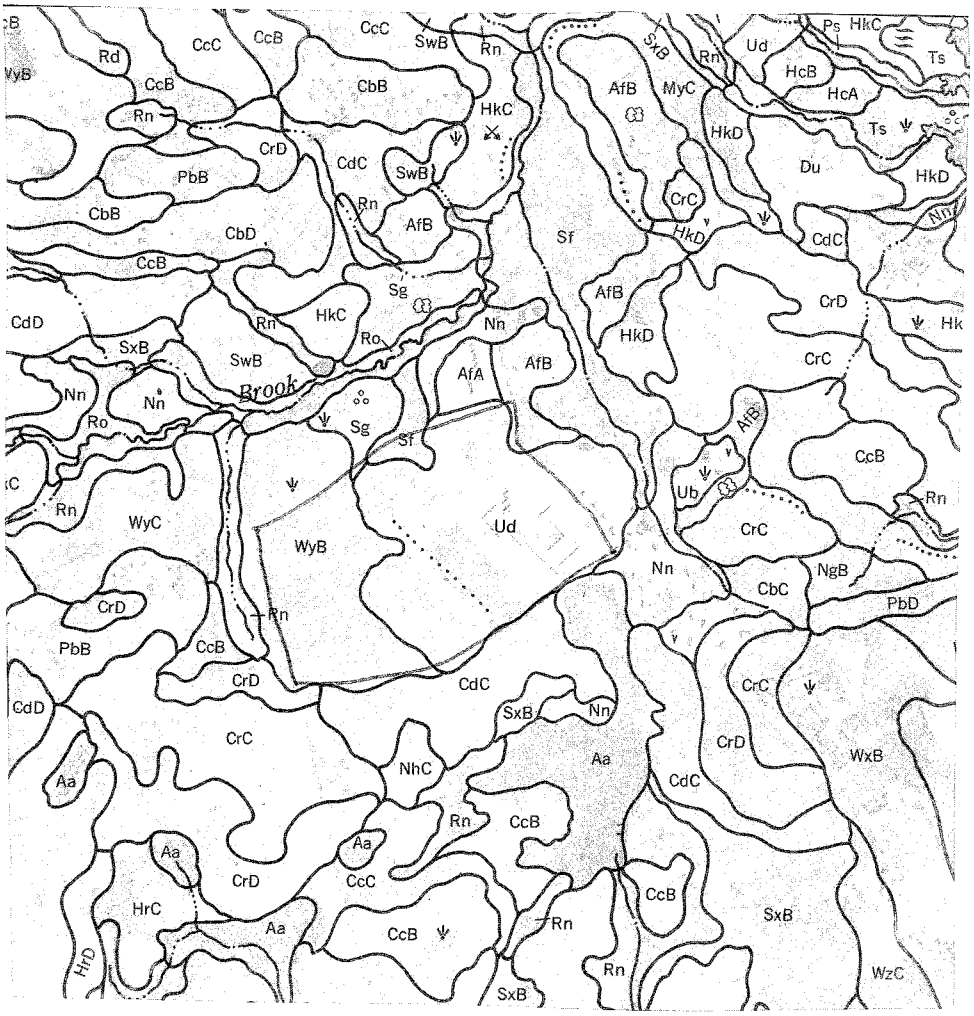
Owner TOWN OF MONTVILLE Operator SAME

County NEW LONDON State CT

Soil survey sheet (s) or code nos. 53 Approximate scale 1"=1320'

N

Prepared by U. S. Department of Agriculture, Soil Conservation Service cooperating with NEW LONDON COUNTY Conservation District



Principal Limitations and Ratings
for Building Site Development

Soil name and map symbol	Buildings with basements	Local roads and streets	Lawns and landscaping
#AfB - Agawam	Slight	Slight	Slight
*Sf - Scarboro	Severe:ponding	Severe:ponding, frost action	Severe:ponding, excess humus
#Sg - Sudbury	Severe:wetness	Moderate:wetness, frost action	Moderate: wetness
WyB - Woodbridge	Severe:wetness	Severe:frost action	Moderate:large stones,wetness
Ud - Udorthents	This soil requires onsite investigation and evaluation to determine appropriateness for most uses.		

*Designated inland wetland soil by Public Act 155
#Prime farmland soil

6. GEOLOGIC DEVELOPMENT CONCERNS

The availability of a municipal sewer line eliminates the need for on-site sewage disposal system. Clearly, had the site required on-site sewage disposal, the presence of "hardpan' soils would have been a severe limitation. The seasonally high water table that is associated with the hardpan soils on the site will no doubt require building/footing drains for the school. Also, any new playing fields constructed in the area will require curtain drains so that the fields are usable during the early spring months. Properly installed, footing curtain drains can intercept groundwater originating from the higher parts of the site and direct it to a discharge area such as a stream or wetland. This results in the lowering of the local groundwater table.

There is a chance that the bedrock surface may be encountered in the study areas. Because the bedrock beneath the site is quite competent, there may be a need for blasting if deep cuts (8 feet or greater), are needed.

7. WATER SUPPLY

The principal source of water to wells in the area appears to be the underlying crystalline, metamorphic bedrock. Sand and gravel

deposits, which can be very productive water-bearing units, particularly thick, coarse-grained deposits near major stream-courses, are not found within the study area. The typical bedrock well, which intersects the water-bearing fractures in the rock, is likely to be 150 feet or more, and some wells might be expected to be as deep as 350 feet. The crystalline, metamorphic rock underlying the site is not a prolific aquifer, but generally yields about 2-5 gallons of water per minute. Allowing each student 25 gallons of water per day (toilets, kitchen facilities, showers), a total water demand of 17,500 gallons would be required for 700 students on a daily basis. Assuming an 18 hour pumping period, the yield of a well for the school would need to be about 16 gallons per minute. As mentioned earlier, since bedrock wells typically produce relatively small amounts of water (2-5 gallons per minute), it seems likely that more than one well will be required to service the school.

During the pre-review meeting, Team members and Town officials discussed the possibility of tying the potential school into an existing community water supply located just north of the high school. There is little well data available on this bedrock well. It is known, however, that it currently serves about 108 persons. Also, there is a possibility that the future Chesterfield Hills Estates subdivision may also utilize this well. If so, it could mean an additional 260 customers bringing the total to about 368 customers. Allowing each person 75 gallons of water per day, a total water demand of 27,600 gallons would be required to serve the residential needs. Combining the residential needs with the potential water demands of the school brings the total to approximately 45,100 gallons per day. A bedrock well capable of yielding about 42 gallons per minute (based on an 18-hour pumping period) would be required to service both the residential needs and the school. Bedrock yields, particularly in crystalline metamorphic rocks rarely come close to this figure. It seems likely that 3 or more wells would need to be drilled in order to fulfill the desired 42 gallons per minute.

The proposed water supply system for the school, whether developed on-site or used jointly with the existing community water supply, 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 both departments. Both departments should be contacted early on for an application for the subject certificate in either case. Ideally, consideration should be given for the take-over of the water supply by a public water supply company which is capable of maintaining the supply in compliance with all local,

state and federal regulations.

The natural quality of the water should be good. There is always a chance for elevated iron levels in the metamorphic rocks, but there are filters available on the market to combat this problem.

8. PLANNING CONSIDERATIONS

This proposal would utilize the existing high school property as the location for a new Middle School to house grades 6, 7, and 8. The site itself contains approximately 68 acres with some 29 of these acres being undeveloped.

The site and the surrounding area is zoned Residential A-40 in which schools and public buildings are permitted by right. The residential character of the area is an appropriate environment for school facilities. Additionally, both the Town and Regional Plans of Development depict the area as appropriate for school usage.

Public sewers are available on-site presently and there is the possibility of using an existing community well system. Currently, the site maintains its own water supply wells for the high school.

The size of the undeveloped portion of the site available for this use exceeds minimum parcel size guidelines. For a proposal of this type and size, the recommended parcel size is approximately 12 acres. ("School site Selection", APA Information Report No. 175.)

The western portion of the site, which is the undeveloped section, is relatively level with a moderate slope of approximately 8--10% easterly in the center of the property adjacent to the football field.

The Woodbridge soil type of the site has characteristics of a high water table. The high water table may be a consideration for construction but, due to the availability of public sewers to the site, should not have other adverse impacts.

The site is centrally located within the Town and located on well maintained local roads. While traffic count data on local roads is generally unavailable, a recent traffic impact study of the surrounding road network conducted by Wilber Smith and Associates (February, 1987) for a residential subdivision east of the high

school site found the following existing traffic volumes:

	Chesterfield Road	Old Colchester Road
AM Peak	345 v.p.h.*	545 v.p.h.
PM Peak	420 v.p.h.	675 v.p.h.

The development that this study was conducted for will add some forty vehicle trips to these peak hour flows.

The addition of the Middle School itself has the potential to generate an AM peak hour flow of approximately sixty-seven (67) vehicles to and from the site per day and a PM peak hour flow of approximately twenty-eight (28) vehicles to and from the site per day.** Together, the proposed subdivision and the Middle School have the potential to change the road networks traffic volumes as follows:

	Chesterfield Road	Old Colchester Road
AM Peak	452 v.p.h.	652 v.p.h.
PM Peak	488 v.p.h.	743 v.p.h.

The generalized capacity of a two-lane road of this type is approximately 1,800 v.p.h.** It is estimated that due to the geometrics of the road network, the generalized capacity figure would be minimally reduced in this situation.

The Montville Police Department has not had a high accident rate experience in the vicinity of Chesterfield and Old Colchester Roads.

The projected traffic volumes coupled with the past accident rate experience indicate that the road network has the capacity to handle the proposed additional traffic volume safely and without significantly affecting the present level of service.

If the site is developed for school use as proposed, consideration should be given to minimizing access roads to the site which would enhance traffic control. Additionally, consideration should be given to creating exclusive turning lanes into the access road in order to permit uninterrupted "through" traffic flow.

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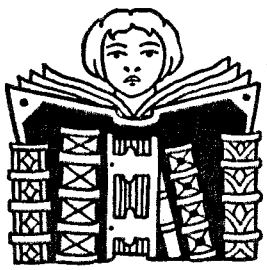
*Vehicles per hour

**National Cooperative Highway Research Program Report No. 187

Generally, the proposed site is large enough in size, is centrally located within the Town, has accessibility to public sewers which minimizes possible negative aspects of the site's high water table, is located within a residential neighborhood which is an appropriate environment, and is on a road network which is capable of handling the additional traffic volumes without adversely affecting the present level of service.



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.