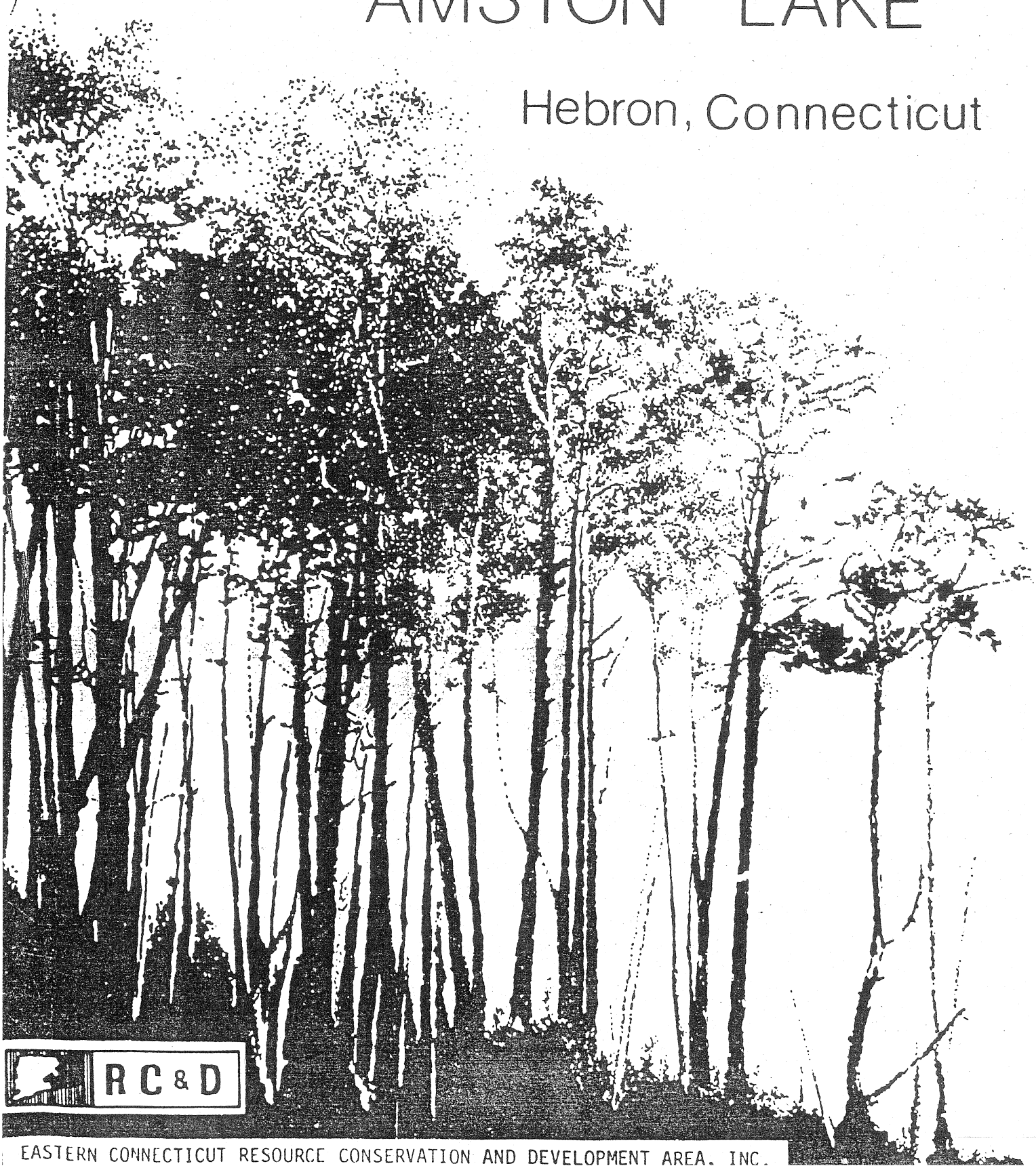
Environmental Review Team Report

AMSTON LAKE

Hebron, Connecticut



R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report

AMSTON LAKE

Hebron, Connecticut

June 1985

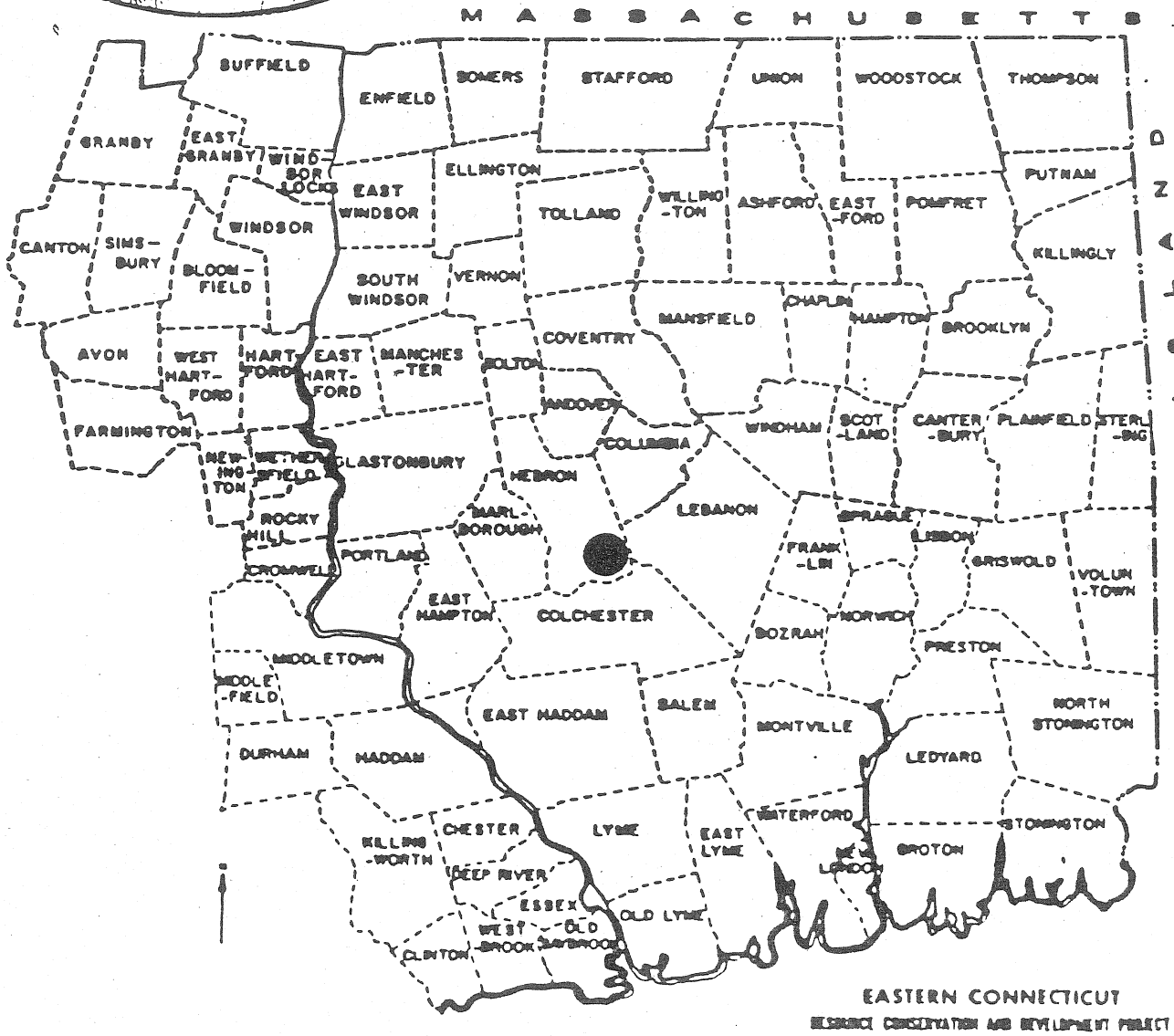
Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

AMSTON LAKE WATERSHED

HEBRON, CONNECTICUT



EASTERN CONNECTICUT

RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
AMSTON LAKE
HEBRON, CONNECTICUT

This report is an outgrowth of a request from the First Selectman of Hebron 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 was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

The ERT that field checked the site consisted of the following personnel: Joe Neafsey, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Connecticut Department of Environmental Protection (DEP); Jim Parda, Forester, DEP; Frank Homiski, Sanitarian, State Department of Health; John Rook, Wildlife Biologist, DEP; Chuck Phillips, Fisheries Biologist, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, August 30, 1984. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

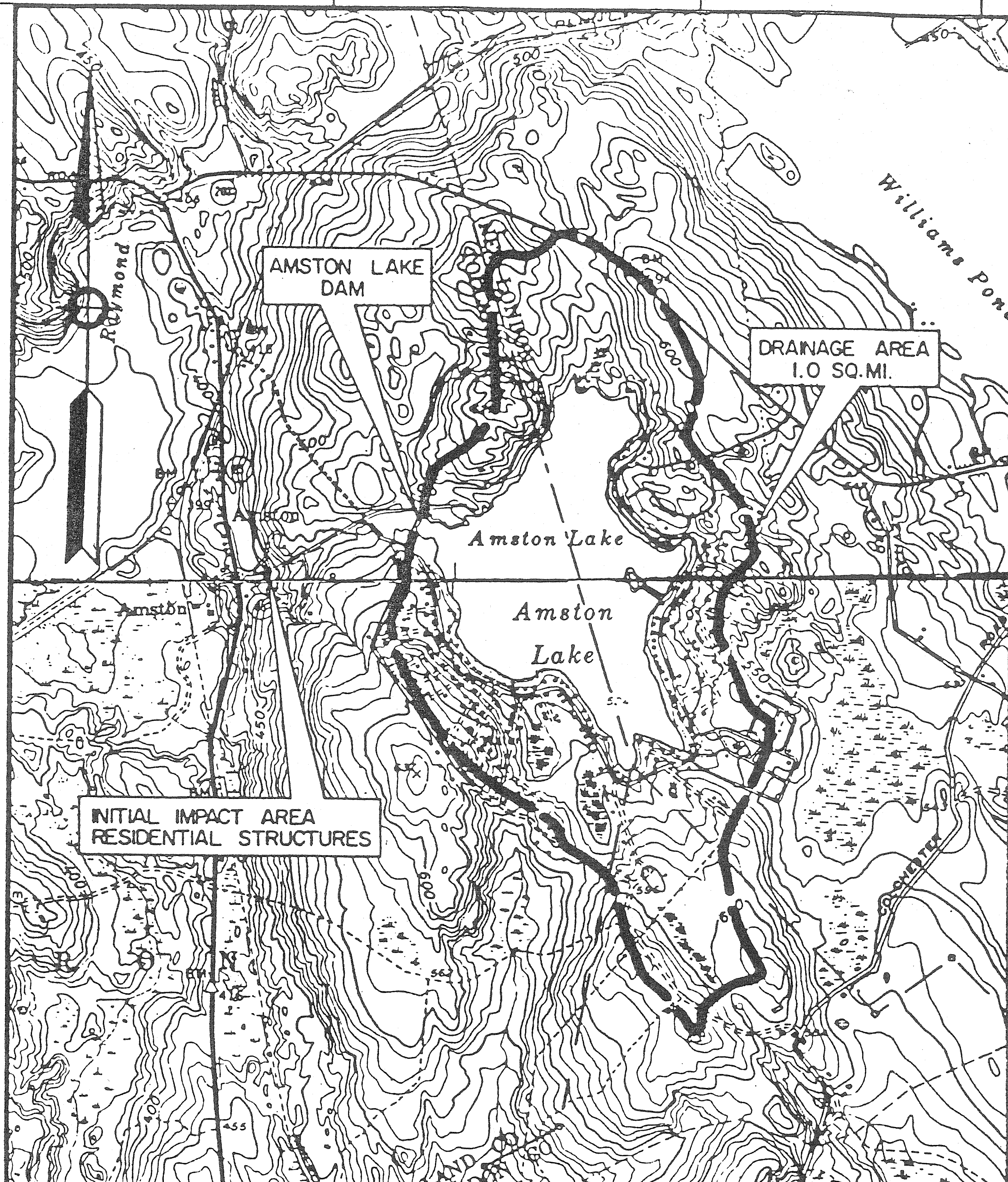
This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Hebron. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Route 205, Box 198, Brooklyn, Connecticut 06234, 774-1253.

Topography

Site Boundary | 0 2000' scale | N

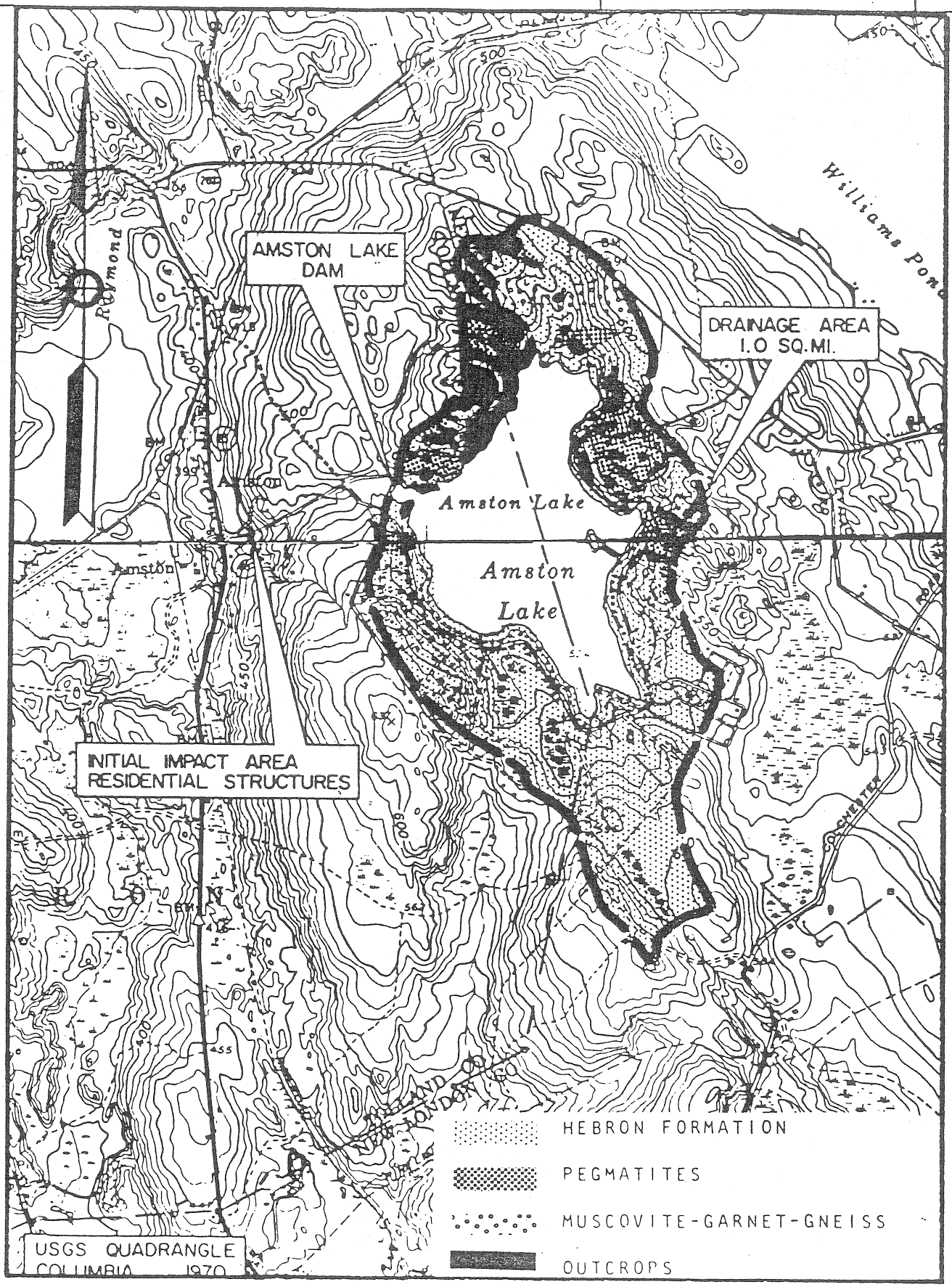


INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare a natural resource inventory for the Amston Lake watershed in the Towns of Hebron, Lebanon and Colchester. Amston Lake is located in the southeastern portion of the Town of Hebron, with eastern and southern portions of the watershed being located in Lebanon and Colchester, respectively. The present owner of the lake, Murray Ostrager, has offered the Lake to the Town of Hebron for the purchase price of one dollar. The Town presently owns the road system around the Lake, but there is no public access to the beach. Information provided in this report should help the Town in making an informed decision regarding the purchase of the Lake.

The Town was particularly concerned with the condition of the existing dam, the potential repairs which may be needed, algae blooms, conditions for swimming, boating and fishing, and land uses in the watershed which will impact upon the Lake. The Team has provided general natural resource information and detailed discussion of these concerns in the following sections of this report.

Bedrock Geology



ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

Amston Lake, which is ±184 acres in size, is bisected by the Hebron-Lebanon town line. The drainage area of Amston Lake encompasses approximately 680 acres or just over one square mile. Nearly 50 percent of the drainage area lies within the Town of Hebron, 38 percent lies within the Town of Lebanon and the remaining 22 percent lies in the Town of Colchester. The drainage area of Amston Lake may be defined as the geographical area from which runoff ultimately drains into the lake. The drainage area as shown by the accompanying topographic map, tends to follow along the crests of hills surrounding the lake.

The water level of Amston Lake is controlled by an earthen dam on the western side of the lake. A concrete spillway is located in the middle of the dam. The outlet stream for Amston Lake, which is unnamed, is a tributary of Raymong Brook.

The topography throughout the drainage area ranges from gentle to steep slopes. Steepest slopes, which are found in the northwestern portion of the drainage are associated with areas where bedrock is at or near ground surface. Slopes also rise steeply to the east from the eastern shore of Amston Lake. The southeast portion of the drainage area is characterized by moderate slopes. This area has been extensively developed for residential use (summer as well as year round). The eastern shoreline of the lake in the Town of Lebanon has also been developed for residential use at high density. Gentle slopes predominate in the southern parts of the drainage area.

Maximum and minimum elevations in the drainage area are ±650 feet and 445 feet above mean sea level, respectively.

The drainage area for Amston Lake is located partially in the Columbia topographic quadrangle and partially in the Colchester topographic quadrangle. A bedrock geologic map (GQ-595 by George Snyder) for the Columbia quadrangle has been published by the Connecticut Geological and Natural History Survey. The surficial geologic map for the Columbia has not been published to date. There is preliminary information on file at the Department of Environmental Protection's Natural Resources Center which is available for review purposes.

A bedrock geologic map (QR-27 by L. Lundgren, Jr. and G. Snyder) for the Colchester quadrangle has been published by the U.S. Geological Survey. No surficial geologic map has been produced for the Colchester quadrangle to date. The Soil Surveys for New London and Tolland Counties, prepared by the U.S. Department of Agriculture, Soil Conservation Service, were referenced for this report.

SURFICIAL GEOLOGY

The surficial geologic materials in the Amston Lake drainage area (those unconsolidated materials overlying bedrock) may be broadly classified into three major units; till, swamp sediments, and stratified drift. Till, which covers approximately 96 percent of the watershed, consists of a non-sorted, non-stratified deposit of glacial debris that is composed largely of rock particles and fragments with widely ranging shapes and sizes. The debris accumulated on, within, or beneath an ice sheet as it moved across pre-existing soils and bedrock exposures and was later deposited directly from the ice without substantial re-working by meltwater streams. Till is generally sandy, friable and very stony in the upper few feet. However, beneath the sandier, stonier zone, the till becomes compact. These compact till layers at depth will be encountered primarily with the Paxton and Woodbridge soils delineated on the accompanying soils map. These soils are found in the eastern portions of the watershed. Thickness of the till range from zero, where bedrock outcrops occur at the land surface, to probably not more than 10 feet at various points in between outcrops.

Based on the Soil Survey for Tolland County, approximately 25 acres at the southwest part of the watershed comprise stratified drift. Stratified drift consists of these sediments that were deposited by meltwater streams emanating from glacier ices. The major components of stratified drift consist of gravel, sand, and some silt. Stratified drift is typically well-sorted by grain size. Based on air photos of this area, it appears that the sand and gravel deposits have been mined in the past.

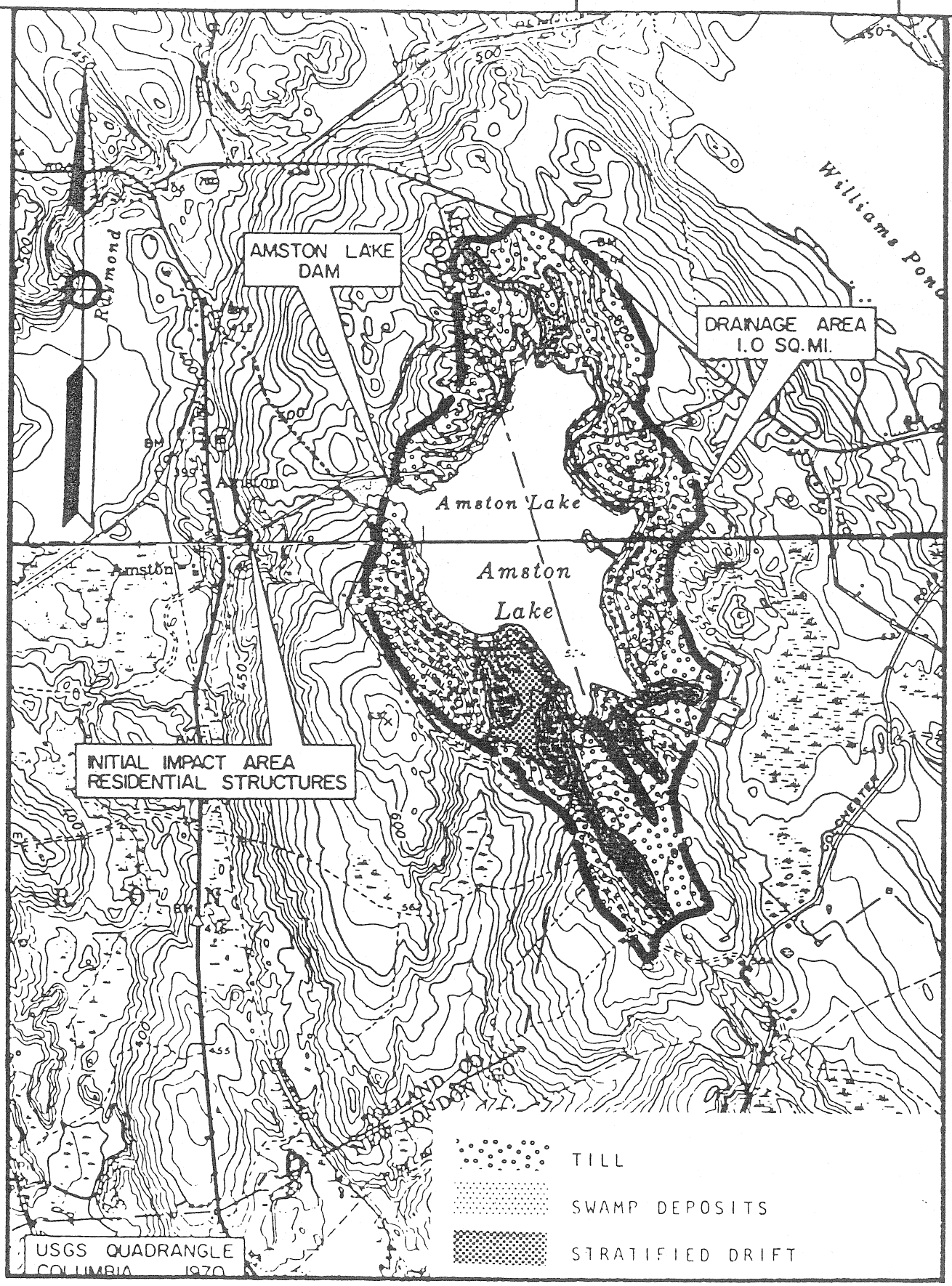
Overlying till and/or stratified drift throughout the watershed are areas of seasonal wetness. These areas are designated as Rn and Lg on the soils map. These soils, which generally parallel watercourses enroute to the lake are regulated inland-wetland soils under Public Act 155. They comprise approximately 59 acres or +9 percent of the watershed.

BEDROCK GEOLOGY

Bedrock underlying and cropping out in the watershed consists of three major rock types: (1) the Hebron Formation, (2) a muscovite-garnet gneiss, and (3) pegmatite intrusives.

The most extensive rock underlying the watershed is the Hebron Formation. The Hebron Formation consists predominantly of interbedded brownish-gray schist composed of the minerals andesine, quartz, biotite, potassium feldspar, and a greenish-gray calc-silicate gneiss composed of the minerals labradorite, quartz, actinolite, hornblende and diopside. "Gneisses" are rocks in which thin bands of elongate, platy, or flaky minerals alternate with bands or layers of more rounded mineral grains. "Schists" are structurally layered, crystalline rocks, in which platy, flaky, or elongate minerals have become aligned to form surfaces of relatively easy parting. Both gneisses and schists are metamorphic rocks, which means they have been altered by tremendous heat and pressure within the earth's crust.

Surficial Geology



The next most abundant rock formation which underlies or crops out within the watershed are pegmatites. Pegmatites are igneous rocks (rocks formed from magma) which intruded the surrounding metamorphic rocks (Hebron Formation) after their formation. These pegmatite rocks were subjected to deformation (metamorphism) after they intruded the surrounding Hebron rock. Pegmatites consist of coarse grained, pink or white rocks composed of the minerals quartz, oligoclase, microcline, and biotite. The minerals beryl, garnet, and tourmaline are also present. Because the pegmatites are more resistant to weathering than the surrounding rocks of the Hebron Formation, they usually make prominent ledges and comprise high points throughout the watershed.

The final rock type, underlying or outcropping in the watershed, is a band of muscovite-garnet gneiss. It trends east-west in the northern parts of the watershed. These rocks consist of a medium-grained, white, quartz monzonite gneiss composed of the minerals oligoclase, microcline, quartz, muscovite, biotite and garnet. Like the pegmatite rocks, these rocks are also resistant to weathering than the surrounding rocks of the Hebron Formation. As a result, they also usually make prominent ledges.

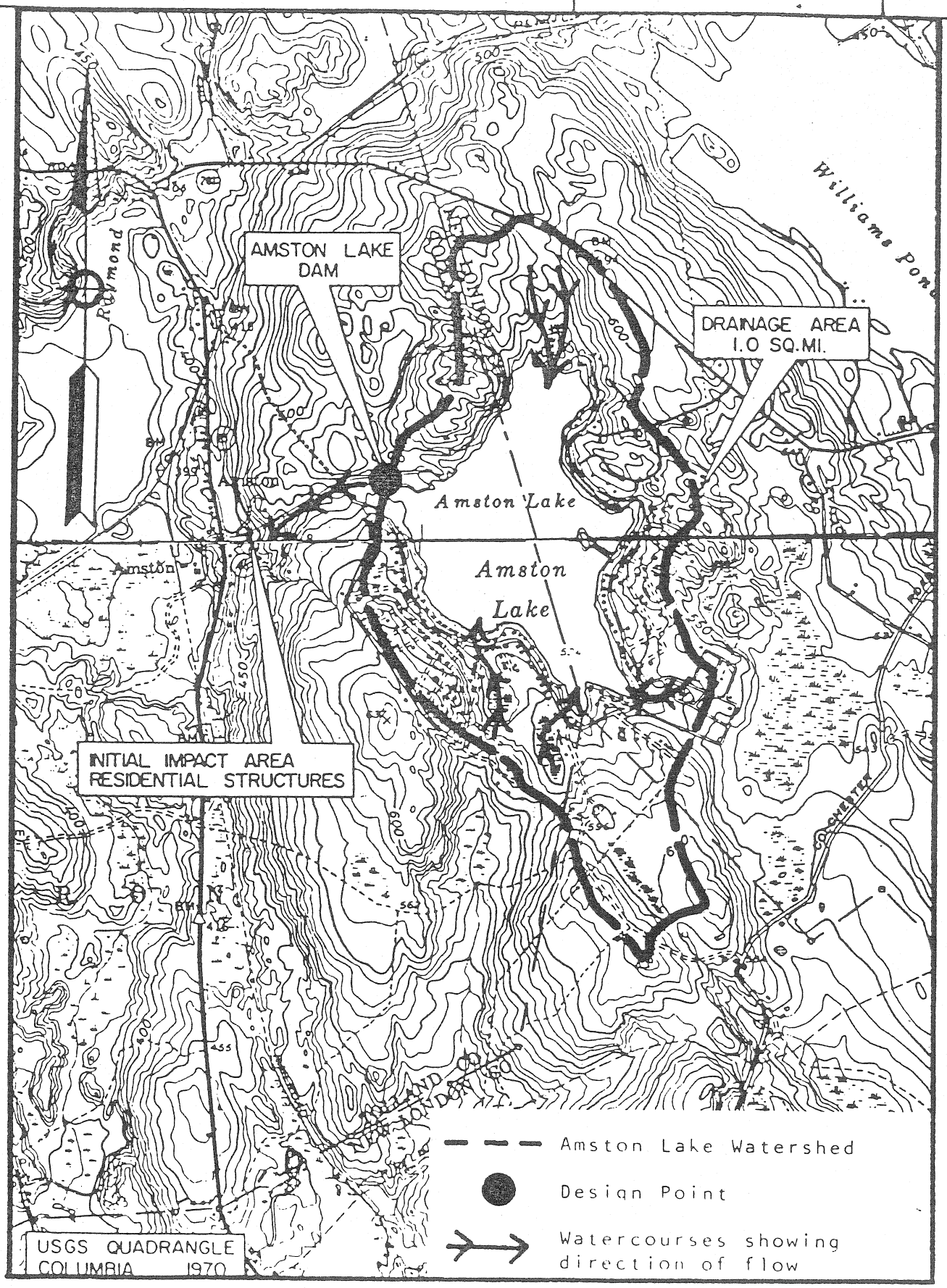
An accompanying map shows the approximate distribution of the bedrock geology and bedrock outcrops within the watershed.

HYDROLOGY

By definition, the watershed of Amston Lake comprises all land areas from which ground or surface water may ultimately enter the lake. As shown by the accompanying Drainage Area Map, the boundary for the watershed tends to follow the crests of hills and ridge surrounding the lake. The boundary as delineated should be substantially correct and may be used as a reliable indication of the study area. Because the contours shown are not completely accurate and because small topographic details do not appear due to the 10 foot contour interval, the true physical boundary may deviate to some degree from the boundary delineated. The watershed as depicted comprises approximately 680 acres (about 1.06 square miles). At present, there is no bathymetric information available for Amston Lake.

There is no gaging station at the outlet of Amston Lake. Nevertheless, it is possible to estimate the flow duration characteristics of the unnamed outlet stream using a method described in Connecticut Water Resources Bulletin No. 31. The estimates are tabulated in the following table in units of both million gallons per day (mgd) and cubic feet per second (cfs).

Drainage Areas



Estimated flow duration and characteristics for unnamed tributary to Raymond Brook at the outlet of Amston Lake.

Percent of time equalled or exceeded	1	5	10	30	50	70	90	99
Flow equalled or exceeded, in mgd	7.95	3.9	2.97	1.38	.75	.34	.07	0.0
Flow equalled or exceeded in cfs	12.3	6.06	4.6	2.13	1.16	.52	.11	0.0

The mean annual outflow from Amston Lake is estimated to be 1.09 million gallons per day or 1.70 cubic feet per second.

The general groundwater flow pattern in the watershed parallels the surface flow pattern to a great extent. The shape of the water table (the level below which all spaces in the soil and bedrock are filled with water) is largely conformable with the surface topography, although minor surface features may not be reflected in the water table. Rainfall reaching the ground may be evaporated back to the atmosphere, pass over land as surface runoff or it may be absorbed into the ground. If absorbed, the water may either be returned to the atmosphere through transpiration, or it may percolate down to the water table and become groundwater.

Groundwater may be discharged at the surface in the form of a spring, seep, wetland, or stream, which ultimately transports the water to the lake. The outfall streams of wetland areas, primarily in the southern parts of the watershed, appear to be the only surface discharging streams to the lake. Bottom springs may also contribute inflow to the lake.

The natural mineral composition of the surficial geologic deposits and underlying bedrock effects the chemical quality of the lake. For example, Connecticut Water Resources Bulletin #31 indicates that surface and ground water in the Amston Lake watershed may have elevated iron and/or manganese levels. The source of elevated iron and/or manganese levels can be attributed largely to the minerals in the underlying metamorphic rocks in the watershed. Surficial geologic materials (till), which for the most part are derived from the surrounding bedrock, may also be a source of elevated iron and/or manganese minerals to water which come in contact with it. Hard water, which may interfere with the lathering of soap and when heated may deposit a hard scale in cooking pots and on heating coils, with a consequent waste of fuel, should not be a major problem in the watershed. With the possible exception of elevated iron and/or manganese levels, the chemical quality of groundwater and surface water within the Amston Lake watershed under natural conditions should generally be good. According to the Team's lake ecologist and sanitarian, chemical, physical, and bacteriological samples collected from the lake were found to be satisfactory.

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

If a septic system is not properly designed, installed or maintained, there is a good chance it will malfunction. A malfunctioning septic system will either result in the backflow of sewage effluent into a house or the breakout of septic effluent on the surface of the ground. Sewage effluent discharging onto the ground surface may ultimately reach Amston Lake. The sewage effluent can contribute phosphorous, nitrates, and other pollutants to the lake's waters. A far more important consideration, however, is that a failing septic system is a public health hazard. The public health threat is a concern which demands immediate correction. On the day of the field review, team members observed two failing septic systems at residences on Woodside Drive in the Town of Hebron. If these failing septic systems, which are located in front yards, are not contained on the property, it is conceivable they will overflow into the street gutter. The street gutter will carry the effluent downslope to a catch basin at the corner of Deepwood Drive and Woodside Drive which ultimately discharges into Amston Lake. According to Hebron's town sanitarian, there are numerous septic system failures within the watershed in the Town of Hebron.

Residential development around the shore is very dense. The greatest concentration of dwellings which, according to Hebron's sanitarian, are 50 percent seasonal and 50 percent year around, are located primarily along the eastern, southern, and parts of the western shores of the lake. The northwestern and northern shores of the lake are undeveloped.

Based on visual inspection of the residences clustered around the Amston Lake along the eastern, western, and southern shores, they appear to have been constructed on undersized lots and are very close to the high water mark of the lake. In addition, due to the presence of moderate to steep slopes and till-based soils (slow percolation rate, compact layer, elevated groundwater table), it seems that these lots would be only marginally suited for on-site sewage disposal systems and would probably require engineered septic systems. As a result, unless these systems were properly designed, installed and maintained, it seems likely that these existing systems could malfunction and ultimately discharge septage effluent into the lake, particularly during periods of heavy precipation and/or during summer months when cottages get heavy usage by residents. The potential for septic discharges in these areas may ultimately threaten the water quality of the lake as well as create a public health nuisance condition.

The correction of individual or scattered failing septic systems is the responsibility of each town's health official(s). There are a number of steps which can be taken to reduce the potential adverse effects of existing and proposed sewage disposal systems in the Amston Lake watershed. These include:

(1) Conducting a sanitary survey in the watershed to identify potential sources of pollution. This may include the introduction of fluorescene dye in residential toilet systems during the wet spring months in order to determine proper system function.

(2) Strict enforcement of the Public Health Code requirements with respect to new construction in the Amston Lake watershed. Of particular concern, will be the undeveloped areas throughout the northwestern and northern parts of the watershed. The presence of bedrock at or near ground surface, moderate to steep slopes and till-based soils will greatly limit the development potential in this part of the watershed. These limitations will weigh most heavily on the ability to provide adequate subsurface disposal.

(3) Educating lakeside residents about the proper operation and maintenance of septic systems via an information pamphlet. The pamphlet should advise homeowners about the consequences of failures, list materials which should not be disposed of in a septic system, discuss water conservation measures, and stress the need for routine septic tank pumping. An excellent pamphlet for these purposes was developed by the Northeastern Connecticut Regional Planning Agency and the Northeast District Department of Health entitled, "Homeowner's Guide to Septic System Maintenance - Or How to Save Thousands of Dollars."

(4) Encouraging lakeside residents to use nonphosphate laundry detergents. The phosphorus passing through a residential septic system can be reduced 30 to 40% by the use of nonphosphate laundry detergents.

(5) Consider adopting a town ordinance which requires the installation of sewage disposal systems meeting all health code requirements at the time of building conversion from seasonal to year round use.

SOILS

The soils around this lake are primarily of glacial till origin. A few glacial outwash soils are along the southern end of the lake.

A cemented or compacted and often clayey layer of soil that is impenetrable by

Slope, and shallow depths to bedrock and hardpans are the most limiting factors of these soils. They range from excessively drained to poorly drained. The poorly drained soils are mostly along stream channels.

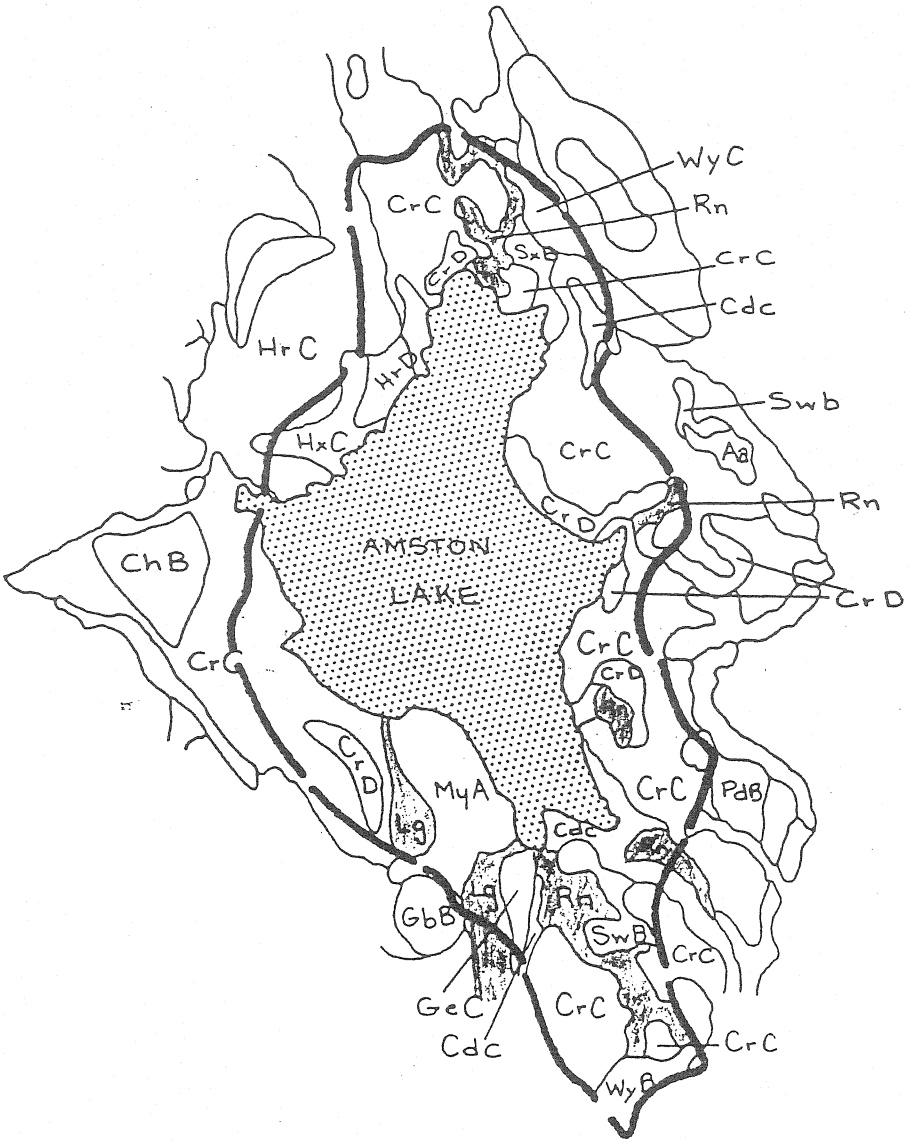
The land use around the lake is predominantly residential. The use of on-site septic systems in areas of steep slopes, hardpans and shallow depths to bedrock may eventually have an impact upon the lake if they are not properly designed.

Erosion and Sediment Control

The transport of eroded soil to a lake contributes to eutrophication in several ways. Most importantly, phosphorus and other plant nutrients associated with soil particles are introduced into the lake. Erosion and sedimentation can, therefore, be a dominant cause of phosphorous enrichment of lake waters. Another important effect is the physical presence of solid particles in the lake. Sedimentation reduces water depths, creating shallow shoals which are conducive to the growth of aquatic plants. In addition, organic matter associated with soil particles is decomposed by lake bacteria, contributing to the depletion of oxygen in waters overlying the lake sediments.

Due to moderate steep slopes in the Amston Lake watershed, sediment and nutrient inputs due to erosion are a particularly important concern. Erosion control practices should be implemented to correct any known problem areas and to prevent future problems due to new construction. Methods for controlling erosion and sedimentation are described in detail in the "Erosion and Sediment Control Handbook for Connecticut," U.S. Departmant of Agriculture Soil Conservation Service, 1976. This publication is available at the U.S.D.A. Soil Conservation Office in Tolland.

Soils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TOLLAND COUNTY

Map Symbol	Mapping Unit Names	Hydrologic Group
ChB	Canton and Charlton fsl, 3 to 8% slopes, very stony	B
ChC	Canton and Charlton fsl, 8 to 15% slopes, very stony	B
ChD	Canton and Charlton fsl, 15 to 35% slopes, very stony	B
CrC, CeC	Canton and Charlton fsl, 3 to 15% slopes, extremely stony	B
CrD	Canton and Charlton fsl, 15 to 35% slopes, extremely stony	B
GbB	Gloucester gravelly sl, 3 to 8% slopes, very stony	A
HrC	Charlton-Hollis complex, 3 to 15% slopes, very rocky	B
HrE	Charlton-Hollis complex, 15 to 45% slopes, very rocky	B
HxC	Hollis-Charlton-Rock outcrop complex, 3 to 15% slopes	C
Lg	Ridgebury, Leicester and Whitman fsl, extremely stony	C
MyA	Merrimac sl, 0 to 3% slopes	A
Pk	Carlisle muck	D
Pm	Adrian and Palms	D
SxA, SxB	Sutton fsl, 2 to 15% slopes, extremely stony	B

NEW LONDON COUNTY

Map Symbol	Mapping Unit Names	Hydrologic Group
Aa	Adrian and Palms mucks	D
CbB	Canton and Charlton fsl, 3 to 8% slopes	B
CcC	Canton and Charlton fsl, 8 to 15% slopes	B
CdD	Canton and Charlton fsl, 15 to 35% slopes	B
CrC	Charlton-Hollis fsl, 3 to 15% slopes, very rocky	B
CrD	Charlton-Hollis fsl, 15 to 45% slopes, very rocky	B
HrC	Hollis-Charlton-Rock outcrop complex, 3 to 15% slopes	C
HrD	Hollis-Charlton-Rock outcrop complex, 15 to 45% slopes	C
PbD	Paxton and Montauk fsl, 15 to 25% slopes	C
PdB	Paxton and Montauk fsl, 3 to 8% slopes, very stony	C
Rn	Ridgebury, Leicester, and Whitman fsl, extremely stony	C
SwB	Sutton fsl, 0 to 8% slopes, very stony	B
SxB	Sutton fsl, 0 to 8% slopes, extremely stony	B
WxA	Woodbridge fsl, 0 to 3% slopes	C
WxB	Woodbridge fsl, 3 to 8% slopes	C
WyB	Woodbridge fsl, 0 to 8% slopes, very stony	C

The soils around this lake are mostly of glacial till origin. A few glacial outwash soils are along the southern end of the lake.

Slope, and shallow depths to bedrock and hardpans are the most limiting factors of these soils. They range from excessively drained to poorly drained. The poorly drained soils are mostly along stream channels.

The land use around the lake is mostly residential. The use of on-site septic systems in areas of steep slopes, hardpans and shallow depths to bedrock may eventually have an impact upon the lake if they are not properly designed.

Another publication, "Best Road Maintenance Practices for Critical Watersheds," prepared by the Northwestern Connecticut Regional Planning Agency, can be used as a guide to minimize erosion and sedimentation from roadways into the lake. The publication includes information on (1) designing roadway drainage systems; (2) maintaining roads within the watershed which includes road salt and sanding operations; (3) erosion and sediment control measures; and (4) the grading and surfacing of unpaved roads. In this regard, residences surrounding the lake may want to consider forming a lake association which could work with appropriate town officials to formulate a stronger management program for the lake watershed roads and thereby reduce erosion and sediment problems.

The town expressed concern with regard to the condition and stability of the Amston Lake dam. Based on a cursory inspection of the dam on the review day, evidence of seepage on the downslope side of the dam was visable. Also, the concete spillway needs repairing.

These type of conditions, as well as other areas of concern, were noted in an inspection report compiled by the Army Corps of Engineers for the Amston Lake Dam in 1979. At least two engineering firms made inspections of the dam subsequent to the Army Corps inspection report. Both studies indicate areas of concern with regard to the dam's condition. Because the Army Corps of Engineers' report rates the dam as "significant" in their hazard classification, it is important that the dam's condition be investigated and appropriate steps be taken to correct all necessary problems in an expeditious manner.

VEGETATION

General Vegetation Description

1. Mixed hardwoods: This vegetative type is characterized by a variety of species including black oak, white oak, red oak, scarlet oak, hickories, birches, red maple, sugar maple, white ash and beech, shrubby vegetation and ground cover includes viburnum, ferns, blueberry, witch hazel, horn beam, and hop horn beam.

2. Hardwood Swamp: Forested wetlands occur primarily at the northern and southern ends of the lake. The dominant trees species is red maple with some white ash and yellow birch. Common understory vegetation includes spicebush, sweet pepperbush, blueberry, skunk cabbage and various ferns.

3. Open Swamp: These non-forested wetlands contain a variety of vegetation. The vegetation occurring in these wetlands includes blueberry, spicebush, sweet pepperbush, speckled alder, button bush and swamp azalea.

4. Open Field: The open fields in the watershed are primarily agricultural fields currently used for hay.

Forest Impact on Water Quality

Healthy woodlands provide a protective influence on water quality. They stabilize soils, reduce the impact of precipitation and runoff, and moderate the effects

of adverse weather conditions. Woodlands, therefore, help to reduce erosion, sedimentation, siltation and flooding. Research has shown that soil protected by the cover of litter and humus associated with woodland areas contributes little or no sediment to streams.

Management Considerations

The Forestry Bureau for the Department of Environmental Protection encourages all woodland owners to manage their forestland. When properly prescribed and executed, forest management practice will increase the production of forest products, improve wildlife habitat, and enhance the overall condition of the woodland. To reach a healthy and productive state, individual forest stands should be evaluated periodically to determine management needs. A DEP forester can be contacted at 295-9523 for management advice at no charge.

WILDLIFE

The main concern in an area such as this would be regarding waterfowl. There are certain requirements, such as: amount and type of aquatic vegetation, depth of water, control of water depth, availability of nesting sites, availability of disturbance free areas, etc., which must be considered.

Additional information and assistance concerning the aspects of waterfowl biology and management can be obtained by contacting the Franklin Wildlife Office, Route 32, Franklin, CT.

FISHERIES

Amston Lake is a typical warm-water Connecticut pond. The following fish species would be expected to inhabit the pond:

Largemouth Bass
Chain Pickeral
Bluegill Sunfish
Pumpkinseed Sunfish
Yellow Perch
Golden Shine
Brown Bullhead
American Eel
White Sucker

Since the pond is private, it has not been surveyed by State Fisheries personnel, but reports of good bass and perch catches have been received periodically. As an area of significant size for water-based recreation, the lake could be an important acquisition for the Town or a tax district. Any acquiring authority should consider the associated short and long term cost in the areas of dam maintenance, aquatic vegetation control, boating regulations, and sanitation improvements.

WATER SUPPLY

The underlying bedrock appears to be the most important source of groundwater in the watershed. Bedrock wells are commonly capable of providing small but reliable yields to wells. The yield of bedrock wells depends upon the number and size of water-bearing fractures the wells intersect. Since the fractures are distributed irregularly through the rock, it is difficult to predict what the yield of a well will be. Nevertheless, based on statistical information in Water Resources Bulletin No. 31 (Lower Connecticut River Basin), of those wells studied tapping the crystalline metamorphic rocks underlying the watershed, 90% yielded just under 2 gallons per minute (gpm) or more; 50% yielded approximately 6.5 gpm or more; and only 10% yielded approximately 18 gpm or more.

The natural quality of the groundwater should be satisfactory. Connecticut Water Resources Bulletin No. 31 suggests that wells tapping the underlying bedrock may contain elevated levels of iron and/or manganese. If levels are excessive, filtration may be required to remove objectionable water color and taste.

PUBLIC HEALTH CONCERNS

Amston Lake is presently under private ownership and is located within the Towns of Hebron and Lebanon. There is no bathymetric data on the lake, therefore, comment on depths and water volume cannot be discussed. As for water quality, a review of the State Department of Health Services' files indicates that the water quality has historically been good for bacterial examination. However, a single sample in 1978 that was collected opposite Oakland Road, indicated a total coliform count of 480 colonies per 100 ml. of water which is still within the recommended threshold level of 1000 per 100 ml. for swimming purposes. It should be pointed out that the last sample results on file were from 1979.

The southwestern shore of the lake, within the Town of Hebron, is heavily developed by both year 'round homes and seasonal cottages at approximately a 50-50 ratio. The year 'round homes are served by on-site wells and septic systems, while most, if not all, of the seasonal homes are served by on-site septic but drinking water is supplied by the Amston and Beseck Water Company, Amston Lake Division, which is a seasonal community water supply. The company supplies drinking water to some 233 cottages around the lake in both the towns of Hebron and Lebanon.

A majority of the residences around the lake were probably constructed prior to the enactment of planning and zoning regulations; as a result lot sizes are generally small. Many of the original seasonal homes have been converted to year 'round residences. It is questionable whether the septic systems were correspondingly upgraded to accommodate the added usage that a year 'round residence would require.

This sequence of events has led to a condition of failing septic systems as witnessed on Woodside and Deepwood Drives. It is reported that as many as 21 or more homes are incurring similar problems. It can be assumed that effluent from these failing septic systems is making its way into the lake via runoff and through catch basin discharges. Over time, if this situation is not corrected, the

water quality in the lake may be adversely affected. Therefore, it is important that a plan for correction be developed. It is this writer's understanding that the Town of Hebron is presently under an abatement order from the Department of Environmental Protection to eliminate this situation and the process toward compliance has begun.

Any future development on the watershed should meet all planning and zoning and Public Health Code regulations.

Amston Lake dam is located on the western shore of the lake in the Town of Hebron. It is an earthen dam with a concrete spillway which has the capability of raising or lowering the lake depth by means of flashboards and/or a gate valve.

There was evidence of seepage on the back side of the dam and erosion to the water side. The dam also has small trees and brush growing from it which will have to be removed. There have been several engineering studies conducted on this dam and reference should be made to these for a more indepth knowledge of the dam's condition.

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.

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 activitis. 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, and a statement identifying the specific areas of concern the Team should address. When this request is approved by the local Soil and Water Conservation District and the 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 Jeanne Shelburn (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.