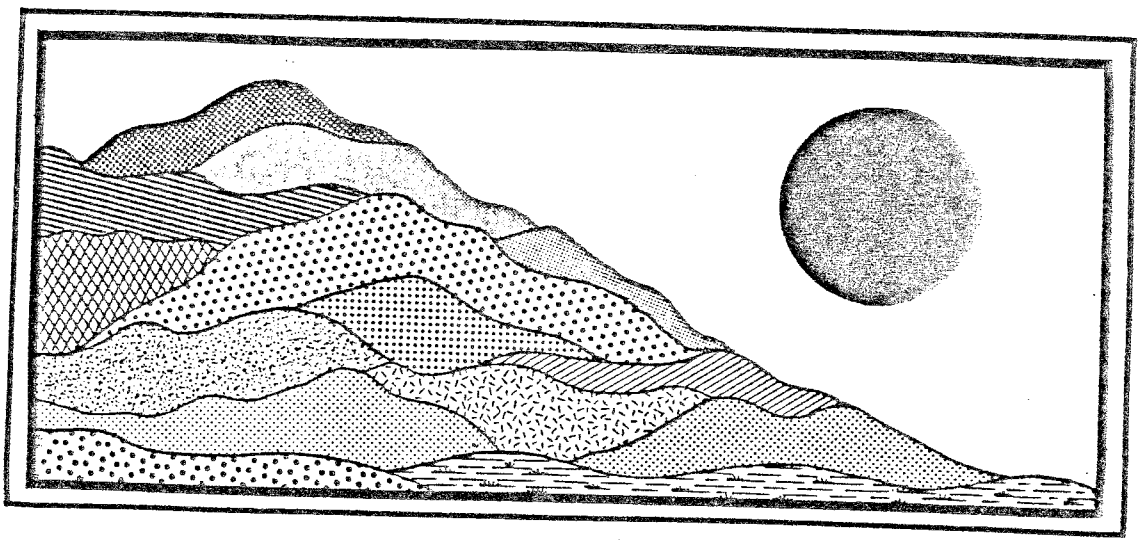
Access Road

Vernon, Connecticut

February 1987



ENVIRONMENTAL REVIEW TEAM REPORT

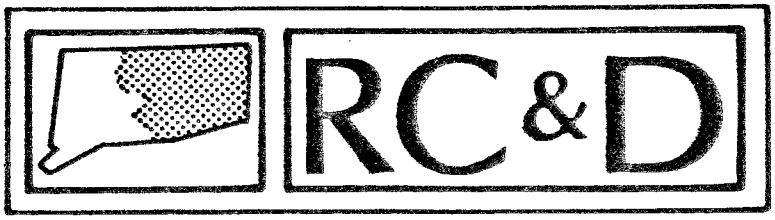
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Access Road

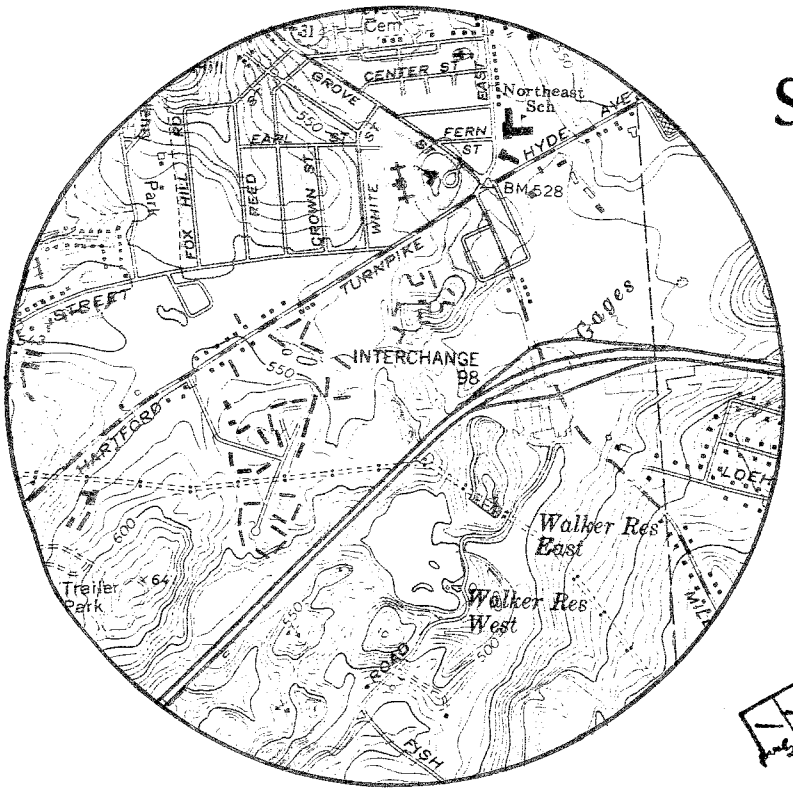
Vernon, Connecticut

Review Date: NOVEMBER 24, 1986

Report Date: FEBRUARY 1987



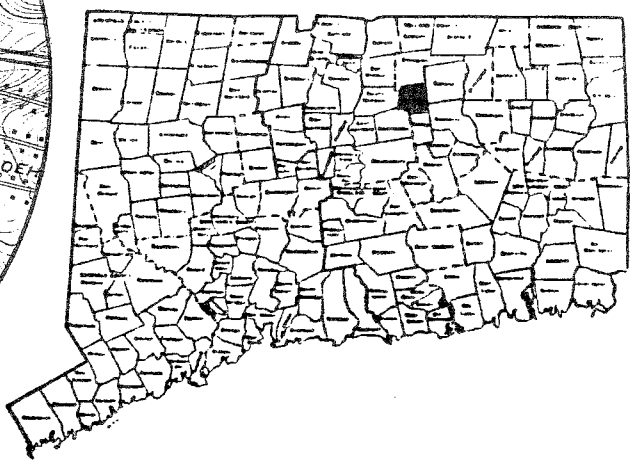
ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234

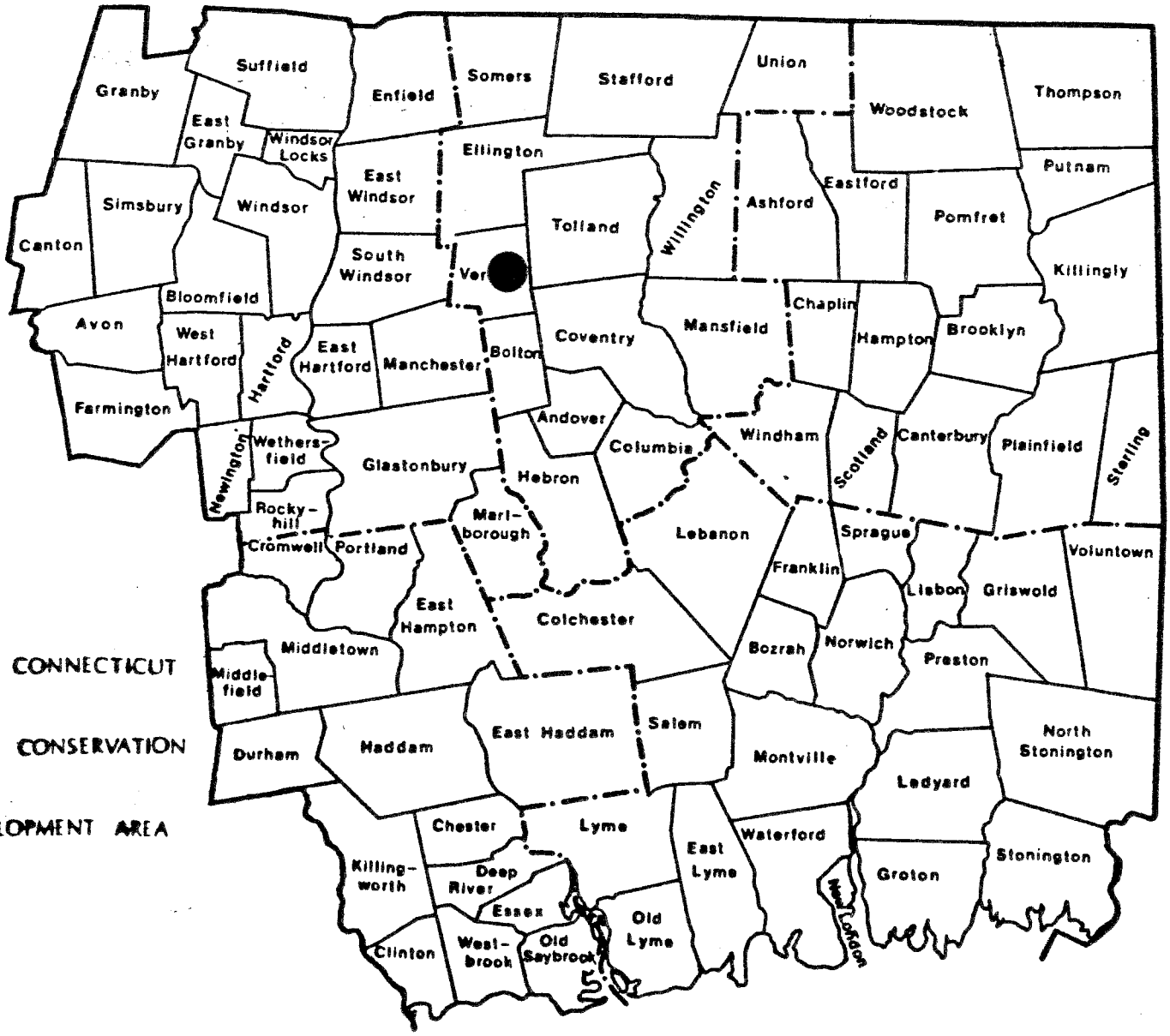


Site Location

ACCESS ROAD

VERNON, CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT

ON

PROPOSED ACCESS ROAD

VERNON, CONNECTICUT

This report is an outgrowth of a request from the Vernon Town Planner to the Tolland 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 November 24, 1986. Team members participating on this review included:

Doug Cooper	--Pr. Environmental Analyst - DEP, Water Resources Unit
Joe Neafsey	--District Conservationist - U.S.D.A., Soil Conservation Service
Jim Parda	--Forester - Connecticut Department of Environmental Protection
Alfred Roberts	--Soil Resource Specialist - U.S.D.A., Soil Conservation Service
Harry Siebert	--Transportation Planner - ConnDOT
Eric Schluntz	--Fisheries Biologist - Connecticut Department of Environmental Protection
Elaine Sych	--ERT Coordinator - Eastern Connecticut RC&D Area
Bill Warzecha	--Geologist - DEP, Natural Resources Center
Judy Wilson	--Wildlife Biologist - Connecticut Department of Environmental Protection
Mike Wosniak	--Community Development Planner - Capitol Region Council of Governments

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 preliminary site plans and copies of a preliminary environmental impact analysis. The Team met with, and were accompanied by the developer, and his environmental analyst. 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 access road.

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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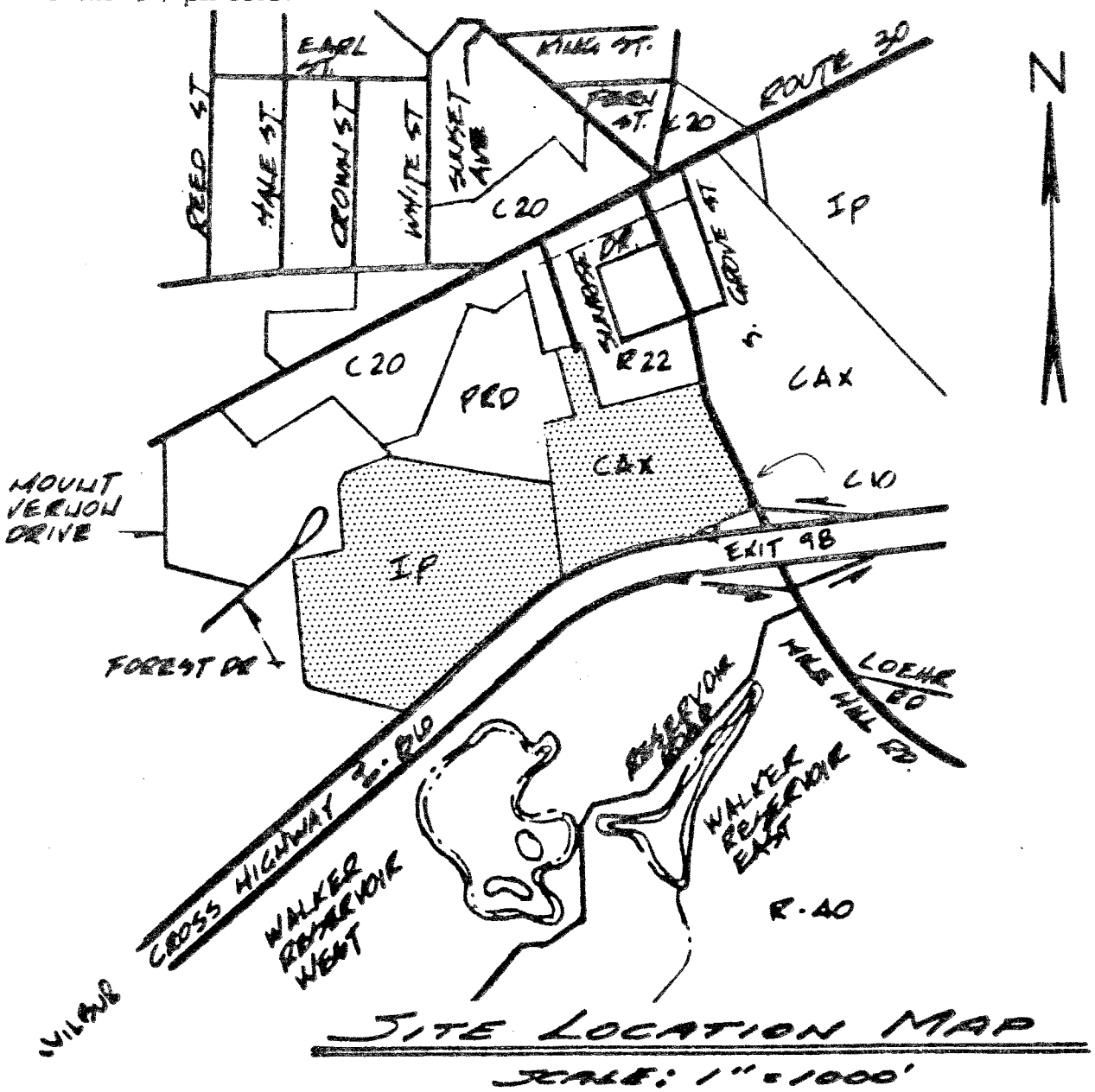
A. INTRODUCTION

The Eastern Connecticut Enviornmental Review Team has been asked by the Town of Vernon to perform an environmetnal assessment of a proposed access road through two (2) parcels of property.

The two (2) parcels are comprised of: (1) the Bray Property, which covers 17 acres in the eastern parts of the site and is zoned commercial and (2) the Kirstofak/Peterson Property, which covers about 26 acres in the western parts and is zoned for industry.

This report addresses basic information, concerns and recommendations regarding the impact of the proposed road and subsequent development of the two (2) parcels.



SITE LOCATION MAP

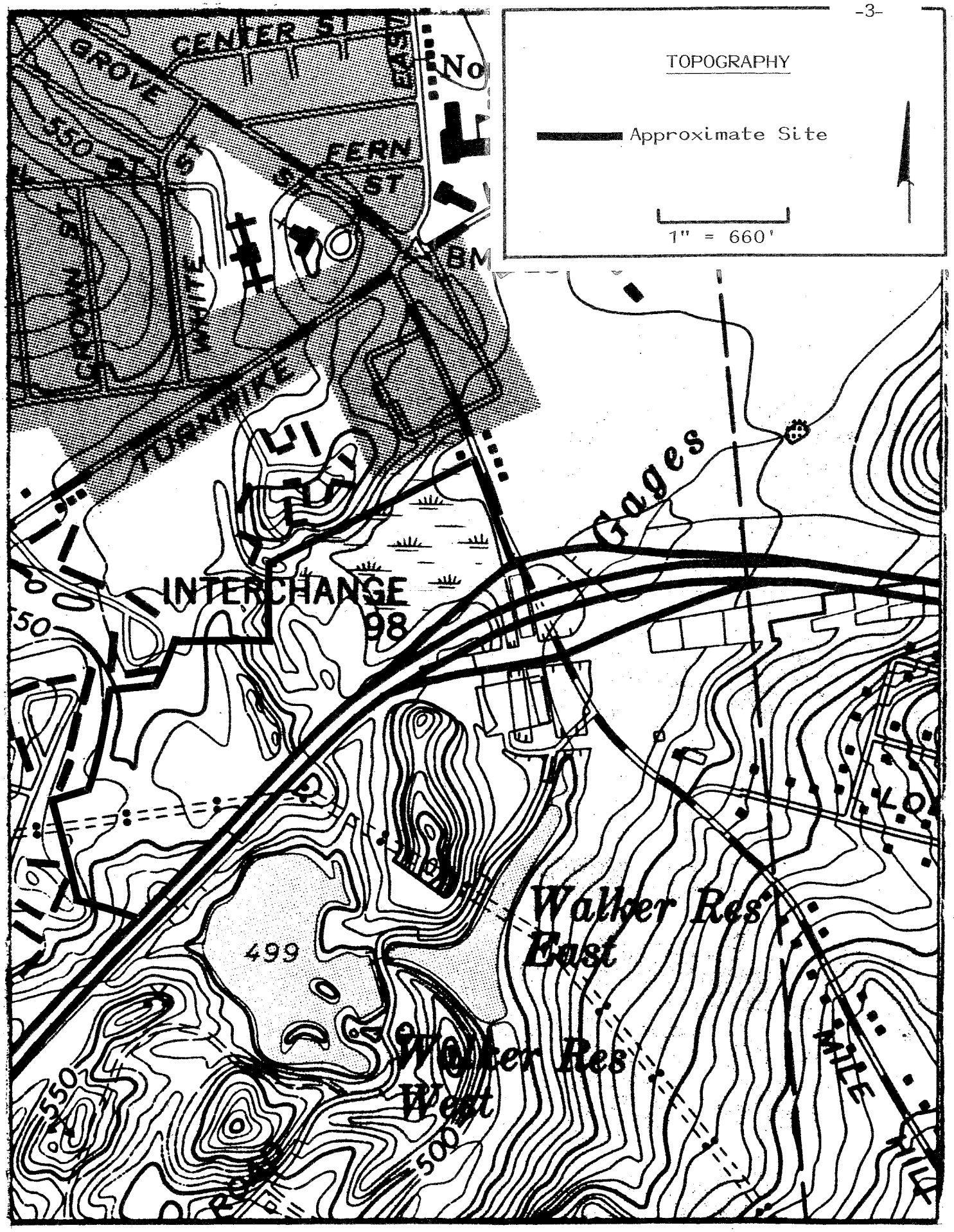
SCALE: 1" = 1000'

B. TOPOGRAPHY

The eastern part of the site (Bray Property) is dominated by a wooded wetland area about ±12 acres in size. Along the northern border and in the western parts of this parcel, the land surface rises to upland soils. The minor upland areas of the parcel are characterized by sandy and gravelly soils that have less severe limitations to development than the wetland soils. Based on a cursory inspection of the western parts of the Bray Property, it appears that soil from adjacent upland areas had been placed over the wetland soils. Deep test pits will need to be excavated or bored in this area to verify the subsurface conditions, i.e. soil types, depth to groundwater table, etc. I-84 and Route 31 forms the eastern and southern boundaries, respectively, of the site.

The 26 acre parcel of land referred to as the Kristofak/Peterson Property consists mainly of sandy, gravelly upland soils, except for minor wetlands in the northern parts.

It is understood that the applicant (s) wishes to construct an access road through the northern parts of the wetlands comprising the Bray Property, which would serve commercial development in the western parts of the parcel, as well as to serve potential industrial development on the Kristofak/Peterson Property.


TOPOGRAPHY
Approximate Site
1" = 660'
CENTER ST
GROVE ST
FERN ST
WHITE ST
GROVE ST
TURNPIKE
INTERCHANGE 98
Gages
Walker Res East
Walker Res West
MILE
550
500
499

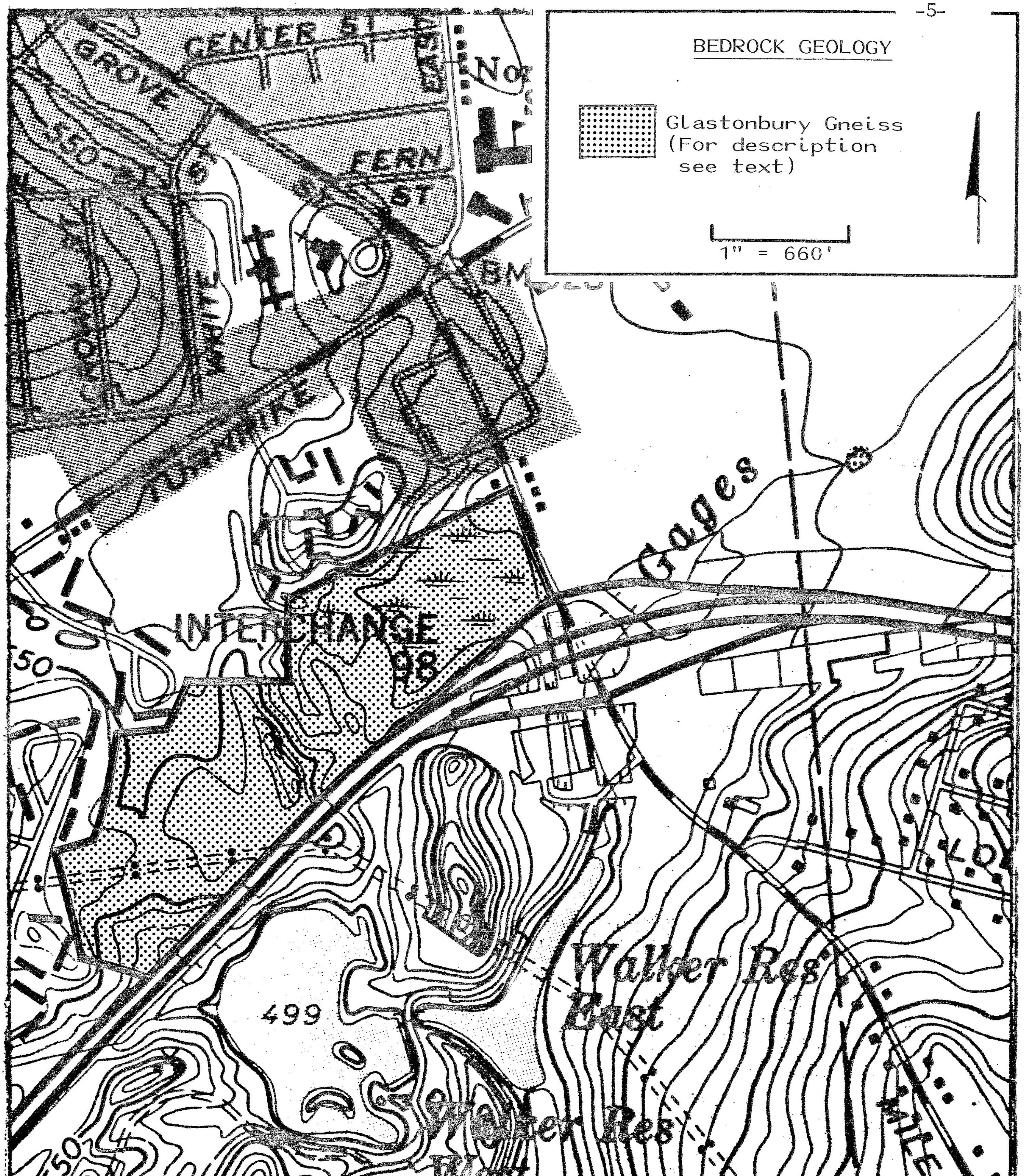
C. GEOLOGY

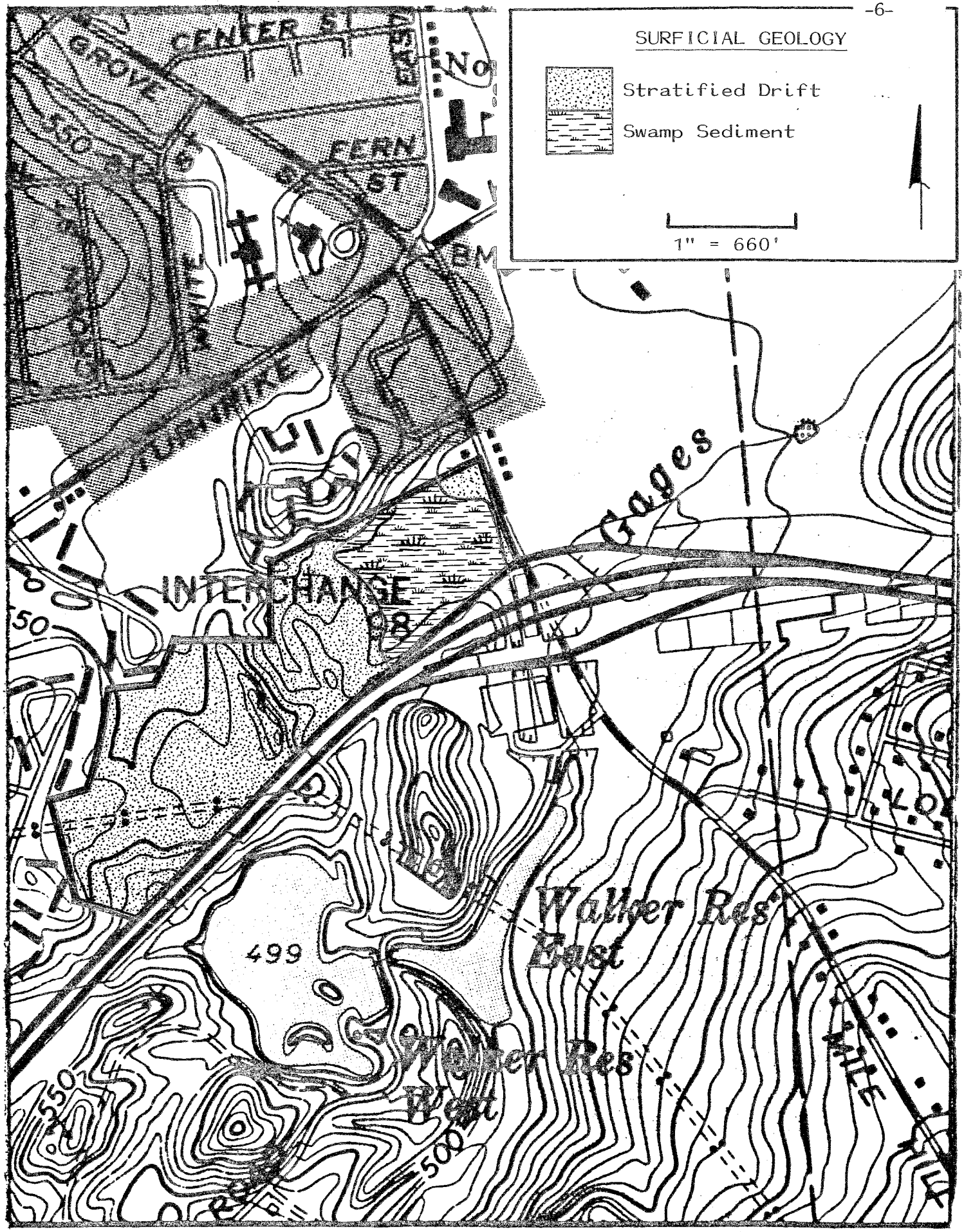
The site is encompassed by the Rockville topographic quadrangle. A bedrock geologic map (QR-6, by Janet A. Aiken) of the quadrangle has been published by the Connecticut Geological and Natural History Survey. Also, referenced for this section of the report was John Rodger's "Bedrock Geological Map of Connecticut", published in 1985. A surficial geologic map of the quadrangle has not been completed to date. The Team's Geologist referenced the preliminary Surficial Materials Map of Connecticut, Janet Stone, et al., and Soil Survey-Tolland County, Connecticut for this section of the report.

Bedrock underlying both parcels has been classified as Glastonbury Gneiss. Rodgers (1985) describes it as a gray, medium to coarse grained, massive to well-foliated granitic gneiss. The bedrock surface does not break the ground surface within the study area. According to Water Resources Bulletin #24 (Upper Connecticut River Basin), which encompasses the subject parcel, depth to the bedrock surface throughout the site ranges between 51 feet and 150 feet. Because of its deep setting, and because the proposed development will rely on public water (no on-site wells), the underlying bedrock should pose little or no problem.

The Bray Property is dominated by a ± 12 acre swamp. According to the preliminary Surficial Materials Map, it consists largely of muck and peat containing minor amounts of sand, silt and clay, which accumulated in poorly drained areas. These deposits are probably less than 10 feet thick and are underlain by a relatively thick layer of stratified drift, a relatively thin layer of glacial sediment called till and finally, the bedrock surface. It appears that the wetlands in the western parts of the Bray Property had been covered by material from the adjoining upland areas. The applicant noted on the field review day that it is likely that commercial development would infringe on the filled area. It should first be determined whether or not the filled area constitutes regulated wetlands. Also, detailed subsurface exploration, such as soil borings and deep test pits should be conducted throughout this area to determine organic content of the soil. The organic material in the soil may not support building foundations and road base. If proper precautions are not taken, severe problems such as cracked foundations, subsiding road base, and crumbled road bases may occur. For this reason, it is also recommended that soil borings be conducted along the proposed road route and analyzed by a competent soils engineer.

The remainder of the Bray Property and the Kristofak/Peterson Property is covered by a glacial sediment called stratified drift. Sand and gravel are the major components of stratified drift. The layering of the stratified drift within the parcels ranges from well-sorted to poorly sorted. Its thickness ranges from about 51 to 150 feet. The sandy and gravelly deposit found on both parcels are relatively poor filters for contaminated groundwater. However, the risk of significant groundwater contamination is reduced by several factors; (1) the ability of the deposits to absorb more rainfall than other types of soil; (2) the availability of public sewer facilities; (3) the small size of the site; and (4) the availability of public water.


BEDROCK GEOLOGY
Glastonbury Gneiss
(For description
see text)
1" = 660'
CENTER ST
GROVE
FERN
ST
TURNPIKE
Gages
INTERCHANGE
98
499
Walker Res
East
Walker Res
West
550
500
MILE


SURFICIAL GEOLOGY
Stratified Drift
Swamp Sediment
1" = 660'
CENTER ST
GROVE
FERN ST
TURNPIKE
INTERCHANGE
Gages
Walker Res
East
Walker Res
West
499
550
500
MILE

In regard to the latter comment, the exact direction of groundwater on the site is not known, nor is it known if public water is available to these areas should groundwater contamination problems arise from the proposed industrial development. Perhaps potential users of the industrial park could be screened first to evaluate the type of industrial wastes, and methods for handling and disposing of such wastes. Despite the availability of public sewers, certain types of industries may pose too great a risk for site conditions, especially in view of the widespread sandy and gravelly soils.

D. SOILS

This property has undergone considerable alterations since the publication of the Tolland County Soil Survey. The area zoned industrial, formerly consisted of sandy and gravelly soils of the Manchester series. This area was excavated and most of the sand and gravel hauled away. It appears that some of this material was used to construct the new interchange at the junction of Connecticut Route 31 and I-84. What resulted was a large abandoned gravel pit that has been excavated to the groundwater table. There also exists an old sediment basin with riprapped walls near the east side of the pit. Groundwater pollution may be of concern in this area.

To the east in the area zoned commercial, are both shallow and deep muck soils. These soils are wetland soils and comprise most of this lot. Some of the muck soils were filled with two to three feet of sand and gravel near the area where a hotel unit is proposed. Subsequent backhoe excavations were made to verify the depth of fill and established a wetland soil boundary on the south and east side of the lot near I-84. It is recommended that the Town Wetlands Enforcement Officer make sure boundaries are flagged in the field and correctly plotted on the proposed plans.

The main soil limitations of these sites are shallow and deep mucks, along with an abandoned gravel pit with a high water table. The muck areas are deep and very unstable. Most of this area will be destroyed to construct the proposed access road. Also, a stream channel will have to be re-routed in order to place the road in the proposed area. Unstable soil conditions in the area that have been filled will cause sinking foundations and the eventual collapsing of any buildings constructed in the area of the fill.

In the center of the abandoned gravel pit, the groundwater is at the surface. Activities in this area may pollute water supplies in the area. Extensive land reclamation will be needed in and around the gravel pit.

Included in this section of the report are detailed soil map unit descriptions and a list of soil map symbols with their current interpretive names. Map symbols used are those that appear in the published soil survey; however, soil map unit names reflect current concepts and interpretations. In some cases, map units are combined or they were renamed. Also included is a revised soil map to show the approximate boundaries of soils over this parcel. It should be noted that the soils information is significantly different.

Listed below are the soil map symbols, with their current interpretive names, which are used in the published soil survey and on the revised map.

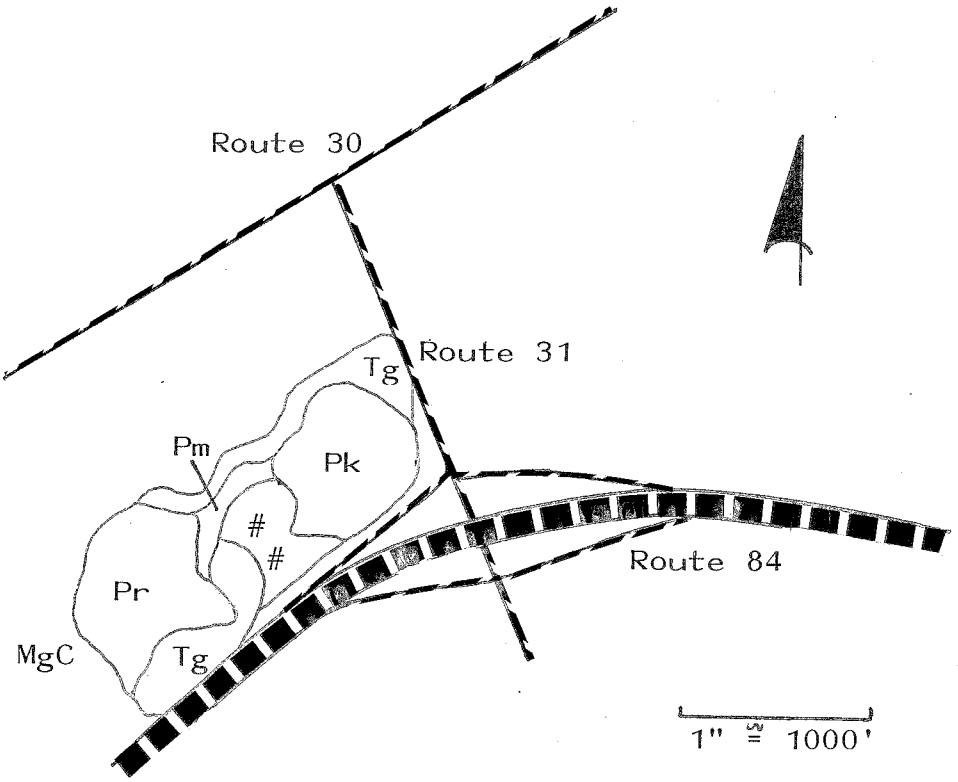
MgC - Manchester gravelly sandy loam, 3 to 15 percent slopes.
#Pk - Carlisle muck
#Pm - Adrian and Palms mucks
Pr - Pits, gravel
Tg - Manchester gravelly sandy loam, 15 to 45 percent slopes

#Designated Inland Wetland Soils

United States Department of Agriculture

Soil Conservation Service

Tolland County USDA-SCS
24 Hyde Avenue
Rockville, CT 06066
875-3881



SOILS

MgC	-	Manchester grsl, 3-15% slopes
Pk	-	Carlisle Muck
Pm	-	Adrian & Palms Muck
Pr	-	Pits, Gravel
Tg	-	Manchester grsl, 15-45% slopes
##	-	Fill area underlain by Muck soils

MgC - Manchester gravelly sandy loam, 3 to 15 percent slopes. This is a a gently sloping to sloping, excessively drained soil on outwash terraces of stream valleys. This soil is mainly on the edges of terrace breaks where the terraces adjoin the glacial till uplands. Slopes are mainly smooth and are less than 250 feet long. The areas dominantly are irregular or long and narrow in shape.

Typically, the surface layer of this soil is reddish brown gravelly sandy loam 6 inches thick. The subsoil is yellowish red gravelly sandy loam and gravelly loamy sand 10 inches thick. The substratum, to a depth of 60 inches, is yellowish brown stratified sand and gravel.

Included with this soil in mapping are small intermingled areas of excessively drained Penwood soils and well drained Branford soils. In a few areas the soils are not so gravelly, and in some areas the surface layer is gravelly loamy sand. Included soils make up 5 to 15 percent of this map unit.

Permeability is rapid in the surface layer and subsoil and very rapid in the substratum. This soil dries out and warms up rapidly in spring. It has a low shrink-swell potential.

This soil has fair potential for community development. It is limited mainly by steep slopes and droughtiness. It is easy to excavate; however, the steep slopes of excavations are unstable. The droughtiness of this soil is a major concern in landscaping. Irrigation or sprinkling is needed in summer. Waste disposal systems such as septic tank absorption fields need careful design and installation to ensure that effluent does not seep to the surface in areas downslope from the leaching system. Because the substratum is very rapidly permeable, caution is needed to prevent pollution of groundwater. Intensive conservation measures may be needed to prevent excessive runoff, erosion, and siltation during periods of construction.

Included soils are as well suited to community development as this Manchester; however, the Branford soil is better suited to landscaping because it is not droughty.

Pk - Carlisle muck - This soil is nearly level to level and very poorly drained. It is in low depressions on outwash terraces and glacial till plains. Areas of this soil are mostly oval in shape. Slopes range from 0 to 2 percent but are mostly less than 1 percent.

Typically, this soil is black, very dark brown, and dark reddish brown muck to a depth of 60 inches or more.

Included with this soil in mapping are small areas of very poorly drained Adrian, Palms, Saco, Scarboro, and Whitman soils. A few small areas have a thin mineral layer on the surface. Included areas make up about 25 percent of the unit.

The Water table of this Carlisle soil is at or near the surface during most of the year. The available water capacity is high. Permeability is moderately rapid. Runoff is very slow, and water is on the surface of some areas from autumn to spring and after heavy rains.

Most areas of this soil are wooded or are covered by marshgrasses and sedges. Most areas do not have adequate drainage outlets. Although this soil supports red maple, ash, and alder, it is poorly suited to woodland production. The organic material will not support heavy equipment, and uprooting is common during windy periods.

The high water table and the low strength of the organic material make this soil generally unsuitable for community development.

Pm - Adrian and Palms mucks - This mapping unit consists of very poorly drained soils with an organic layer at least 16 inches thick, but not more than 51 inches thick over sandy and loamy mineral soil materials. These soils are on the landscape commonly in low depressions and along drainageways of outwash plains and glacial till uplands. Slopes are commonly less than one (1) percent.

Adrian and Palms soils have a high water table at or near the surface for most of the year. Permeability is moderately rapid in the organic layers and moderately slow to rapid in the underlying mineral materials. Included in these soils in mapping are small areas of soils with organic material less than 16 inches thick and small areas with organic materials greater than 51 inches thick. These soils are generally not suited to agricultural use or building site development without major reclamation.

Pr - Pits, gravel. This unit consists of irregular shaped areas that have been excavated for sand and gravel. The areas are mostly on outwash plains and terraces of stream valleys and range from 3 to 60 acres. Slopes mainly range from 0 to 25 percent, but are steeper on escarpments along the edge of the pit.

Included with this unit in mapping are small intermingled areas of Udorthents, excessively drained Hinckley and Windsor soils, somewhat excessively drained Merrimac and Gloucester soils, and moderately well drained Ninigret and Sudbury soils. Also included are a few small bodies of water. Included areas make up about 20 percent of the unit.

Tg - Manchester gravelly sandy loam, 15 to 45 percent slopes. This is a sloping to steep excessively drained soil on terraces of stream valleys and glacial outwash plains. The areas of this soil are on terrace breaks along drainageways in highly dissected areas and on kames and eskers. They are irregular in shape with slopes that are generally short and range from 100 to several hundred feet in width.

Typically, the surface layer of this soil is reddish brown gravelly sandy loam 6 inches thick. The subsoil is yellowish red gravelly sandy loam and gravelly loamy sand 10 inches thick. The substratum, to a depth of 60 inches, is yellowish brown stratified sand and gravel.

Included with this soil in mapping are small intermingled areas of excessively drained Penwood soils and well drained Branford soils. In a few areas the soils are not so gravelly, and in some areas the surface layer is gravelly loamy sand. Included soils make up 5 to 15 percent of this map unit.

Permeability is rapid in the surface layer and subsoil and very rapid in the substratum. This soil dries out and warms up rapidly in spring. It has a low shrink-swell potential.

This soil has poor potential for community development. It is limited mainly by short steep slopes and droughtiness. It is easy to excavate; however, the steep slopes of excavations are unstable. The droughtiness of this soil is a major concern in landscaping. Irrigation or sprinkling is needed in summer. Waste disposal systems such as septic tank absorption fields need careful design and installation to ensure that effluent leaching system. Because the substratum is very rapidly permeable, caution is needed to prevent pollution of groundwater.

E. HYDROLOGY

Most of the study area drains to the wetland located on the Bray Property in the eastern parts. The outlet stream for the wetland is routed under I-84 to Walker Reservoir, East. The western parts of the Kristofak/Peterson Parcel flows northward into the headwater regions of the Clark Brook watershed. The courses of the brooks on the Bray Property are well defined within the wetland.

The applicant (s) propose three (3) activities that would affect the wetland on the Bray Property and they include; (1) construct a commercial-type building in the western parts of the Bray Property, which may infringe on fill material placed over wetland soils; (2) create an access road along the northern boundary of the Bray Property which would extend into the wetlands and which will result in significant modification and disturbance of it; (3) develop adjacent lands which drain to the wetland.

In regard to the first comment made above, it is strongly advised that soil borings be conducted throughout the filled area to determine subsurface conditions, i.e., presence of organic materials, etc., and determine whether or not it constitutes a regulated area. Not until this information is compiled, can an accurate assessment of this area for development be determined.

Wetlands serve many valuable hydrologic and ecological purposes. They act as natural runoff detention basins, reducing downstream flood flows during storms. They trap sediments from upstream. They change water quality through biochemical processes, often resulting in cleaner water. Based on a cursory inspection of the wetland and an environmental report made available to Team members by the applican's consultant, it appears that the wetland on the Bray Property performs all of the above functions. It is also in an excellent hydrologic position to protect the water quality of the Walker Reservoirs and other downstream watercourses. Also, wetlands serve as habitat for many species of animals and plants. For these and other reasons, every effort should be made to avoid wetland fillings or disturbances, especially if the risk of environmental damage is high. Once a definite route through the wetland has been determined, the applicant should be required to assess the risk of filling and disturbing the wetland from a hydrologic and ecologic standpoint. Since the wetlands on the site afford values which deserve protection, every effort should be made to look at alternate routes to the Kristofak/Peterson Parcel, which would eliminate crossing the wetlands. It is understood that there is a right-of-way through an apartment complex to the north. If no alternate route appears pratical, the Town may wish to seek assurances that the least disturbing route through the wetlands from an ecologic and hydrologic standpoint be constructed.

Both commercial and industrial development of the site would increase the amount of runoff during periods of rainfall. These increases would result from soil compaction, removal of vegetation, and placement of impervious surfaces (roofs, driveways, etc.) over the soil. Since the commercial and industrial uses tend to require more impervious surface area (as for parking lots and bigger buildings), the runoff increases for that type of development would be expected to be high.

Parking lot runoff would probably be the principal source of surface water contamination. Judicious planning and engineering, perhaps utilizing the natural cleaning abilities of the wetland on the Bray Property, can mitigate the deleterious of effects of such runoff. This wetland area may also be useful for controlling post-development increases in runoff.

If the wetland road crossings appear feasible to the Town, it is imperative that they be properly engineered. Provisions should be made for removing unstable material beneath the roadbed, backfilling with a permeable road base fill material and installing culverts as necessary. When crossing any wetlands, the roads should be at least 1.5 feet and preferably 2 feet above the surface elevation of wetlands. This will allow for better drainage of the roads. It will also increase 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.

The steep slopes that characterize the bank along the northern property line are composed of sands and gravel if they are disturbed, there is a good chance of "cave-ins". As a result, if the road is located near these slopes, there may be a need for shoring.

F. RESOURCE CONCERNS

1. EROSION AND SEDIMENT CONTROL

Final plans should include a detailed plan to control soil erosion and sedimentation. The strategy of the plan should be to prevent siltation of the wetlands and watercourses and to prevent silt from entering the storm drainage system. Plans should be developed according to the methods outlined in the Connecticut Guidelines for Soil Erosion and Sediment Control (1985).

2. STORM WATER MANAGEMENT

Final plans should include a detailed hydrologic analysis of the proposed development with emphasis on impacts to the wetlands adjacent to the site and the downstream system. The methods described in the Connecticut Guidelines for Soil Erosion and Sediment Control (1985) should be used. In agreement with the preliminary findings presented in the BEC report with respect to potential downstream impacts on the Walker's Reservoir system, the wetlands will ultimately receive storm water generated by development. The wetland system can most likely be successfully used to retain increased peak flow volumes with minor changes to the existing 48" culvert inlet that flows under I-84. If properly designed measures (sediment and debris basins or oil separators) are installed in the storm drainage system to trap contaminents (sand, silt, oil, debris, etc.), impacts to the wetland system resulting from detention of storm water should be minimal.

3. GENERAL WETLAND RECOMMENDATIONS

(1) Due to the intrinsic values that this wetland offers in its present state, it would be preferred that alterations be avoided by careful examination of alternative routes for the access roadway.

(2) Any plan for roadway construction or development should be accompanied by accurate soils data as may be obtained by field examination.

(3) If alternative access routes which avoid wetland disturbance are not available, all appropriate measures to avoid unnecessary alteration of wetlands by vehicle operation, siltation or storm water discharges should be implemented. Buffer plantings which encourage birdlife and provides a visual barrier are also desireable along the periphery of such roadways.

(4) The applicant and municipal agency should be aware that these wetlands are of significant value and that the primary step to mitigate impacts should occur by design of the project to avoid wetland intrusion.

4. WETLAND/WILDLIFE CONCERNS

The limits of wetlands and watercourses on the site are not adequately or accurately shown on the plan map dated 6-25-86. A certified soil scientist should examine the property and wetland boundaries should be flagged in the field and

numbered sequentially. Watercourse limits should also be identified. This information should then be surveyed onto the plan map. The soil scientist should then examine the information and sign the map to certify it as substantially correct. This makes the verification process easier. Without this information, the ERT was not able to verify wetland boundaries.

The large wetland parcel on the property although isolated is by no means devoid of wildlife. The BEC report (Section F Wildlife, pages 10 and 11) discusses the site in detail and provides an accurate assessment. Many bird species use this habitat for food, shelter, water and breeding sites. Some are permanent residents, others use it intermittently or seasonally. Development of this parcel as proposed will further isolate and probably degrade the value of the area for wildlife. The proposal calls for construction of an access road through the north edge of the wetland and commercial development along the east and west edges. The BEC report estimates 1.5 to 2.0 acres of wetland either filled or disturbed. Most of the disturbance will occur along the edges of the wetland, an area that provides much of the inherent values to existing wildlife that use the parcel. In addition the upland buffer that now exists along the wetland edge will be eliminated and replaced with either roadbanks, asphalt, grassed areas, lawns or commercial buildings.

The Team District Conservationist disagrees with the BEC report statement (p. 22 Section VIII, paragraph 1) concerning mitigation and impact avoidance. Mitigation is discussed in the BEC report, but no specifics concerning wetland habitat mitigation were mentioned other than a suggestion that an attempt be made to minimize the area impacted. Successful mitigation schemes (based on Golet-Larson or others) with respect to replication of wetland habitat are few and far between and the potential for this site is low in his opinion given the intensity of development and the encroachment that is proposed. If a mitigation plan is proposed it should be throughly reviewed prior to conditional approval and the plan fully implemented and assessed prior to granting any final construction permits.

He also disagrees with the BEC report's conclusions on page 25 concerning natural habitat impacts (#4). Assuming the development were limited to the constraints listed in the proposal, the loss would be 2 acres of actual wetlands and approximately 2500 feet of upland buffer (roadbank and development on three (3) sides). Since the I-84 roadbank borders the southern wetland edge, the proposed development will effectively eliminate all of the remaining upland buffer and the impacts on wildlife will most likely be significant and severe.

The Conservation Commission is advised to require the developers to examine alternative access routes to the site which avoid major wetland crossings and development plans which will retain and/or enhance a wildlife buffer around the wetland edges. One of the given reasons that access road construction is proposed across the wetland is the objection of ConnDOT to increased traffic on Route 30 (Hartford Turnpike). It seems that an alternative plan which meets their concern can be developed for consideration.

In addition, consideration should be given to transferring the wetland areas and buffer to a land trust in order to provide permanent protection for the area (see BEC report page 25 #6).

G. VEGETATION

The tract which is proposed for development can be divided into seven (7) vegetative types. These include eight (8) acres of wetland ranging from open water to shrub swamp and hardwood swamp, seven (7) acres of filled wetland, three (3) acres of old field, one (1) acre of oak-hickory upland forest, eight (8) acres of softwood/hardwood poletimber and occasional sawtimber, sixteen (16) acres abondoned gravel pit planted with white pine.

1. VEGETATION TYPE DESCRIPTIONS

Stand 1: 3 acres, Old Field. This abondoned field area is a combination of woody vegetation and grasses. Included are seedling oaks and hardwoods, multiflora rose, blueberry, golden rod, steeple bush and grass.

Stand 2: 4 acres, Hardwood Swamp. This poorly stocked stand is sapling/poletimber sized red maple with an open understory of scattered blueberry with sphagnum moss and princess pine and the most common ground covers.

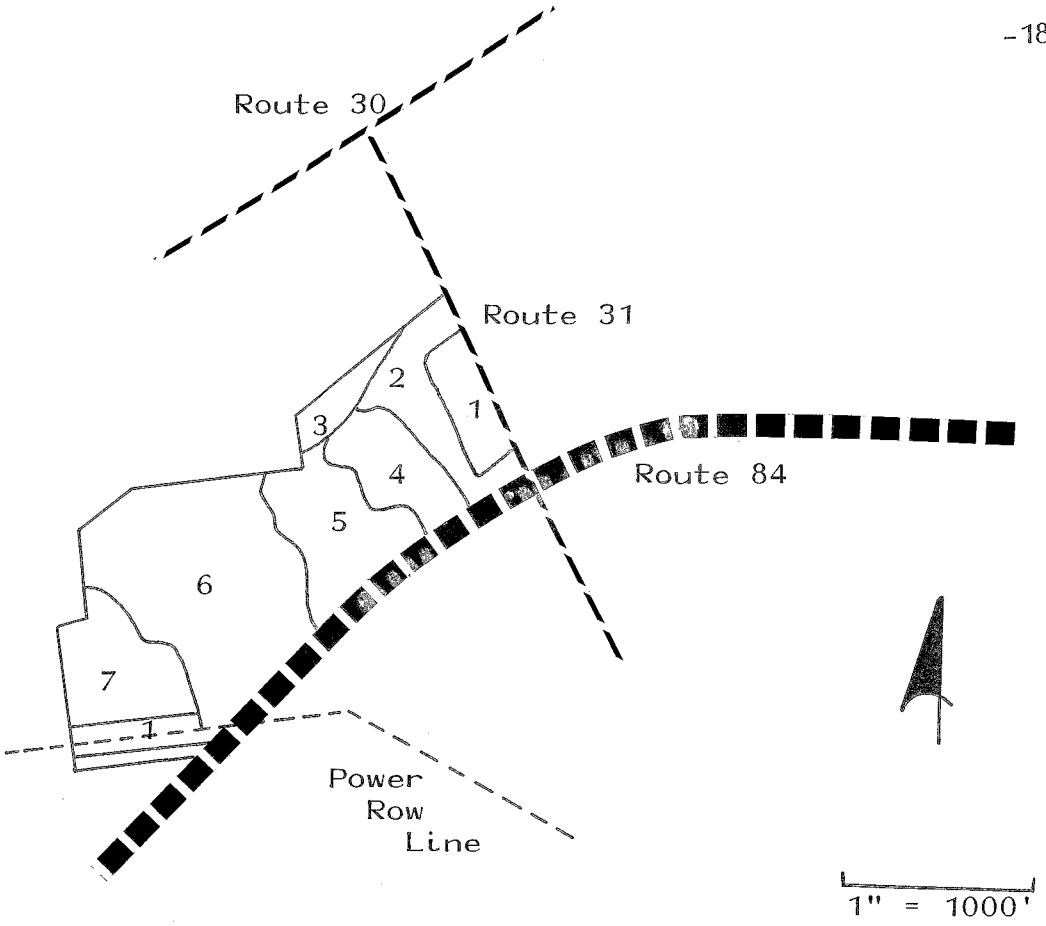
Stand 3: 1 acre, Oak-Hickory. This is a narrow upland oak stand on a steep side hill along the north boundary of the property . Species include black oak, scarlet oak, white oak and hickory in the poletimber and small sawtimber size classes. Understory vegetation includes blueberry, grey birch and red maple.

Stand 4: 4 acres, Hardwood Shrub Swamp. This wetland is densely stocked with numerous species of shrubs including dogwood, spicebush, blueberry, speckled alder, autumn olive, multiflora rose, grape, scattered red maple, cotton wood, willow and black locust as well as cattail, sedges and grasses.

Stand 5: 7 acres, Filled Wetland. This area was once a wetland, but appears to have been filled. It is presently occupied by a dense stand of sapling black locust with cottonwood, willow, red maple, sweet fern, steeple bush, golden rod and grasses.

Stand 6: 16 acres, Abondoned Gravel Pit. A small portion of this old gravel pit has a few scattered oaks on site. However, for the most part the soil is bare, covered with sparse grass or a scattering planted white pine seedlings.

Stand 7: 8 acres, Softwood-Hardwood. This stand is stocked with all sizes of trees (sapling, poletimber, sawtimber). Due to past cutting practices some areas have dense oak understory vegetation, while other areas are a combination of white pine, mixed oaks, birches and maples in the poletimber and sawtimber size classes.



VEGETATION

Stand 1 : Old Field
Stand 2 : Hardwood Swamp
Stand 3 : Oak-Hickory
Stand 4 : Hardwood/Shrub Swamp
Stand 5 : Filled Wetland
Stand 6 : Abandoned Gravel Pit
Stand 7 : Softwood/Hardwood

For full descriptions please see text.

2. AESTHETIC CONSIDERATIONS

Some of the scattered larger trees and a small grove of white pine in stand 7 may be valuable to improve aesthetics and for shade. However, trees are sensitive to the condition of the soil within the entire area under their crowns. Building practices near trees, such as excavation, filling and grading can disturb the balance between soil aeration, soil moisture level and soil compositon. Care should be taken during construction not to disturb trees that are to be retained so that roots are not cut by machinery or the tree itself is not damaged by tearing the bark with equipment. Trees with shallow root systems, such as white pine, should be avoided by machinery. If the wetlands of stands 2 and 4 are either filled with soil, flooded with water or drained due to construction the trees and shrubs would die leaving an unsightly area of dead, gray snags.

3. MANAGEMENT CONSIDERATIONS

Planted conifers to serve as windbreaks and visual screens to the highway and along the north boundary near the apartment complexes may be considered in the development plan. Three or four rows of planted white pine would serve as a shelter for song birds over time, and could absorb or mask some of the highway noise. (Also see Section J, Planning Concerns.)

H. WILDLIFE

1. WILDLIFE CONSIDERATIONS

All wildlife have the basic requirements of food, cover, water and living space. Habitat (vegetative classes) and habitat components (snag and den trees, etc.) provide these requirements. A variety of diversity of habitats best fulfills the needs of most wildlife.

Development will decrease the amount of habitat simply because the land will be occupied by physical buildings. The quality of the habitat will be decreased because an undeveloped area of land will be broken up with buildings and human activity.

Some species which require larger undeveloped areas will probably be forced out or will reduce their use of the area. They may be able to move into adjacent undeveloped areas if there is suitable habitat available and the competition with other species already occupying the area is not to great. Other species which are more adaptable to man's presence will probably remain. Some new species may even be attracted to the area.

Wetlands cover a portion of the proposed project site. Wetlands are absolutely essential areas for many species of wildlife and can be important to all because they provide habitat requirements needed for survival.

Not only are they important to wildlife, they are important to man also. They act as water storage and absorption areas that help prevent flooding. There are usually severe inherent limitations in developing wetlands due to poorly drained unstable soil types.

Wetland habitat can provide a rich variety of food, cover, nesting and brook rearing sites for a great number of wildlife species. They can provide breeding and nesting sites for waterfowl, and habitat for more than 50 species of game and non-game species including beaver, fox, mink, muskrat, opossum, white-tailed deer, and snowshoe hare. Because of previous development, there is less wetlands available for use by wildlife in general. Developing any small area by building on it will leave the majority of the area unavailable for wildlife to use.

2. RECOMMENDATIONS

If the proposed development is carried out, the following wildlife recommendations can help lessen the impact to some species using the area. Some animals will leave the area, but others may find it even more attractive after development.

(1) Design of Development/Wetlands

The impact on wildlife of the area can be lessened to some degree if some thought is given to the development. Developments can be designed in two basic ways. Buildings can be built on larger lots or they can be built on small lots or in clusters, leaving open space areas. Both designs leave more open space for wildlife as opposed to having small lots and developing the entire acreage.

Probably none of the wetland areas should be developed due to the severe limitations caused by soil capabilities and the regulations governing their development. They are important to wildlife as feeding, nesting and cover areas.

A buffer area of uncut vegetation should be left along any intermittent streams.

(2) Clearing

When the initial clearing for building is done, try to leave as many trees and shrubs as possible, especially those useful to wildlife. Some useful species include:

white oak (Quercus albra)
red oak (Quercus rubra)
black cherry (Prunus serotina)
quaking aspen (Populus tremuloides)
red-osier dogwood (Cornus stolonifera)
apple (Malus spp.)

(3) Landscaping

On small acreage with many buildings, landscaping can do a great deal to provide habitat and make an area attractive to wildlife. First, leave as many trees as possible around the buildings. This will not only benefit wildlife by providing food, cover and nesting sites (especially for songbirds), but will also be more aesthetically pleasing for the residents of the development.

Leave as many snag trees (standing dead trees) and den trees (trees with holes) as possible. These trees are used by insect eating birds and cavity nesting birds and mammals.

Plant trees and shrubs which are useful to wildlife and landscaping such as:

Japanese barberry (Bergeris bulgaris)
American mountain ash (sorbus americana)
flowering dogwood (Cornus florida
honeysuckle (Lonicera spp.)
juniper (Juniperus spp.)
bayberry (Myrica pensylvanica)
chokecherry (Prunus virginiana)
American holly (Ilex opaca)
maple-leaved viburnum (Biburnum acerifolium)
autumn olive (Elaegnus umbellata)
winterberry (Ilex verticillata)
American cranberry bush (vernum trilobum)
red maple (Acer rubrum)
alternate leaf dogwood (Cornus stolonifers)
red-osier dogwood (Cornus stolonifera)

A variety of trees and shrubs should be used. Most species of wildlife need to have cover when they move from place to place. By leaving corridors of vegetation this will allow wildlife to utilize the area and also have access to adjacent areas. Large expanses of lawn with no trees or shrubs present should be discouraged. These factors will allow wildlife to better utilize the area and thus make it more attractive to wildlife.

I. FISHERIES

Walker Reservoir East lies below the project site in the watershed. The reservoir is stocked annually with adult brown and rainbow trout. It is essential that the reservoir's water quality be maintained in order that it continues to support trout.

The reservoir recently underwent a significant dredging program to remove silt deposited during the I-84 construction process which channelized Gage's Brook, the main watercourse in the system. Since the reservoir improvement program was conducted as a cooperative Town, State and Federal program; there are strong vested interests in maintaining watershed water quality.

Crossing the wetland at its noth end and bridging, if possible, will minimize impact to its water storage and filtration capabilities. From a fisheries standpoint, these wetland protections are essential.

J. PLANNING CONCERNS

After making a site visit and thoroughly reviewing the "Preliminary Environmental Impact Analysis prepared by Baystate Environmental Consultants (BEC), it appears that development of the site is being approached in a reasonable manner given the significant environmental constraints. Since it would not be appropriate to accommodate site access for commercial and industrial development through the apartment complexes located to the north; the only way of providing access to the major portion of the site is to construct a drive across the wetlands.

In hindsight it is clear to see that the existing zoning pattern is largely responsible for the dilemma. Development of the Mt. Vernon Apartments, Dobbs Crossing Apartments, and Sleeping Giant Apartments has served to landlock the 26 acre parcel zoned for Industry. Given the restriction to access from the south and east, Route I-84 and the large wetland, the most sensible way of accommodating access to the site would have been from Route 30 to the north. Since adequate easement for a major access street was not set aside when development of the apartments took place this option was precluded. Despite its proximity to I-84 it would seem from a planning standpoint that additional multi-family residential development (apartment or condominium) would present less conflict with surrounding uses. If the site was being developed for residential use it would be possible to provide access via Mount Vernon Drive and Forest Drive. However, since the 26 acre parcel is zoned for Industry the access drive from Route 31 proposed by the developer is clearly the most appropriate way of reaching the portion of the site wast of the wetland area.

Clearly the 17 acre parcel was zoned for commercial use due to its proximity to the I-84 interchange. Although promoting business use around interchanges is a typical practice of most municipalities, it is important to note that the commercially zoned parcel is not physically suited to accommodate a great deal of development. As recognized in the "Preliminary Environmental Impact Analysis" only 4-6 acres of the 17 acre parcel are suitable for building. Although the intention of expanding opportunities for economic development around highway interchanges to capitalize on good highway access is logical; it is not good planning practice to zone a parcel of property for a type of use which it cannot physically sustain without extensive site modification. Since the zoning is in place, however, the issue at stake is whether or not the developer is proposing the most suitable means of providing access for the site.

The proposed location of the access drive along the northern boundary of the site would be most suitable because its course would follow the boundary of the wetland and therefore not divide it. Dividing the wetland with fill for the drive would significantly impede the flow of water from north to south on that portion of the site. Even being sited at the northern boundary of the property, the drive will predominantly be located over wetlands.

Based on review of the "Preliminary Environmental Impact Statement" and discussion with the Project Environmental Consultant (F. Bud Titlow) it appears that the developers are clearly aware of type of construction necessary to build a road across the wetland. Precautionary steps to avoid erosion and sedimentation problems or unreasonable pollution wetland, both during and after construction, have been outlined by the environmental consultants.

The planner/landscape architect Team member participating in this environmental review feels it is important to voice a special concern regarding the loss of vegetation associated with construction of the proposed access drive. A major concern of the Town of Vernon should be the aesthetic look of the drive and the quality of the visual experience of entering and traveling through the site.

Special effort should be made to identify larger trees (3" diameter or greater) which lie directly adjacent to the right-of-way of the proposed drive. A determination should be made of which trees are of particular landscape value and precautionary measures should be taken to protect them during construction. The disruption of the natural landscape along the proposed route of the drive will be extensive due to the large amount of muck/peat which must be removed before depositing fill. This process will alter the surface and subsurface drainage pattern in the area surrounding the drive which could be just as harmful to existing vegetation as actual physical damage. It will be important to insure that trees adjacent to the construction area are not innudated with an abnormally high level of water for a prolonged period during construction. This issue can be addressed in more detail as the design of the proposed drive reaches its final stages.

It is very important that Vernon Planning Officials emphasize that the site's natural vegetation be preserved to as great a degree as possible. Insensitive construction practices could leave a swamp with dead trees which would scar the site for many years to come.

Given the location and existing zoning the proposed access drive appears to be a reasonable means of opening up the site for development. As long as construction is undertaken in an environmentally sensitive manner it is the planner/landscape architect's opinion that the negative impact to the wetland and downstream to the Walker Reservoir system should not be excessive. A final recommendation is that the Vernon Planning Officials should require the developer to specify what type of commercial development they have in mind for the 1-2 acre piece of buildable land located along Route 31. A restaurant at this location could be a big traffic generator which could congest the intersection of the access drive and Route 31 and interfere with access to the interior portion of the site.

K. TRANSPORTATION CONCERNS

The critical transportation concerns will be the impact to Routes 30 and 31. The location of the access road will be a determining factor in the impact to Route 31 directly, and the Route 30 and 31 intersection indirectly.

1. INTERNAL TRANSPORTATION CONCERNS

(1) The access road can be designed to minimize the impact on the existing wetlands of the 17A parcel. This will require attention to both horizontal and vertical geometry. A profile with a typical cross-section should be developed along the wetland to indicate the amount of encroachment that may occur before final recommendations are made.

(2) The use of free draining material in the embankment to return normal run-off into the wetland and subsurface should be considered.

(3) The profile could be "sagged" in the wetland area. Utilization of structural support to reduce embankment slopes should be considered in this portion of the roadway to reduce or eliminate impacts to the wetland.

(4) The fill area should be tested to determine the depth of wetland soils underlying the fill adjacent to the aggregate excavation area.

2. EXTERNAL TRANSPORTATION CONCERNS

Based on the following hypothetical traffic generation from the site some improvements to Route 30 and 31 that will be necessary are discussed:

26A = 1,040,000 Ft^2 vph = vehicles/hour	Peak hour Traffic 1 trip/1000 FT^2	0.67 trip 1000 Ft^2
60% development	650 vph	430 vph
50% development	520 vph	350 vph
40% development	460 vph	310 vph

(1) The above peak hour volumes would suggest the necessity of a traffic control signal and modifications because of the proixiimity of the proposed access route to the I-84/Route 31 interchange and a Route 31 1985 volume of 13,200. Depending on the generated traffic volumes, improvements may be necessary to Route 31.

(2) Development on land fronting Route 31 will require additional analysis to determine the type of commercial development that is deemed appropriate.

(3) A State Traffic Commission Certificate will be necessary and a detailed traffic analysis would be made.

3. GENERAL

The site can be developed, but traffic, roadway design and drainage must be responsive to the best available environmental engineering considerations. Traffic operations must minimize ques and accommodate the necessary turning movements. Drainage must be designed to provide average annual runoff and recharge conditions to preserve the wetland system. Roadway design must minimize noise, drainage and air quality impacts.

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.