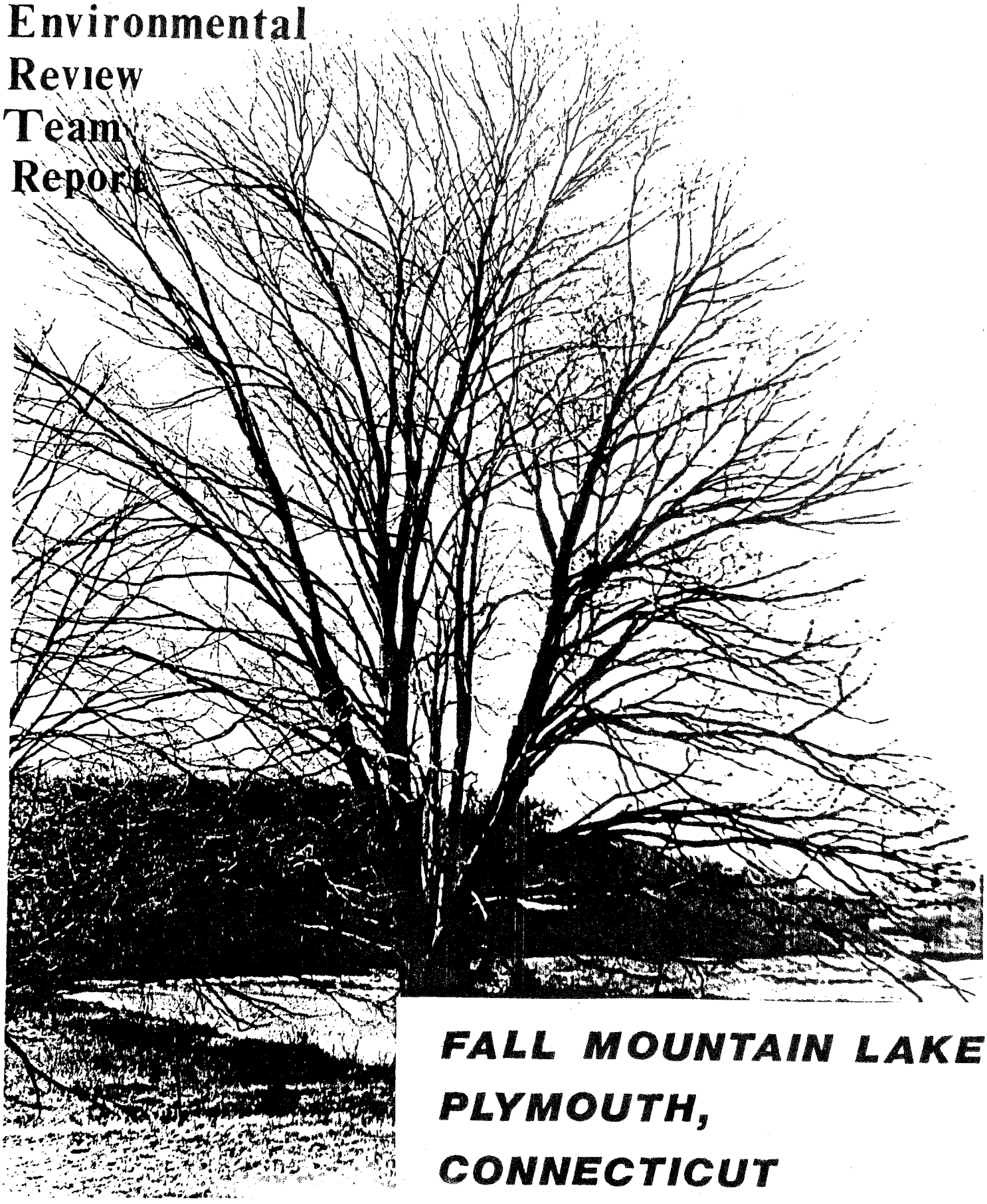
King's Mark Environmental Review Team Report



FALL MOUNTAIN LAKE
PLYMOUTH, CONNECTICUT

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PLYMOUTH, CONNECTICUT

Environmental Review Team Report

Prepared by the King's Mark Environmental Review Team
of the King's Mark Resource Conservation
and Development Area, Inc.

Wallingford, Connecticut

for the

Plymouth Planning and Zoning Commission

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its signficance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Plymouth. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of the land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

AUGUST 1987

ACKNOWLEDGEMENTS

The King's Mark Environmental Review Team Coordinator, Nancy Ferlow, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this study:

* Willianm Warzecha, Geologist
  Department of Environmental Protection - Natural Resources Center

* Cliff Bienko, District Conservationist
  U. S. Department of Agriculture - Soil Conservation Service

* Donald Mysling, Fishery Biologist
  Department of Environmental Protection - Fisheries Bureau

* Ann Burcroff, Environmental Analyst
  Department of Environmental Protection - Water Resources Unit

* Anthony Sullivan, Planner
  Office of Policy and Management

I would also like to thank Laverne Mendela, Secretary, and Janet Jerolman, Cartographer of the King's Mark Environmental Review Team for assisting in the completion of this report.

Finally, special thanks to Ralph Ciarmella and Al Saucier, Plymouth Planning and Zoning Commission, Barbara Bastenbeck, Lake Plymouth Association and Charlene Berube, Fall Mountain Lake Association for their cooperation and assistance during this environmental review.

EXECUTIVE SUMMARY

The Town of Plymouth Planning and Zoning Commission requested that an environmental review be conducted for the Fall Mountain Lake Area. The area immediately surrounding the lake is dominated by single family homes on small lots. Areas not devoted to housing are characterized as either beach and recreation area or as second growth forest.

The area is currently under a building moritorium as of October, 1986.

The purpose of this review was to inventory and assess existing natural resources and the effects that new development might have on the lake and surrounding land. The environmental and planning information generated by the ERT will be used by the Planning and Zoning commission to guide them in creating regulations for the lake area.

Below is a summary of the major findings of the ERT study.

Geology

The major outcroppings of bedrock lie in the northern and southern limits of the lake watershed. The bedrock is identified as the Southington member of the Straits Schist. Depth to bedrock ranges from zero in outcrop areas to probably less than 10 feet in areas between outcrops.

The surficial geologic material in most of the watershed is glacial till. The variety of till in the watershed is generally loose and sandy. It is mostly shallow (10 feet or less). The remainder of the watershed is covered by stratified drift. This is minor in terms of depth and extent.

Post glacial sediments found in the watershed area include 1) swamp deposits found in the wetland areas and 2) floodplain or alluvial deposits found by the inlet stream.

Hydrology

Fall Mountain Lake has a watershed area of approximately 350 acres. The watershed boundary tends to follow the crests of local hills and ridges. The watershed area includes areas of Bristol and Wolcott. All three towns need to work closely regarding the development of the watershed.

Water quality in the watershed is affected by various sources of pollution such as septic systems, sedimentation, lawn fertilizers and stormwater runoff. While many homes are tied in to the municipal sewer, there are many that are not. Efforts should be made to connect all remaining houses to the municipal sewer line. There should be strict enforcement of the public health code requirements regarding septic system design and installation for any new construction in the watershed.

Erosion and sedimentation may affect water quality. A major source of sedimentation is the road system. Another is stream bed and streambank erosion caused by increased runoff from the developed area. A comprehensive erosion and sediment control plan should minimize new problems in the watershed.

Water Supply

The major water bearing formation is the underlying crystaline metamorphic rock. Bedrock in this area is capable of yielding 2 gallons per minute. Some wells in the area have experienced low yields. One method of preventing this is to adequately separate the wells. A general 'rule of thumb' is to separate the wells by a distance double the depth. This may necessitate large lot sizes.

Soil Concerns

The soil types in the watershed are Charlton, Hollis, Leicester and Sutton. There are some building limitations on each of these soils including rocks, steep slope and drainage.

Most of the developed area of the watershed is on Charlton, Hollis and Sutton soils. Charlton soils are highly suitable for on-site sewage disposal. However, small lots are inadequate for secondary leaching fields for existing septic tanks. From both a water quality and a public health viewpoint, all houses in the area should be connected to the existing sewer line.

Erosion and Sediment Control

Engineers and contractors should use the 1985 "Connecticut Guidelines for Soil Erosion and Sediment Control" as a reference when they plan and install erosion and sediment controls. Enforcement of erosion and sediment controls is needed. One method is for the developer to post a bond to insure compliance with local regulations.

To lessen sedimentation, erosion should be minimized, stormwater sewers should have catch basins which are cleaned periodically, and sedimentation basins should be installed wherever possible. The large gully near the inlet stream needs some erosion controls. Possibilities include stabilizing the sides of the gully and/or building a sedimentation basin.

The Town should view the entire watershed when making development decisions. To handle increased runoff from development the town might consider additional storm sewers and setting a maximum amount of impervious surface area for each lot. Requiring an engineering report for lots on steep slopes should be considered to insure that the lot can be safely developed. The town might also consider protecting the wetlands for their intrinsic value as well as their ability to buffer impacts to the lake from sediment and other pollutants.

Fisheries

Fall Mountain Lake is an artificial warmwater lake. The fish population includes largemouth bass and common sunfish. It may also include chain pickerel, yellow perch, calico bass, bluegill sunfish, golden shiner and brown bullhead.

Sedimentation and increased nutrients have lead to an abundance of aquatic vegetation. Further development could increase the nutrient loads and the amount of vegetation. Over abundance of vegetation can deplete the oxygen in

the water during the summer and winter months. This could lead to a kill of fish in the lake. which could alter the balance of populations.

Water Quality

Fall Mountain Lake was created over nutrient rich crop land. The lake started in an advanced state of eutrophication. Sedimentation and nutrient loading from septic systems and surface runoff have increased the rate of eutrophication. Further construction will increase erosion and sedimentation which will in turn add more nutrients to the lake. The aquatic vegetation will increase to nuisance proportions. A method for controling weeds is a draw-down of water in the lake and removal of some of the nutrient rich bottom sediments.

Planning Considerations

The efforts that the residents of the Fall Mountain Lake area have put into their lake area appear to be threatened by further development. Policies need to be established to help guide reasonable development of the remaining land. There are State programs that can help the Town develop the area such as the Transfer of Development Rights and Capitol Improvements Program.

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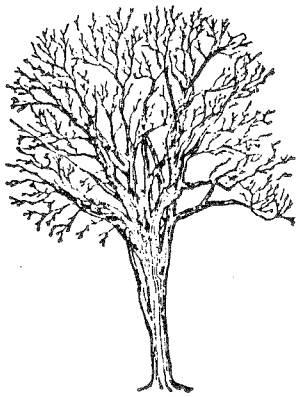
PHYSICAL CHARACTERISTICS



INTRODUCTION

The Plymouth Planning and Zoning Commission requested that an environmental review be conducted for the Fall Mountain Lake area. The lake was created many years ago by damming low-lying portions of the land and letting the depression fill naturally. The lake is fed by small brooks and springs.

The area surrounding the lake is dominated by single-family houses on small lots. Historically, these were summer cottages but most have been converted to year-round homes. Most of the lakefront property is built over and houses are being built in tiers up the hillsides overlooking the lake. Areas not devoted to housing are characterized as either beach and recreation areas or second growth forest.

The region is currently under a building moratorium as of October 1986. The purpose of this review is to inventory and assess existing natural resources and the effects that new development would have on the lake and surrounding land. The environmental and planning information generated by the ERT will be used by the Planning and Zoning Commission to guide them in creating new regulations for the lake area and by the Lake Association to help manage the lake.

Below is a brief description of issues and concerns to be addressed by the ERT as outlined by the Town in the ERT request form.

SOILS: The region contains several varieties of soil types including sandy soils and wetland soils. There are soil erosion problems associated with the current development.

GEOLOGY: Will the type of geologic formation affect development of the area?

HYDROLOGY: Review the hydraulic relationship between the lake valley and contiguous upland areas.

WATER QUALITY: Will the continued growth of the region have a pronounced impact on the water quality of the lake? How are erosion and siltation affecting water quality?

LAKE ECOLOGY: The lake is bordered by extensive development. How has this affected lake ecology? What mitigation measures are available?

FISHERIES: Will further development affect the fish populations?

LAND USE/PLANNING: Will the Towns existing zoning regulations and policies have a significant impact on the resources in the Region?

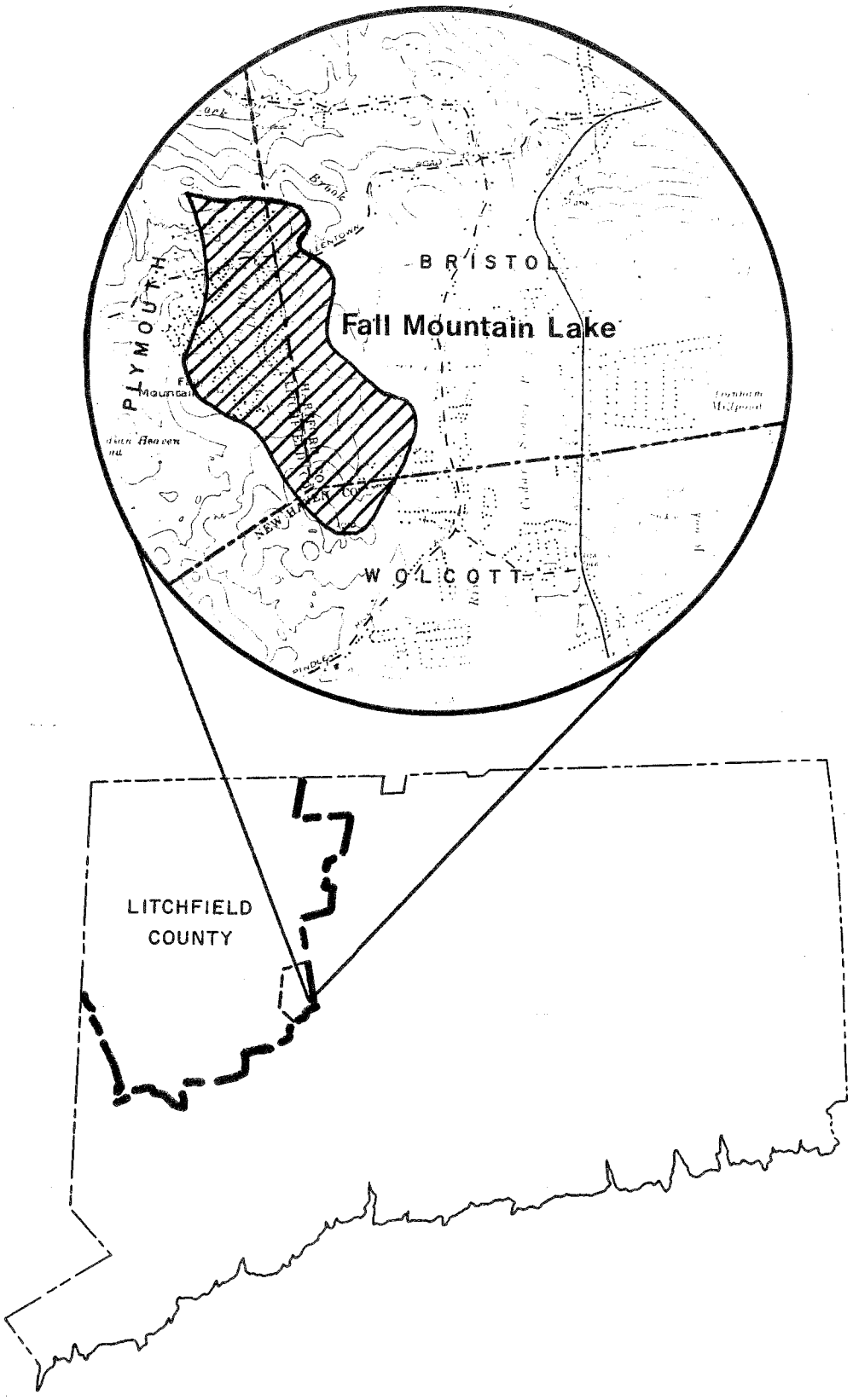
WATER SUPPLY: Current residents are having trouble with water supply during the late summer and fall. How will further development affect the water supply?

STORMWATER DRAINAGE: The Town has recently received several complaints concerning increased siltation of the catch basins and culverts leading into the lake and erosion of the roadsides. Flooding is becoming a problem in low-lying areas.

TRAFFIC AND ACCESS: The roads are currently sub-standard. How will further development affect the traffic flow and roadways?

Figure 1

LOCATION OF STUDY SITE



TOPOGRAPHY AND SETTING

Fall Mountain Lake is a shallow artificial impoundment, created in southeastern Plymouth, Connecticut between 1904 and 1934. Its watershed area, which comprises approximately 350 acres, also lies within the town of Bristol to the east and Wolcott to the south (Figure 2).

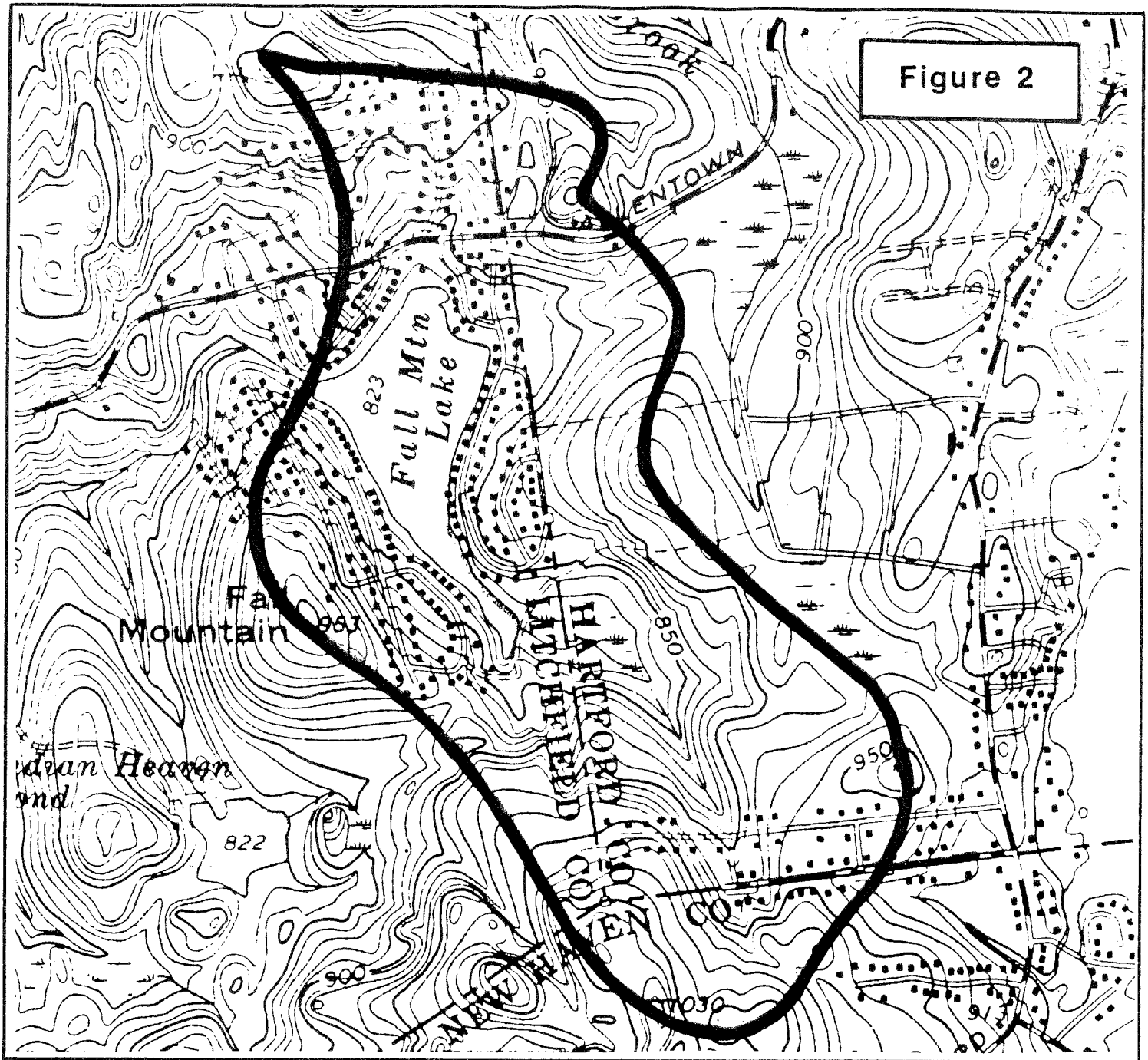
According to data supplied by DEP's Water Compliance Unit to Team members, the approximate physical characteristics of the lake are as follows: surface areas 30 acres, a maximum depth of 8 feet and an average depth of 2 feet. Given the above figures it is estimated that the pond's capacity is about 20 million gallons of water.

The major inflow is an unnamed seasonal drainageway originating in the southern parts of the watershed. There are two small water bodies feeding the lake at the north end. The dam and spillway for Fall Mountain Lake is located at the northwest corner of the lake.

According to a letter dated November 25, 1980 from Joseph Nestico, Chief Field Inspector, Water Compliance Unit (DEP) to Mr. Robert Impresa, President of the Fall Mountain Lake Association, the environmental health of the lake is deteriorating due mainly to (1) shallow water depths; (2) turbidity from resuspended sediments; and, on occasion (3) nuisance aquatic weed growth (see Appendix B).

Except for the moderately sloping wooded land in the towns of Wolcott and Bristol, the Fall Mountain Lake watershed is characterized by high density residential development, especially near the lake. Other than small vegetable gardens, little or no agricultural land exists in the watershed.

Elevations in the watershed range from a high of approximately 1030 feet above mean sea level on a hill in the southern limits of the watershed to a low of 823 feet above mean sea level at the surface of Fall Mountain Lake.



FALL MOUNTAIN LAKE

Plymouth, Connecticut

TOPOGRAPHY

King's Mark Environmental Review Team

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GEOLOGY

Fall Mountain watershed is located entirely within the Bristol topographic quadrangle. A surficial geologic map of the quadrangle has been prepared by Howard E. Simpson and published by the U.S. Geological Survey (Map GQ - 145). No bedrock geologic map has been published to date for the quadrangle so the Teams's geologist referenced the Bedrock Geological Map of Connecticut by John Rodgers. 1985.

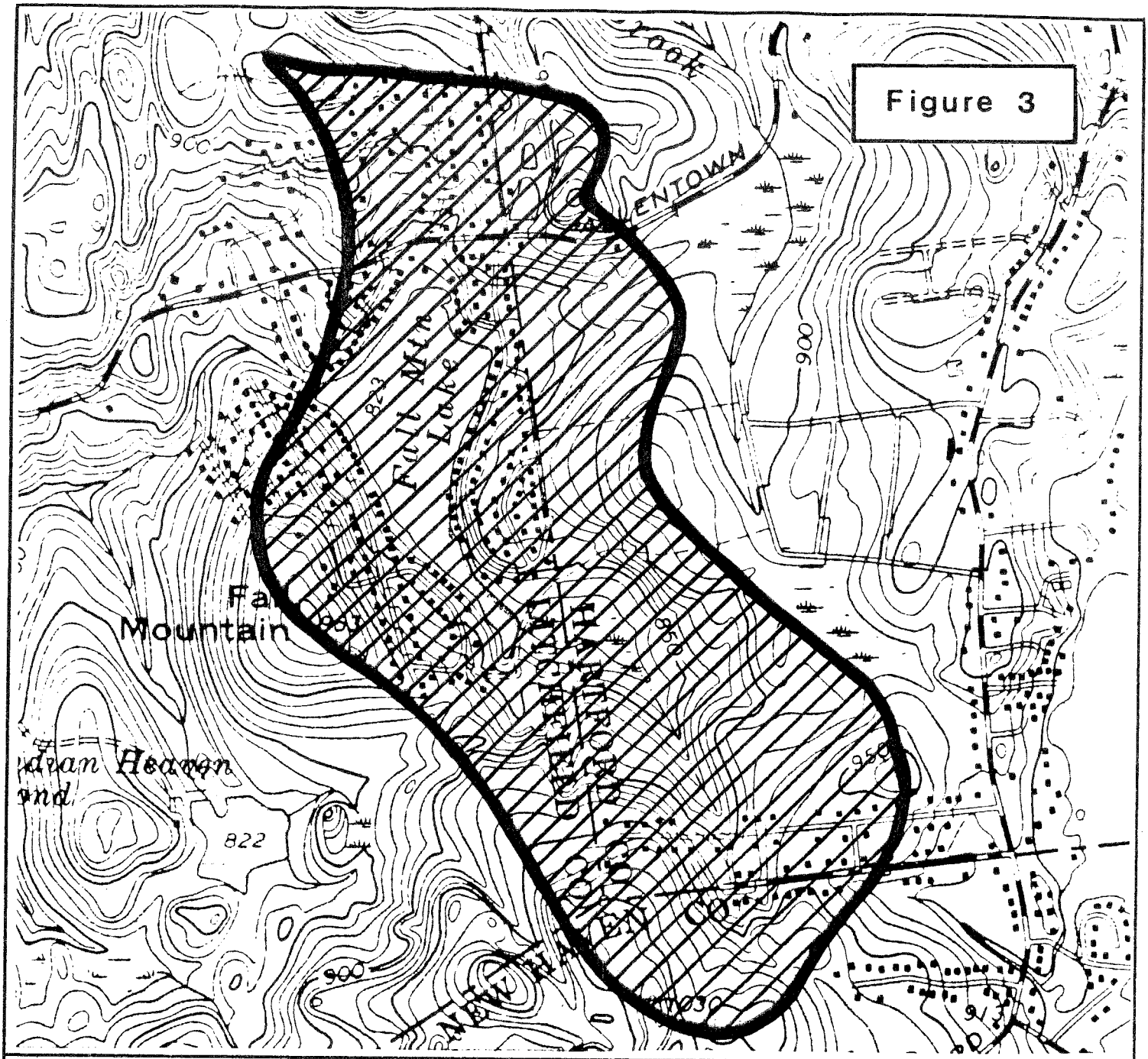
Bedrock Geology

Bedrock outcrops lie extensively in the northern and southern limits of the watershed. Rodgers identifies the underlying bedrock as Southington Mountain member of the Straits Schist (Figure 3). It is described as gray to silvery, medium-grained schist and granofels. "Schist" is a textural term given to a metamorphic rock; that is, a rock which has been subjected to great heat and pressure within the earth's crust. Characteristically, they contain strong layering of platy or elongate minerals (micas) that often permits them to part easily. "Granofels" are light to dark, medium to coarse grained, massive to poorly layered metamorphic rock composed primarily of quartz and feldspar.

Depth to bedrock ranges from zero in rock outcrop areas to probably less than 10 feet in areas in between outcrops.

Surficial Geology

The surficial geologic material comprising most of the watershed is a glacial sediment called till. Till is a nonsorted mixture of rock particles ranging in size from clay to boulders. The rock materials were scraped, abraded, and plucked from pre-existing bedrock and soil surfaces by glacier ice, and were redeposited directly from the ice without significant redistribution by meltwater. The texture of the till may be highly variable, ranging from a relatively clean sand to the silty, stony, tightly compact



SOUTHINGTON MOUNTAIN MEMBER
OF THE STRAITS SCHIST

FALL MOUNTAIN LAKE

Plymouth, Connecticut

BEDROCK GEOLOGY

King's Mark Environmental Review Team

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material that colloquially is termed "hardpan". The variety of till in the watershed is generally loose and sandy, and is shallow for the most part (10 feet or less). The "hardpan" variety does not appear to be in the watershed.

Another type of glacial sediment found at the southern end of Fall Mountain Lake is stratified drift. It consists of a small body of sand and gravel that were deposited by glacial meltwaters during the period of ice retreat and is minor in terms of both thickness and extent. Based on air photo interpretation and visual inspection of the area covered by sand and gravel, it appears that the material was mined in the past. Also, a seasonal watercourse has incised the deposits creating a deep gulley in places. It appears that this seasonal watercourse gets the bulk of its flow from stormwater arising from the Kilmartin Avenue subdivision on the Bristol-Wolcott town line.

Post-glacial sediments found in the watershed area include (1) swamp deposits and (2) floodplain or alluvial deposits. The major swamp deposits, which consist of sand, silt, clay and decomposing plant materials have accumulated near the inlet stream to the lake where the topography is flat and where shallow standing water is present throughout most of the year. Floodplain deposits of sand, silt, and minor clay have been left by the small inlet stream also in the southern parts (Figure 4).

HYDROLOGY

Fall Mountain Lake has a watershed of approximately 350 acres. By definition, the watershed of Fall Mountain Lake comprises all land areas from which ground or surface water may ultimately enter the lake. A raindrop falling on the watershed boundary would have a 50 percent chance of passing into or out of the watershed. As shown on the topographic map (Figure 5), the watershed boundary tends to follow the crests of local hills and ridges; for

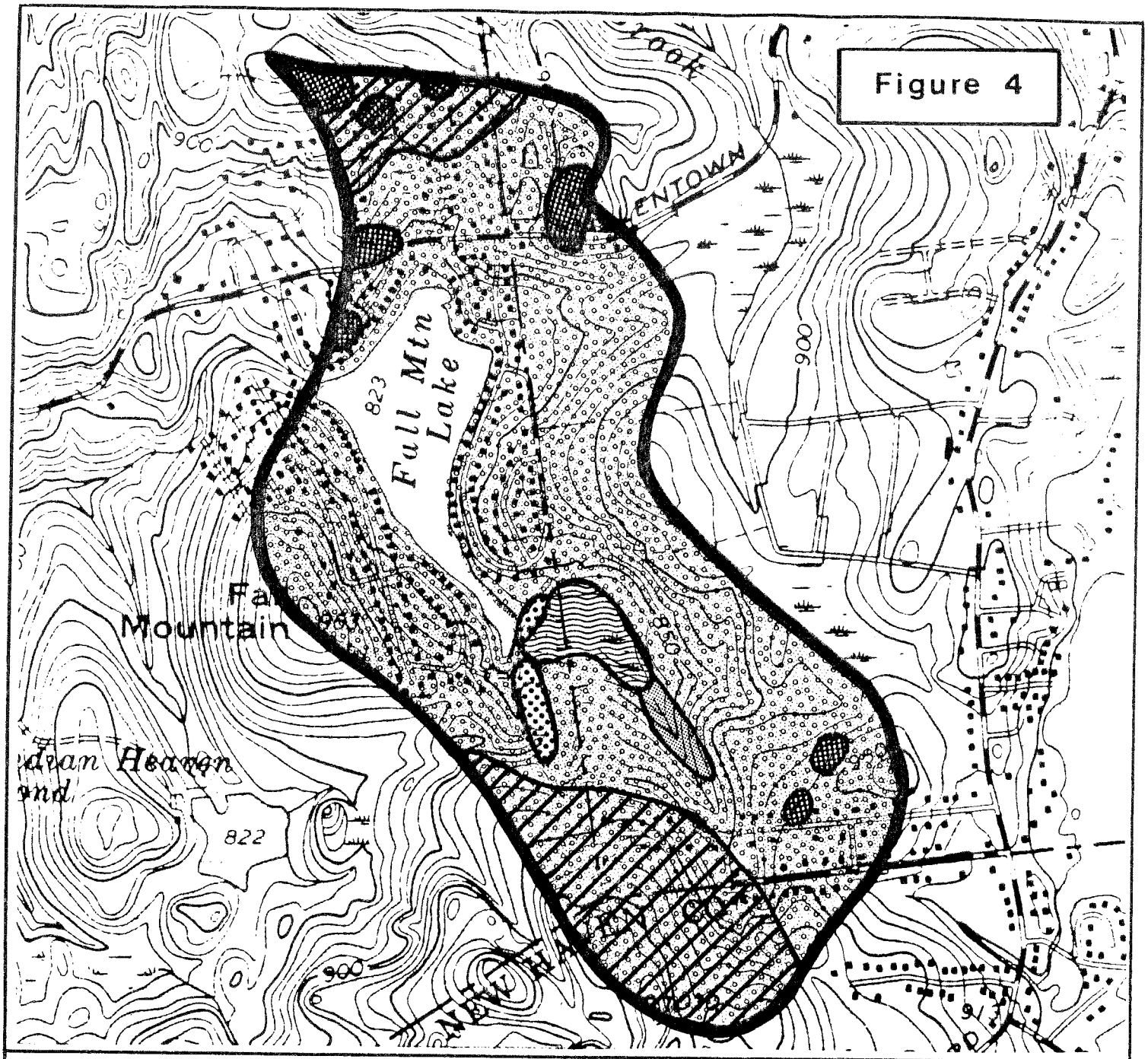
Figure 4

TILL

SWAMP DEPOSITS

ALLUVIAL DEPOSITS

STRATIFIED DRIFT (sand & gravel)

OUTCROPS

AREAS WHERE BEDROCK IS AT OR NEAR GROUND SURFACE

FALL MOUNTAIN LAKE

Plymouth, Connecticut

SURFICIAL GEOLOGY

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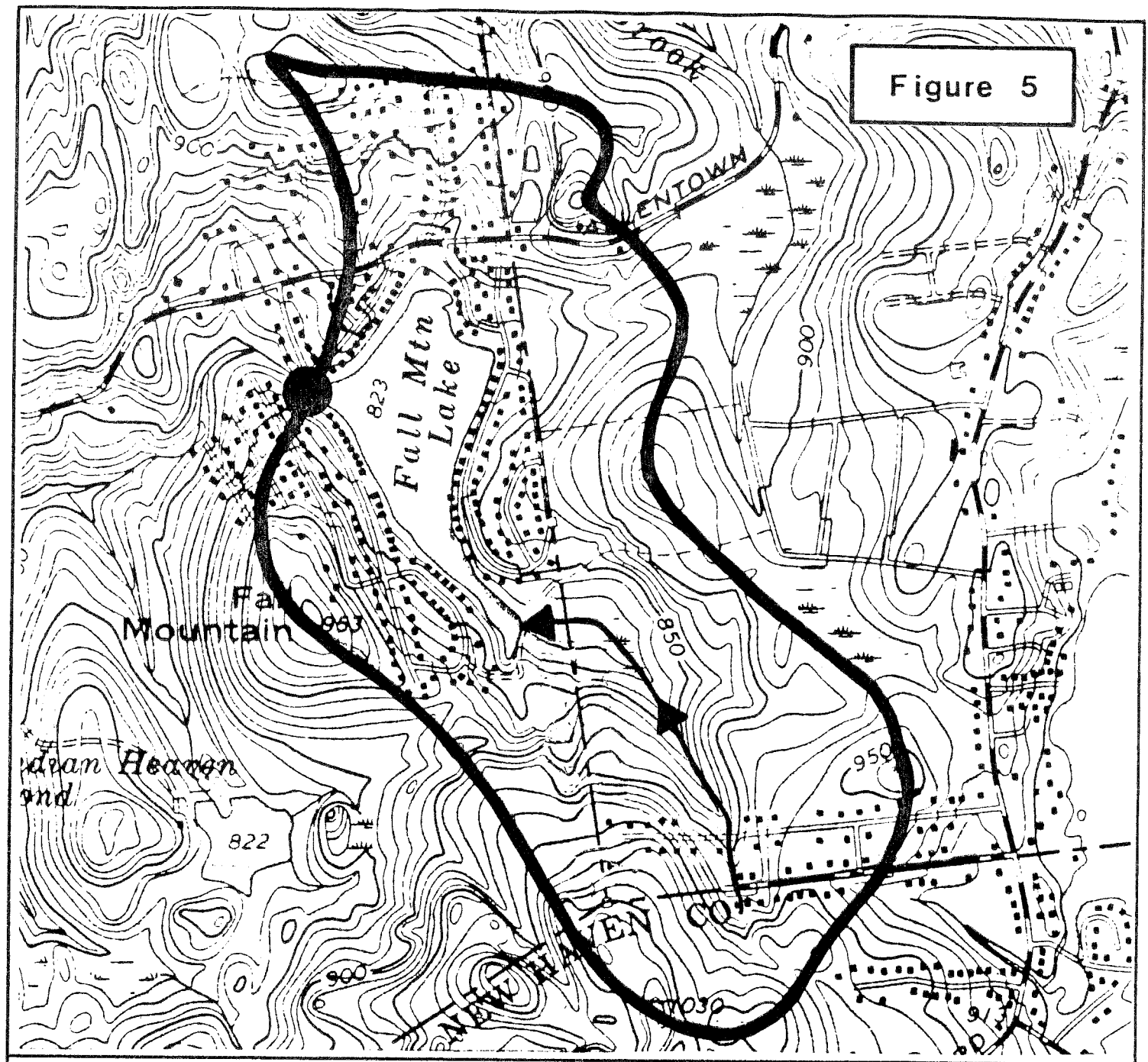

WATERSHED AREA AND POINT OF OUTFLOW FOR FALL MOUNTAIN LAKE

WATERCOURSE SHOWING DIRECTION OF FLOW

FALL MOUNTAIN LAKE

Plymouth, Connecticut

WATERSHED BOUNDARY

King's Mark Environmental Review Team

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example, Fall Mountain. It is to be expected that the true physical boundary may deviate to some extent from the boundary as mapped, especially due to rerouting by road drainage. The contours shown on the map are not completely accurate and small topographic details do not appear because of the 10 foot contour interval. Nevertheless, the boundary as mapped should be substantially correct and may be used as a reliable indicator of the general area of concern. It should be recognized, however, that any variations of true boundary from mapped boundary would be particularly important where the boundary is closest to the lake. Any planning for these areas should allow for a reasonable buffer strip outside the mapped boundary to provide a safety margin. Other than the lake data supplied by DEP's Water Compliance Unit, there is very little depth information on Fall Mountain Lake.

Although there is no gauging station at the outlet of Fall Mountain Lake, it is possible to estimate the flow duration characteristic of the outlet stream using a method described in Connecticut DEP Bulletin No. 35, "Streamflow Information for Connecticut with the Application to Land-Use Planning", by Michael A. Cervione, Jr. The estimates are tabulated below in units of both cubic feet per second (CFS) and million gallons per day (MGD).

Table 1. Estimated flow duration characteristics of the outlet stream for Fall Mountain Lake.

Percent of time flow equalled or exceeded	1	5	10	30	50	70	90
Flow equalled or exceeded in million gallons per day	3.90	2.2	1.50	.7	.4	.16	.017
Flow equalled or exceeded in CFS	6	3.4	2.30	1.1	.620	.25	.026

The mean annual outflow from Fall Mountain Lake is estimated to be 1.1 cubic feet per second or .7 million gallons per day.

The natural water quality in a watershed can be adversely affected by various sources of pollution such as septic systems, sedimentation, agricultural practices, fertilizers used on lawns, and stormwater runoff from roads near the surface water body. These sources of pollution, either singularly or in combination, can severely impact the environmental health of the lake.

Although many houses in the Fall Mountain Lake district are connected to the municipal sewer system, there are some that are not. It is recommended that all remaining homes be required to connect to the municipal sewer line. This will help eliminate the potential for the addition of phosphorus, nitrates, bacteria, viruses and nutrients commonly found in sewage from entering the lake. The addition of these constituents can greatly accelerate the eutrophication of a water body and, far more, create a public health nuisance condition. If the Town does not have a mandatory tie-in ordinance, the town health official should make every effort to check the remaining unconnected homes on a regular basis for evidence failing septic systems.

It is most important that there be strict enforcement of the Public Health Code requirements regarding septic system design and installation for new construction in the Fall Mountain Lake watershed. This is of particular importance due to the presence of shallow, till soils which are generally unfavorable for on-site sewage disposal. Because the Fall Mountain Lake watershed lies within the towns of Bristol and Wolcott, health officials from all three towns will need to work closely with regard to development in the watershed.

Another non-point source of pollution which may threaten the environmental health of Fall Mountain Lake is erosion and siltation. Eroded soils which are transported directly or via streams into Fall Mountain Lake contribute to the physical "filling-in" of the lake and can also accelerate lake eutrophication by enriching the water with nutrients. This nutrient loading of the lake can accelerate the nuisance growth of aquatic weeds or algae.

One of the major sources of sediment to the lake is generated by the road system i.e., paved roads and driveways, gravel driveways and road shoulders. Another major source of sediment to the lake can be generated by stream bed and streambank erosion. Increased runoff from developed parts on the watershed can lead to streambank erosion. The wetland area in the southeast part of the lake provides protection by slowing the water during periods of high runoff and allowing sediments to settle before reaching Fall Mountain Lake. A comprehensive erosion and sediment control plan should be developed for new construction in the watershed pursuant to P.A. No. 83-388, "An Act Concerning Soil Erosion and Sediment Control". This should hopefully minimize new problems for undeveloped parts of the watershed. Once again, all towns in the watershed will need to work closely together to control runoff and erosion. The publication Guideline for Soil Erosion and Sediment Control can be referenced.

A cursory inspection of the unnamed inlet stream to the lake at the southeast end revealed severe gullying. This is probably attributable to stormwater drainage arising from the Kilmartin Avenue subdivision and the presence of erodible soils.

In order to minimize the sediment transport from the area, consideration should be given to stabilizing the banks of the streamcourse and/or construct a sediment basin before the pond.

A sediment basin would provide a body of water into which heavy sediments would settle out before reaching the book. Such a basin would need to be cleaned regularly to ensure proper operation.

Finally, all lakefront residences should be encouraged to minimize the use of lawn fertilizers. Runoff and leaching of nutrients into the lake can occur if fertilizer application exceed nutrient requirements or if fertilizer are applied to lawns prior to a heavy rainstorm.

WATER SUPPLY

Based on geologic mapping and water resources data, the major water bearing formation is the underlying crystalline metamorphic rock. Although there may be some homes in the study area served by dug wells excavated into till soils, they are generally unreliable during dry periods. This is due to the hydrogeologic setting, which results in highly fluctuating and seasonal water table.

Bedrock is commonly capable of supplying small (2 to 3 gallons of water per minute) but reliable yields of groundwater to individual wells. Groundwater moves through bedrock by way of an interconnected fracture system. Most wells that penetrate 150 to 200 feet of bedrock will intersect enough fractures to supply at least 2 to 3 gallons per minute. Some wells, however, fail to intersect any water-bearing fractures. There is no practical way of predicting whether any particular location will be good for drilling a well.

According to Connecticut Water Resources Bulletin No. 19 (Lower Housatonic River Basin), which encompasses the subject site, approximately 80 to 90 percent of the bedrock wells surveyed were capable of yielding 2 gallons per minute. A well yielding 2 to 3 gallons per minute would be acceptable for most domestic purposes.

Town officials noted on the review day that some bedrock wells in the Fall Mountain Lake area have experienced low yields and in some cases have gone dry. As mentioned earlier, it is very difficult to determine where the water bearing fractures in the bedrock are, even with geophysical equipment. However, one way of protecting wells from mutual interference during pumping periods would be to adequately separate them. A general 'rule of thumb' is to separate wells by doubling the distance of the water bearing zones. Typically, the most productive zones in crystalline, metamorphic bedrock are found in the upper 150 to 200 feet of the bedrock surface. Therefore keeping 300 to 400 feet between neighboring wells will help to minimize the chance for mutual interference, particularly during pumping periods. In order to accomplish this, it may be necessary to make lots 1.5 to 2.0 acres in size where on-site well and septic systems are required.

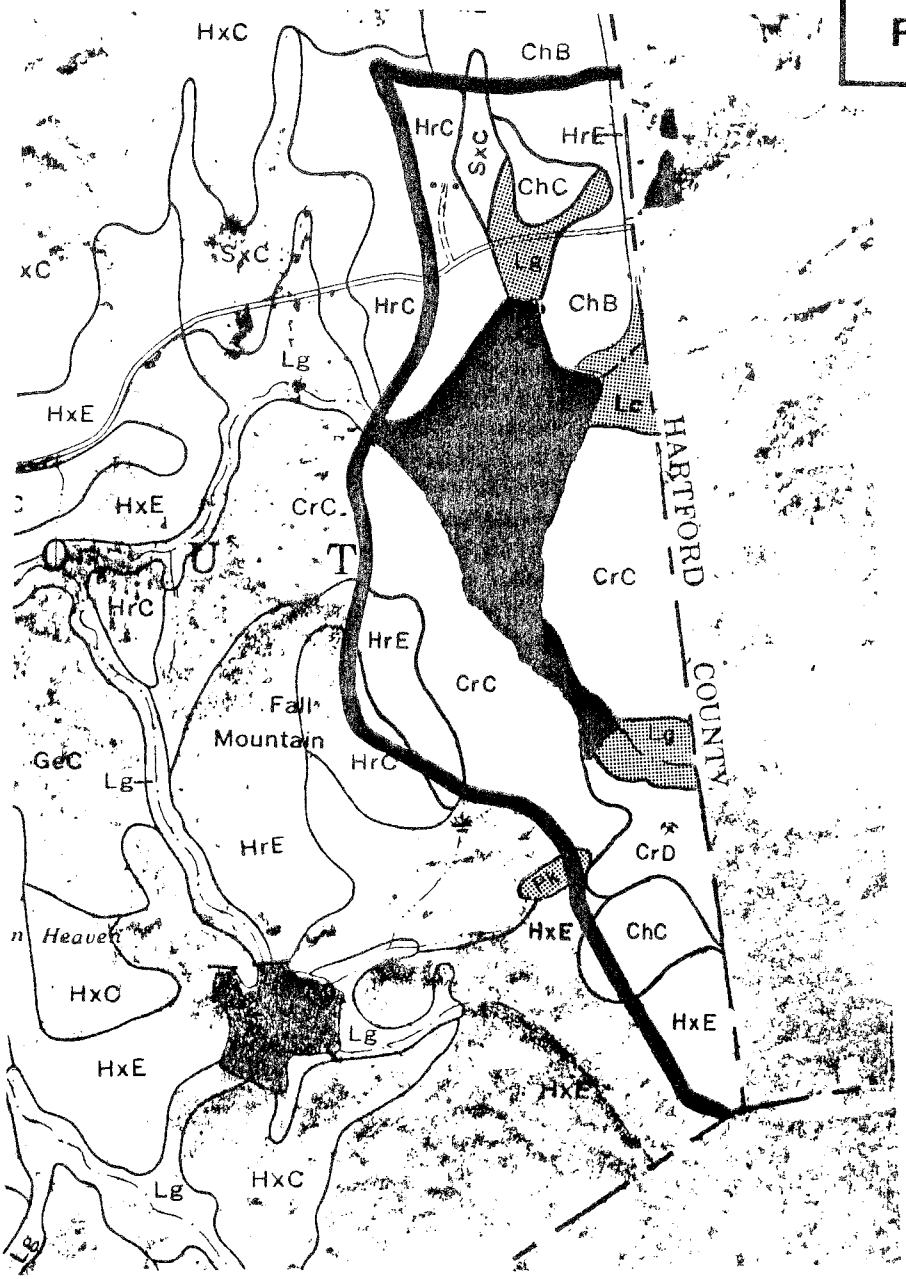
SOIL CHARACTERISTICS

The landscape of the Fall Mountain Lake watershed is characterized by rolling to very steep topography with 3 separate wetlands. The largest part of the lake watershed is in Hartford and New Haven Counties, but these areas are mostly undeveloped and have little direct impact on Fall Mountain Lake.

Specific Soil Concerns

The following discussion addresses concerns for each soil type. The map unit symbols on the accompanying map are unique to Litchfield County. All comments are based on the fact that a sanitary sewer system is available for all residences.

Figure 6



ChB	Charlton stony fine sandy loam, 3-8 % slopes
ChC	Charlton stony fine sandy loam, 8-15 % slopes
CrC	Charlton very stony fine sandy loam, 3-15 % slopes
CrD	Charlton very stony fine sandy loam, 15-35 % slopes
HrC	Hollis very rocky fine sandy loam, 3-15% slopes
HrE	Hollis very rocky fine sandy loam, 15-35 % slopes
HxE	Hollis extremely rocky fine sandy loam, 15-35 % slopes
Lc	Leicester fine sandy loam
Lg	Leicester, Ridgebury and Whitman very stony fine sandy loam
Pk	Peat and Muck
SxC	Sutton very stony fine sandy loam, 3-15 % slopes

Wetland Soils Water

FALL MOUNTAIN LAKE

Plymouth, Connecticut

SOILS

King's Mark Environmental Review Team

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Charlton - The Charlton soil series is deep, well drained and has developed in friable to firm till.

ChB This map unit is stony with 3 to 8% slopes. Building limitations are slight.

ChC This map unit is stony with 8 to 15% slopes. Careful grading is required for lots and roads. Boulders may pose a problem.

CrC This map unit is very stony with 8 to 15% slopes, careful grading is required for lots and roads. Boulders can be expected to cause problems.

CrD This map unit is very stony with 15-25% slopes. Building limitations for this map unit are severe.

The problems increase as the steepness of the slope increases. 1/10th acre lot sizes cannot always be adequate for safe homesites on these type slopes.

Hollis - The Hollis series consists of well drained to somewhat excessively drained soils that are very shallow over crystalline bedrock. Bedrock is typically at a depth of less than 2 feet. Outcrops are common, in severe cases outcrops occupy 50% of the land surface

HrC This map unit is very rocky with 3 to 15% slopes. The main limitation is depth to bedrock. Homesites where basements are desired usually require blasting. Blasting is likely to be needed for driveways, roads, sewer connections and storm sewers.

HrE This map unit is very rocky and steep with 15 to 35% slopes. See comments for HrC regarding basement, driveways, roads, sewer connections and storm sewers.

Steep slopes make it very difficult to maintain gravel driveways and during heavy rainstorms road ditches may actively erode.

HxE This map unit is extremely rocky with 15 to 35% slopes. Rocks are more prevalent then the HrC and HrE map unit. See above comments for HrC and HrE map units.

Leicester - The Leicester series consists of poorly drained or somewhat poorly drained soils that developed in very friable to firm glacial till.

Lc This map has few surface stones. No building should occur on this wetland soil. Any building requires extensive filling. Filling of wetlands should be severely limited or excluded. Wetlands serve to detain stormwater naturally, and wetlands clean surface runoff by filtering out sediment and other pollutants.

Lg This map unit is composed of an intermixture of the poorly drained Leicester and Ridgebury soils and the very poorly drained Whitman soil. This complex is a very stony wetland. See the comments for Lc in reference to developing these areas.

Sutton - The Sutton series consists of moderately well drained soils that developed in glacial till.

SxC This map unit is very stony with 3 to 15% slopes. A seasonal high water table requires use of footing drains around buildings. Boulders cause some problems, and lots need to be shaped so water drains away from buildings.

Disposal of Sewage

With the exception of the Hollis and Sutton Soils, the intensively developed part of the lake watershed has Charlton soils. Charlton soils are highly suitable for on-lot disposal of sewage. However, all soils eventually have their capacity to renovate waste water reduced over time. The small lots situated around the lake are inadequate for secondary leaching fields for existing septic tanks. From a water quality viewpoint, it is imperative that the lakeside homes be connected to the existing sewer lines. From a public health viewpoint, all homes with lots sizes of 1/2 acre or less should be connected to the existing sewer lines.

EROSION AND SEDIMENT CONTROL

Fall Mountain Lake is typical of many Connecticut lakes in that it is susceptible to damage due an intensely developed watershed. The effect on the lake by the intense concentration of homes in the immediate vicinity of lake is balanced somewhat by the undeveloped areas of the lake watershed. Most of the undeveloped watershed is situated across county lines. Land use decisions in Hartford and New Haven Counties may effect Fall Mountain Lake. The Lake Association should concerned about significant changes in the entire watershed.

When viewing the impacts of erosion and sediment on the lake, it should be remembered that the impacts all add up. Individual actions by companies, associations, and Government are all important in protecting the lake.

Erosion Control

Engineers and contractors should use the 1985 Connecticut Guidelines for Soil Erosion and Sediment Control as a reference when they plan and install erosion and sediment control measures on developing land. On most of the recently developed land in Connecticut, proper installation and maintenance of control measures are the two biggest stumbling blocks to the achievement of erosion and sediment control.

Enforcement of erosion and sediment control is needed. One method of control is for the building applicant to post a cash bond or a savings account bond to insure compliance with local soil erosion and sediment control regulations. Contact the Litchfield County Soil and Water Conservation District for more details.

Sediment Control

The streets and storm sewers serve as conduits for sediment as it moves to the lake. The first line of defense is to minimize erosion and capture all sediment on each individual lot.

The sediment on the streets and in the storm sewers must be stopped before entering the lake. All storm sewers need catch basins and all basins should be cleaned periodically. Where possible sediment detention basins should be installed as the final line of defense to capture sediment before it reaches the lake. Sediment detention basins should be designed by an engineer. A design should account for access for machinery needed for cleaning purposes, proper sizing for detention of sediment and the safe conveyance of stormwater during heavy storms. Sediment detention basins should be cleaned out periodically.

Critical Area

During the site review it was noted that the most severe erosion and sediment control problem was at the south end of the lake. Here uncontrolled runoff from an abandoned sand quarry has eroded a gully over 5 feet deep. The resultant sediment is filling the cove at the southern end of the lake.

The proper method of halting the erosion is to control the surface runoff. The gully could be reshaped and lined with rock rap-rap to stabilize the watercourse. Another alternative is to build a water detention basin with a restricted outlet to slowly release stored water. The gully would require shaping and reseeding. These alternatives can be combined in some fashion. For any success with these methods, off-road vehicles should be prevented from using these areas.

Either of these alternatives will require an expenditure of thousands of dollars. The Department of Environmental Protection's Water Resources Unit has the authority to issue bonds for erosion and flood control projects. A participating town must have their own Flood and Erosion Control Board contact DEP to find out the requirements for these bonds.

Watershed Planning

Town commissions should view the entire watershed when making decisions. Looking at each lot as a separate entity ignores the fact that an individual's action on his lot may profoundly affect many other property owners. This is particularly true due to the 40 by 100 foot size lots around the lake.

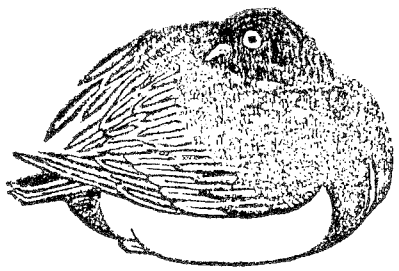
Stormwater sewers are not installed on all roads surrounding the lake. More development will result in more runoff due to the increase in impervious surfaces. An increase in runoff will further tax roads, and road ditches where

they exist. Houses downslope that now have problems with runoff will be further inundated. To minimize the problems from increase runoff that results from building, the Town can consider setting a maximum area of impervious surface for each lot. This could be done in conjunction with installation of storm sewers. All storm sewers should have catch basins which are cleaned periodically.

Due to the presence of bedrock and very steep slopes, not every lot can be safely developed. On Lakeview Road there are some undeveloped lots with a Hollis soil characterized by 15-35% slopes (see Figure 6). These lots are not suitable for building without special engineering restrictions. Applicants for building permits on these steep slopes should provide documentation from a registered professional engineer that proves that each lot can be safely developed.

There are areas of undeveloped watershed land outside the Plymouth Town limits. The Town of Plymouth may want to establish a dialogue with the Towns of Bristol and Wolcott regarding land use decisions in this area. Also where wetlands straddle town lines the Department of Environmental Protection's Wetlands Management Section of the Water Resources Unit has the authority to make decision when the local Inland Wetland Commissions disagree. The undeveloped wetland to the south and the partially developed wetland to the east could be protected for their intrinsic value as well as their ability to buffer the impacts from sediment and other pollutants that may threaten the lake in the future.

BIOTA



FISHERIES

Fall Mountain Lake is an artificial warmwater body approximately 30 acres in surface area, reportedly having a maximum depth of 8 feet and an average depth of 2 feet. The fishery population of the lake has never been sampled and there are no records of introductions of fish. Visual observations revealed the presence of young of the year and yearling largemouth bass as well as spawning adult common sunfish. These observations would indicate a self sustaining population of these two species. The following species may also be found as they are common to the warmwater ponds of Connecticut: chain pickerel, yellow perch, calico bass, bluegill sunfish, golden shiner and brown bullhead.

The lake is eutrophic and aquatic vegetation is found throughout the lake basin. The eutrophication or "aging" process has been accelerated due to development within the watershed. Septic system leachate, erosion and subsequent siltation, and fertilizer runoff are all sources of nutrients in the lake system. The installation of sewers has eliminated the nutrients from septic systems, however there are problems that remain. The extreme southern end of the lake has been filled in with sediments carried in by a tributary stream. Approximately 1/8 of an acre of lake has been lost and terrestrial vegetation has taken hold.

As the storm sewers lead directly into the lake, nutrients from the entire lake watershed have immediate access. An increase in development will also result in increased nutrient loading to the lake. An overabundance of aquatic vegetation will be the end result. If the vegetation develops to uncontrollable proportions, severe problems could be encountered by the fish

community. Large amounts of aquatic vegetation can remove substantial quantities of oxygen from the water. This occurs through a process called respiration whereby during periods of little or nonexistant light, plants will take in oxygen for their own life processes. This is a problem twice yearly. During the summer months when plant growth is at its maximum and water temperatures are their greatest, oxygen is removed and the potential is there to deplete the oxygen supply to a point where a kill of fish occurs. The second time of concern is during the winter months when the lake is under ice cover. At this time there is limited light penetration and the respiration period may be over an extended period of time. A fish kill at this time may not be noted until the ice melts. While a total kill of fish is unlikely on a lake the size of Fall Mountain Lake, it may alter the balance of the entire population.

As the lake is under private ownership, access for recreational fishing appears limited to lake residents and their guests. Anglers are either shore based or water based from boats or canoes. The water based angler will experience greater catch rates given the factor of mobility and the potential to fish different water depths and habitats.

WATER QUALITY

Fall Mountain Lake, Plymouth, is a shallow, man-made lake surrounded by houses. Given its creation on nutrient-rich former crop land, eutrophication problems are likely to occur. The Connecticut Watershed Management Guide, 1986 revision, says ..."many lakes and ponds in Connecticut were formed by the construction of a dam across a stream or across the outlet of a wetland. These

artificial waterbodies often exhibit an advanced stage of eutrophication. They are relatively shallow water bodies which are enriched by the nutrients accumulated by the predecessor wetland or terrestrial ecosystem. However, these water quality conditions do not evolve from the oligotrophic state - these lakes experience an advanced state of eutrophication from the time they are formed. Improvement of conditions in these lakes is exceptionally difficult because restoration does not involve the return to previous water quality conditions, but rather involves the creation of conditions which had never existed previously."

The building of summer homes around Fall Mountain Lake in the 1940's and 1950's and present occupancy of these houses year-round no doubt has added nutrients to the lake system from both septic system seepage and surface runoff. In many lakeside communities, seasonal cottages have been winterized and converted to permanent homes. If a septic system is not expanded and upgraded when a conversion occurs, it may not conform to minimum requirements of the Public Heath Code. Proper operation and maintenance practices will serve to prevent the premature failure of existing septic systems in the lake watershed. The septic system should not be used for the disposal of garbage, solvents, paints, household chemicals, and medicines because these materials can cause clogging or can interfere with biological treatment processes. For maintenance, a septic tank should be pumped routinely every 3 to 5 years to remove accumulated scum and sludge which would otherwise move into the distribution system and leaching system causing clogging and eventual failure. The liquid effluent which flows from the leaching field of any septic system passes into the surrounding soil and enters the ground water system. This

leachate has a high concentration of soluble phosphorus. The ground water flow is generally in the direction of the lake, where it enters the lake as springs. Whether phosphorus travels with the ground water to the lake depends on interactions between soil particles and phosphorus. Many factors are involved, including the proximity the septic system to the lake, the age of the septic system, the soil type and its capacity to attenuate phosphorus, the path of travel of leachate, the time of travel of leachate, and the elevation of the ground water table. The likelihood of a septic system contributing phosphorus to lake waters is enhanced if the septic system is located in thin soils on ledgerock, or if the septic system is located in an area which experiences a seasonally high water table which saturates soils with water. These are important factors in the eutrophication of the lake.

The erosion resulting from continued building near the lake shore was obvious during the field review on July 1, 1987. Watershed Guide, 1986, describes erosion and sedimentation as follows: Erosion is a natural process whereby soil is worn away from the land by running water. Sedimentation is the deposition of eroded material in a watercourse. The severity of erosion and sedimentation is influenced by soil type, slope of the land, type of vegetative cover, intensity and duration of precipitation and proximity to a watercourse. Some erosion and sedimentation from a lake watershed is inevitable, since this occurs as a natural process. Erosion and sedimentation can be greatly increased by activities of man which disturb the land, remove vegetation, and expose soil to the direct forces of rainfall and surface runoff. Research has shown that soil erosion from construction sites may be 10 to 100 times greater than erosion from agricultural land of the same size, slope, and soil type. Construction site erosion must therefore be regarded as a major causative

factor in the lake eutrophication process, according to the Watershed Guide, 1986. Methods for controlling construction site erosion and sedimentation are described in Guidelines for Soil Erosion and Sediment Control, Ct. Council of Soil and Water Conservation, January, 1985. This document can be obtained from the D.E.P. Natural Resources Center, 165 Capitol Ave., Hartford, Ct. 06106.

The transport of eroded soil to a lake contributes to eutrophication in several ways. Most important, phosphorus and other plant nutrients associated with soil particles are introduced into the lake. Erosion and sedimentation is a dominant cause of phosphorus enrichment of lake waters. Another important effect is the physical presence of solid particles in the lake. Sedimentation reduces water depths, creating shoals which are conducive to the growth of aquatic plants.

As a result of the original nutrient rich substrate, plus the input from sewage and erosion, the density of aquatic weeds has increased to nuisance proportions. Particular weeds which have created problems for swimmers, boaters and fishermen are bladderwort, Utricularia spp., and milfoil, Myriophylum spp. Dept. of Environmental Protection, Water Compliance Unit, has on file correspondence correspondence from 1980 - 1982 concerning Fall Mountain Lake's problems with these weeds. One of the procedures recommended at that time to make the lake more usable was a drawdown of the water level and dry dredging to remove some of the accumulated bottom sludge and to increase the depth to five feet or more in selected areas. This detailed proposal addressing the situation at Fall Mountain Lake is still of merit and should be considered (see Appendix B).

LAND USE
AND
PLANNING CONSIDERATIONS

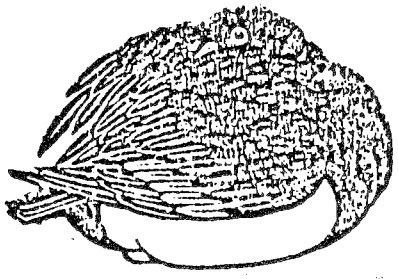
PLANNING CONSIDERATIONS

Residents of the Fall Mountain Lake neighborhood have improved and maintained their properties and the lake area. This appears to be threatened by further development. Lot sizes are small, road widths are narrow, recreation areas are overburdened and density of population is increasing rapidly.

Policies need to be established and regulations enforced which will guide reasonable development of the remaining land. Each vacant lot should not be developed simply because it exists on a map. An alternative that could be explored is combining two lots into one buildable lot. There are programs of the State that could be helpful to Plymouth in addressing some of these problems. One is the recently adopted P.A. 87-490, Transfer of Development Rights (see Appendix A).

A Capital Improvements Program could be an immediate priority of the Town to address problems of poor drainage, erosion, faulty road surfaces and other public works problems. Some help with these kinds of problems can be obtained from the Office of Policy and Management in Hartford.

APPENDICES



Appendix A

Transfer of Development Rights

Substitute House Bill No. 7383

PUBLIC ACT NO. 87-490

AN ACT CONCERNING MUNICIPAL AND REGIONAL PROGRAMS OF TRANSFERS OF DEVELOPMENT RIGHTS, AND ZONING APPROVAL FOR CERTAIN VAULTS, CRYPTS, COLUMBARIUMS AND MAUSOLEUMS.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. Section 8-2 of the general statutes is repealed and the following is substituted in lieu thereof:

The zoning commission of each city, town or borough is authorized to regulate, within the limits of such municipality, the height, number of stories and size of buildings and other structures; the percentage of the area of the lot that may be occupied; the size of yards, courts and other open spaces; the density of population and the location and use of buildings, structures and land for trade, industry, residence or other purposes, and the height, size and location of advertising signs and billboards. Such zoning commission may divide the municipality into districts of such number, shape and area as may be best suited to carry out the purposes of this chapter; and, within such districts, it may regulate the erection, construction, reconstruction, alteration or use of buildings or structures and the use of land. All such regulations shall be uniform for each class or kind of buildings, structures or use of land throughout each district, but the regulations in one district may differ from those in another district, and may provide that certain classes or kinds of buildings, structures or uses of land are permitted only after obtaining a special permit or special exception from a zoning commission, planning commission, combined planning and zoning commission or zoning board of appeals, whichever commission or board the regulations may, notwithstanding any special act to the contrary, designate, subject to standards set forth in the regulations and to conditions necessary to protect the public health, safety, convenience and property values. Such regulations shall be made in accordance with a comprehensive plan and shall be designed to lessen congestion in the streets; to secure safety from fire, panic, flood and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue

concentration of population and to facilitate the adequate provision for transportation, water, sewerage, schools, parks and other public requirements. Such regulations shall be made with reasonable consideration as to the character of the district and its peculiar suitability for particular uses and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout such municipality. Such regulations shall also encourage the development of housing opportunities for all citizens of the municipality consistent with soil types, terrain and infrastructure capacity. Zoning regulations may be made with reasonable consideration for the protection of historic factors and shall be made with reasonable consideration for the protection of existing and potential public surface and ground drinking water supplies. On and after July 1, 1985, the regulations shall provide that proper provision be made for soil erosion and sediment control pursuant to section 22a-329. Such regulations may also encourage energy-efficient patterns of development, the use of solar and other renewable forms of energy, and energy conservation. The regulations may also provide for incentives for developers who use passive solar energy techniques, as defined in subsection (b) of section 8-25, in planning a residential subdivision development. The incentives may include, but not be limited to, cluster development, higher density development and performance standards for roads, sidewalks and underground facilities in the subdivision. SUCH REGULATIONS MAY PROVIDE FOR A MUNICIPAL SYSTEM FOR THE CREATION OF DEVELOPMENT RIGHTS AND THE PERMANENT TRANSFER OF SUCH DEVELOPMENT RIGHTS, WHICH MAY INCLUDE A SYSTEM FOR THE VARIANCE OF DENSITY LIMITS IN CONNECTION WITH ANY SUCH TRANSFER. Such regulations shall not prohibit the continuance of any nonconforming use, building or structure existing at the time of the adoption of such regulations. Any city, town or borough which adopts the provisions of this chapter may, by vote of its legislative body, exempt municipal property from the regulations prescribed by the zoning commission of such city, town or borough; but unless it is so voted municipal property shall be subject to such regulations.

Sec. 2. (NEW) Any two or more municipalities which have adopted the provisions of chapter 124

or 125a of the general statutes or which are exercising zoning power pursuant to any special act may, with the approval of the legislative body of each municipality, execute an agreement providing for a system of development rights and the transfer of development rights across the boundaries of the municipalities which are parties to the agreement. Such system shall be implemented in a manner approved by the legislative body of each municipality and by the commission or other body which adopts zoning regulations of each municipality.

Sec. 3. (NEW) Any zoning regulations adopted pursuant to section 8-2 of the general statutes, as amended by section 1 of this act, concerning development rights shall authorize the transfer of the development rights to land only upon joint application of the transferor and transferee.

Sec. 4. Section 19a-310 of the general statutes is repealed and the following is substituted in lieu thereof:

No person shall construct any vault, crypt, columbarium or mausoleum for public use, wholly or partially above the surface of the ground, to be used to contain the body of any dead person (1) unless the same is located within the confines of an established cemetery containing not less than five acres, which cemetery has been in existence and operation for a period of at least five years immediately preceding the time of the erection thereof, OR (2) IF LOCATED WITHIN A CEMETERY CONTAINING LESS THAN FIVE ACRES, SUCH LOCATION HAS BEEN APPROVED BY THE SELECTMEN OF ANY TOWN, THE MAYOR AND COUNCIL OR BOARD OF ALDERMEN OF ANY CITY AND THE WARDEN AND BURGESSES OF ANY BOROUGH; EXCEPT THAT IN ANY TOWN, CITY OR BOROUGH HAVING A ZONING COMMISSION OR COMBINED PLANNING AND ZONING COMMISSION, SUCH COMMISSION SHALL HAVE THE AUTHORITY TO GRANT SUCH APPROVAL; nor until plans and specifications [thereof] FOR SUCH VAULT, CRYPT, COLUMBARIUM OR MAUSOLEUM are approved by the department of health services, provided a columbarium which is used solely as a repository for the remains, after cremation, of deceased persons and is located on the premises of any religious society or corporation shall not be subject to the provisions of this section. Such plans and specifications shall set forth the sections, halls, rooms, corridors, elevators or other subdivisions thereof, with their descriptive names and numbers, and shall provide: (a) That

such structure be so arranged that the cell, niche or crypt may be readily examined at any time by any person authorized by law to do so; (b) that the materials of which such structure is to be constructed are to be of the best quality and of a character best suited for the purposes intended; and (c) that the structure shall be so constructed as to insure its durability and permanence as well as the safety, convenience, comfort and health of the community in which it is located, as dictated and determined at the time by modern mausoleum construction and engineering science. The person making the application shall file a certificate of such approval, signed by the commissioner of health services, with a copy of such plans and specifications, in the office of the town clerk of the town wherein such structure is to be erected, and such clerk shall retain the same on file.

Certified as correct by

_____

Legislative Commissioner.

_____

Clerk of the Senate.

_____

Clerk of the House.

Approved _____, 1987

_____

Governor, State of Connecticut.

Appendix B

D.E.P. Correspondence

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE OFFICE BUILDING HARTFORD, CONNECTICUT 06115

August 5, 1980

Mr. Robert Impresa
Fall Mountain Lake Association
10 East View Road
Terryville, Conn. 06786

Dear Mr. Impresa:

Please find enclosed a copy of our field inspection report for the Fall Mountain Lake Area. As we discussed on the telephone, the sandpit does not appear to be contributing significant amounts of sediment to the lake.

You may want to consider constructing a sediment trap at the mouth of the tributary. Several other lakes in Connecticut are investigating this procedure at the present time. I would suggest you contact Dick Henry at Lake Waramaug (868-7341), The Woodridge Lake Association in Goshen, The West Hartford Parks and Recreation Department (Spicebush Swamp Pond) for more information.

As I mentioned previously, The Lake Garda Improvement Association should be able to provide advice on planning a drawdown and excavation project.

Please do not hesitate to contact us if we can be of further assistance.

Very truly yours,

Charles Fredette

Charles G. Fredette
Senior Sanitary Engineer
Water Compliance Unit

CGF:mg

Enc.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SITUATION INVESTIGATION REPORT

TOWN Plymouth

	NAME	TITLE	DATE
To	Charles Fredette	Principal Sanitary Engineer	August 4, 1980
	AGENCY: D.E.P. - Water Compliance	ADDRESS	
	NAME	TITLE	TELEPHONE
From	Colette Ready	Field Inspector II	
	AGENCY: D.E.P. - Water Compliance Unit	ADDRESS	

Requested by: __ D.E.P. Staff __x__ Citizen's Complaint __ Other Agency

Location of site (address etc.): Fall Mountain Lake - Terryville

Land owner or Developer (Name, address & tele.) Abandoned sand pit south end of lake.

Complainant (Name, address & tele.) Robert Impresa - 10 E. View Road - Terryville

Type of activity or construction (may include more than one type):

a) __ home development
b) __ site development (commercial-industrial)
c) __ mining (gravel excavation etc.)
d) __ wash sand and gravel operation
e) __ demolition
f) __ pond development and/or cleani
g) __ stream relocation and/or cleani
h) __ wet land development
i) __ pond, lake or stream encroachme
j) __x__ other erosion to lake (111

Rec. Stream Fall Mountain Lake Watershed

Has an erosion control plan been developed? __ Yes __ No

Comments - general description, scope etc. (continue on reverse side if necessary - ma include diagram).

Problem appears to be caused where stream comes out of wooded area and flows through an open area into south end of lake. Erosion is not from the sand pit itself (vegetation is growign on portions of the area). Over the years it appears as though the water flow has eroded the sandy banks of the stream and washed into the lake.

Action taken and/or needed to alleviate conditions: This seems to be a natural occurr due to the sandiness of the soil and not caused by run-off from this sand pit.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

November 25, 1980

Mr. Robert Impresa
Fall Mountain Lake Association
10 East View Road
Terryville, Connecticut 06786

Dear Bob:

I would like to document in writing an overview of our conservation in the field on 11/21/80.

The problem as indicated for Fall Mountain Lake, appears to be one of shallow water depth (average depth is 2', maximum is 6'), turbidity from resuspended sediments and at times nuisance aquatic weed growth (e.g. Utricularia - Bladderwort). The end result in order of importance appears to be a loss in recreation, aesthetics and fish habitat. The preceding pond conditions may also be predicted to give rise to low dissolved oxygen levels (anaerobic conditions), noxious gas production (hydrogen sulphide, ammonia) and eutrophic waters i.e. elevated nutrients, algal blooms. The end result from these conditions, depending on the speed and extent of Fall Mountain Lake aging may be the conversion of the entire pond into a marsh or swamp. A complete loss of recreation will then occur.

Based on our conversation, the following is suggested as an approach to your lake restoration, especially if you wish to utilize drawdown with selective excavation.

(1) Preliminary Study by the Association:

Carefully read over the handouts that I gave you on weed control, septic systems and diagnostic lake surveys. If you can answer the questions and become aware of and solve possible problems then most of the restorative project should run smooth and be cost effective. Some facts to be aware of are as follows: lowering the lake water table affects shallow wells; increase water volume and weight from a deeper pond may increase the hydraulic pressure on the dam; a full drawdown will cause a fish kill unless the fish are transported and held over in cages in another pond; the bottom seal of the lake may be affected to allow seepage and loss of water i.e. prevents full recharge; a small drainage basin could lengthen the refill time and delay the recreational season; any pumping of residual water after drawdown must be directed to a stilling basin for clarification to prevent siltation downstream; the spoils (sediments) should be located to prevent odor problems; drawdown should be regulated to prevent downstream flooding; the local Inland-Wetlands Commission should be notified of the project. Many of the agencies cited in the handout can help you with solving these project design problems and needs.

(2) Field Studies by the Association:

Conduct an extensive bathymetry (water depth) and sediment study to attain a profile of water depths and organic-silt layers in lake. Water Compliance personnel could supply the technical advice on how to attain this data which will determine the depths, amounts of sediments to be removed and where to remove them in-lake. This study

should be conducted after ice-out in the spring of 1981. Incidentally, one composited sediment sample from the above study should be analyzed for residual pesticides to insure that the spoils are safe for land disposal. The 1600 lbs. of Acquathol plus (Endothal and Silvex) which was applied in June 1976 may be persistent. This analysis could be conducted by our division as a service to you. Nutrient levels (NO_2-N, NH_3-N, Organic N and Total PO_4-P) and coliform (total and fecal M.P.N.) levels should be determined and assessed in the tributaries and in-lake to establish the quality of water that would recharge the lake. Therefore, all houses should be connected to the sewer, all tributaries should be free from nonpoint runoff (farm wastes) and nutrient rich sediments (organics) should be removed from the pond. Also unnecessary inhabitation by large groups of waterfowl should be discouraged to prevent any additional input of nutrients. All the preceding points are critical to the long termed success of the project.

(3) Preliminary Technical Input by D.E.P. (Water Compliance Personnel:

Based on our planimeter reading Fall Mountain Lake has a surface area of 1,326,75 sq. ft. (30.5± acres). If 3 feet of wet material (after drawdown) were to be excavated throughout the lake, approximately 1762 cubic yards would be removed upon excavation. In actuality, the dry volume (no water) of solids (spoils) using 25 % solids would be 36,905 cubic yards. The end result would change the mean depth to 5 feet and maximum to 9 feet. Deeper spots in lake could be excavated even greater than 9 feet e.g. 10-12 feet. A more exact volume of soils to be excavated will become evident when the bathymetry and core data are collected in the spring of 1981. Where and how deep to excavate is dependent upon the depth of the organic-silt layer and type of refusol (sand, gravel and/or bedrock). Beach areas that are excavated should be resanded to reduce aquatic weed reinvasion. It should be emphasized that high excavation costs may require a long termed program. Selective excavation could be prioritized in lake so that the funds are made available over a period of years rather than one lump sum which may be too costly for your budget. To minimize study and design costs, it is recommended that the agencies cited in the hand out be contacted for assistance. Your monies should go into restoration rather than into extensive studies. The association should be able to attain all the data necessary for the project with a minimum capital outlay.

In closing I hope that I've been of a help to you and look forward to further helping the lake association in their endeavors. As you know, our division does not have the resources to sample your lake and other private ponds in Connecticut. However, the State can supply the guidance and some technical services. Best of luck.

Sincerely,

Joe Nestico

Joe Nestico
Chief Field Inspector
Water Compliance Unit
566-7049

JN:mg

P.S. Charlie Fredette is willing to meet with your association for one night session. The best time to deal with me is during working hours because I know that future contacts will necessitate the use of resources available to me.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

October 21, 1981

Mr. Robert Impresa
10 East View Road
Fall Mountain Lake Association
Terryville, Connecticut 06786

Dear Bob:

The following is a summation of answers to your questions about your proposed dredging project at Fall Mountain Lake.

(1) Bathymetry (Water and Sediment Depth) - It is not necessary to have an engineer approve and/or conduct your work. When you complete it you may send me a copy for review to insure that everything is in order e.g. enough data points, etc.

(2) Locale inlands - wetlands - notify this group

(3) D.E.P. Conservation and Preservation - In a brief letter notify Deputy Commissioner Dennis DeCarli (165 Capitol Ave., Hartford 06115) of the drawdown and excavation.

(4) Dam Considerations - Victor Galgowski from D.E.P. - Water and Related Resources indicated that there should be no apparent problems or stresses to your Dam as long as the excavation does not undermine the Dam base. Therefore keep a safe distance from the Dam.

(5) Pesticides in the Sediments - Gregory Piontek of D.E.P. - Pesticides indicated there are no apparent problems with disposal of the spoils from the dredging. The 1600 lbs. of Aquathol plus should be stabilized because of its short life span of less than 6 months and the 6 years since its application. Please refer to the attached article on Herbicides. In conclusion, there is no need to have the sediments analyzed for herbicides.

(6) Drawdown should be slow to prevent downstream flooding and siltation. After drawdown you will need a hay filter fence and/or settling pond for the water drawn off during the excavation.

If any additional questions or problems arise, feel free to contact me.

Best of luck in your endeavors,

Joe Nestico
Chief Field Inspector
D.E.P. (Water Compliance Unit)
566-7049

JN:mg

Phone:

NOTES

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists, landscape architects, recreational specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC & D) Area - a 83 town area serving western Connecticut.

As a public service activity, the Team is available to serve towns and/or developers within the King's Mark RC & D Area - free of charge.

PURPOSE OF THE ENVIRONMENTAL REVIEW TEAM

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

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

REQUESTING AN ENVIRONMENTAL REVIEW

Environmental Reviews may be requested by the chief elected official of a municipality, or the chairman of an administrative agency such as planning and zoning, conservation, or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District, and the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the Team to enter the property for purposes of review, and a statement identifying the specific areas of concern the Team should investigate. When this request is approved by the local Soil and Water Conservation District and King's Mark RC & D Executive Committee, the Team will undertake the review. At present, the ERT can undertake two (2) reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or Nancy Ferlow, ERT Coordinator, King's Mark Environmental Review Team, King's Mark Resource Conservation and Development Area, 322 North Main Street, Wallingford, Connecticut 06492. King's Mark ERT phone number is 265-6695.