Environmental Review Team Report

Wyassup Lake

North Stonington, Connecticut

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EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

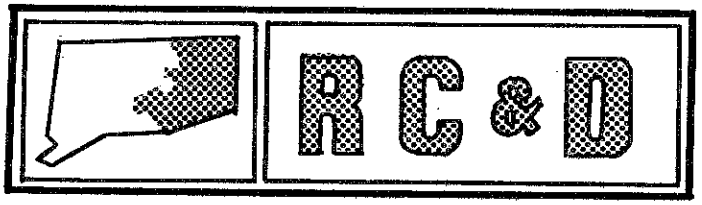
Environmental Review Team Report

on

Wyassup Lake

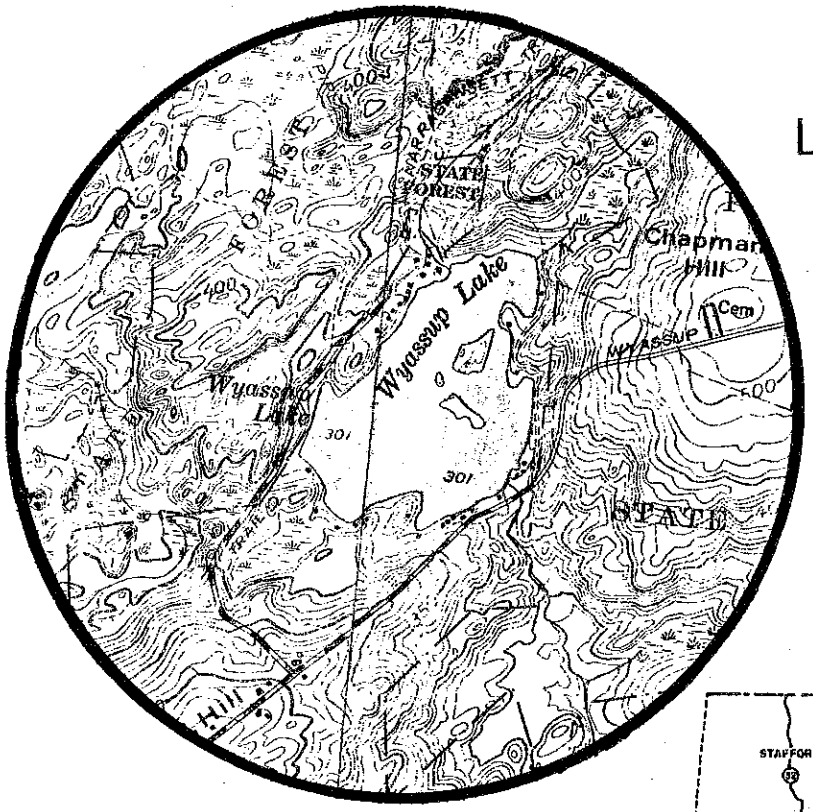
North Stonington, Connecticut

July 1978



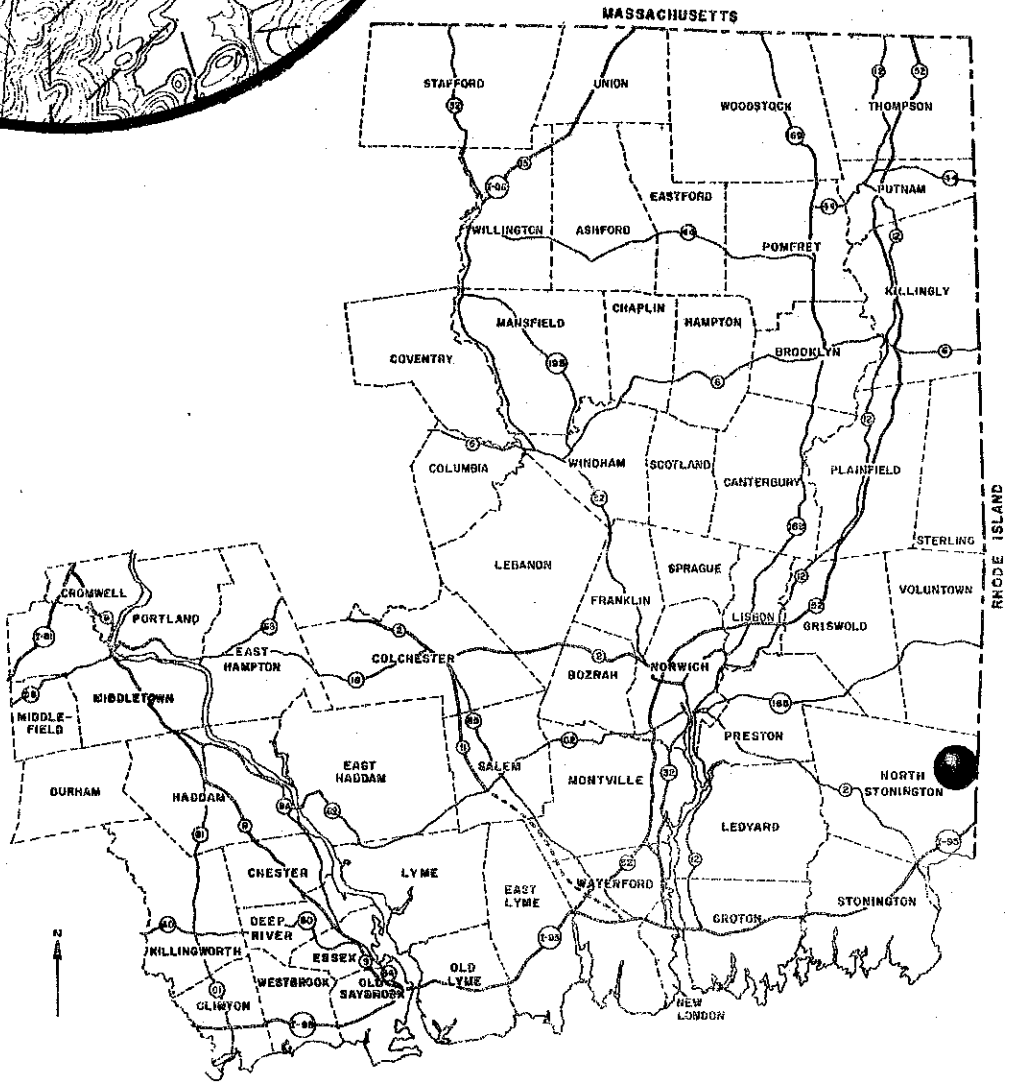
eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360



Location of Study Site

WYASSUP LAKE
NORTH STONINGTON, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
WYASSUP LAKE
NORTH STONINGTON, CONNECTICUT

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

The soils of the site were mapped by a soil scientist of the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). Reproductions of the soil survey map as well as a topographic map of the site were distributed to all ERT participants prior to their field review of the site.

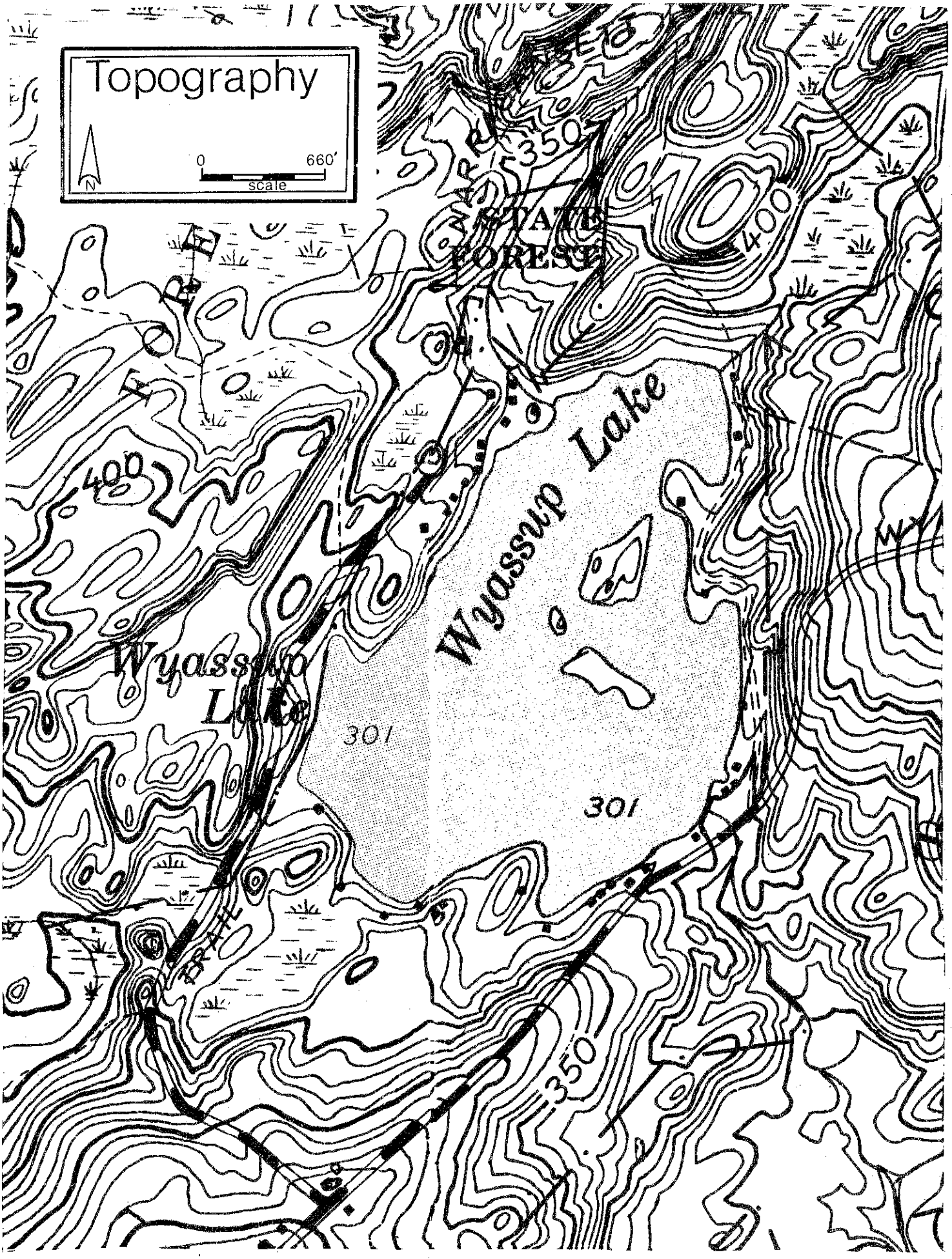
The ERT that field checked the site consisted of the following personnel: Gary Parker, District Conservationist, Soil Conservation Service (SCS), Mike Zizka, Geologist, Department of Environmental Protection (DEP), Donald Smith, Forester (DEP), Jim Murphy, Senior Environmental Analyst, Water Compliance Unit (DEP), Charles Fredette, Senior Sanitary Engineer, Water Compliance Unit (DEP), Donald Capellaro, Sanitarian, State Department of Health, Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Thursday, April 13, 1978. Reports from each 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 indentifies 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 North Stonington. 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 Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.


Topography
N
0
660'
scale
STATE
FOREST
350
400
400
Wyassup Lake
Wyassup Lake
301
301
350

INTRODUCTION

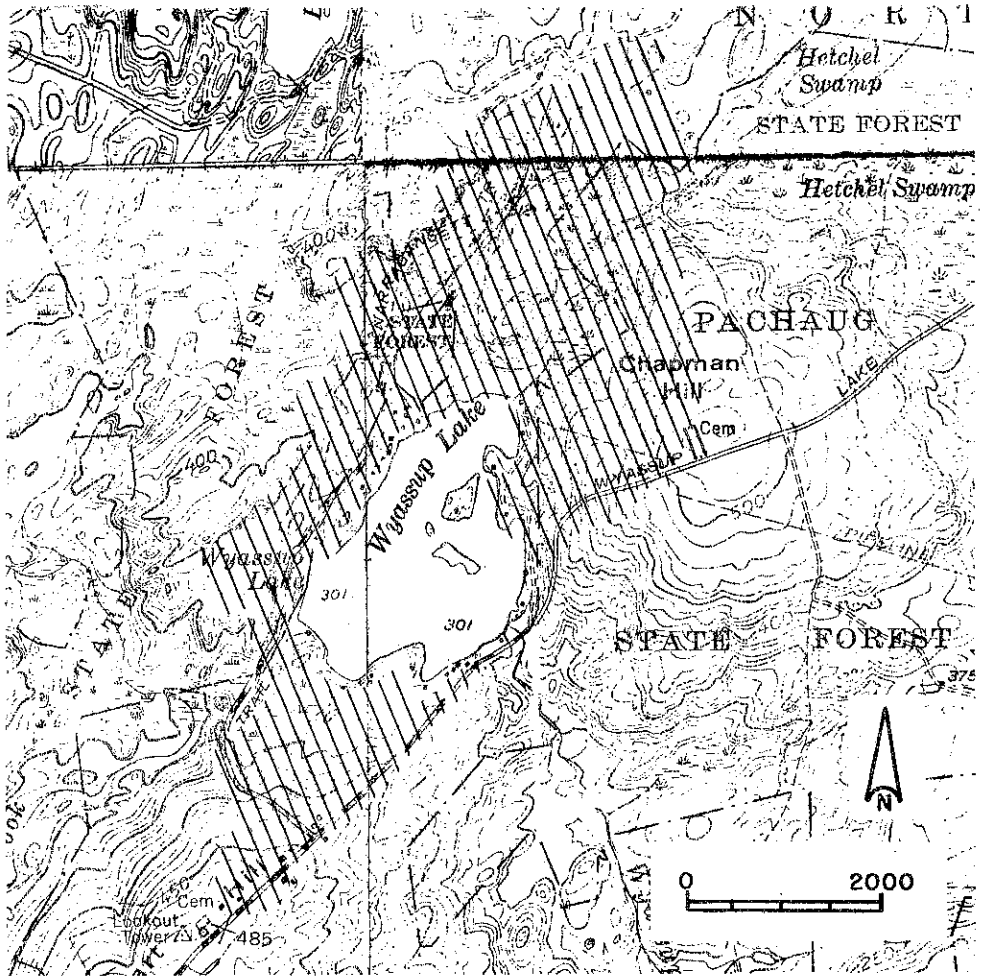
The Eastern Connecticut Environmental Review Team was requested to inventory the natural resource base of the Wyassup Lake watershed and using this data, assist the Town of North Stonington Planning and Zoning Commission in making a determination as to potential change in the seasonal residence zone in this area to allow for year-round cottage use.

Wyassup Lake is located in the eastern portion of the Town of North Stonington and is classified in the most recent State Water Quality Standards as a Class A waterbody. In essence this means that the State does not now permit any point source discharges into the lake or its tributary stream.

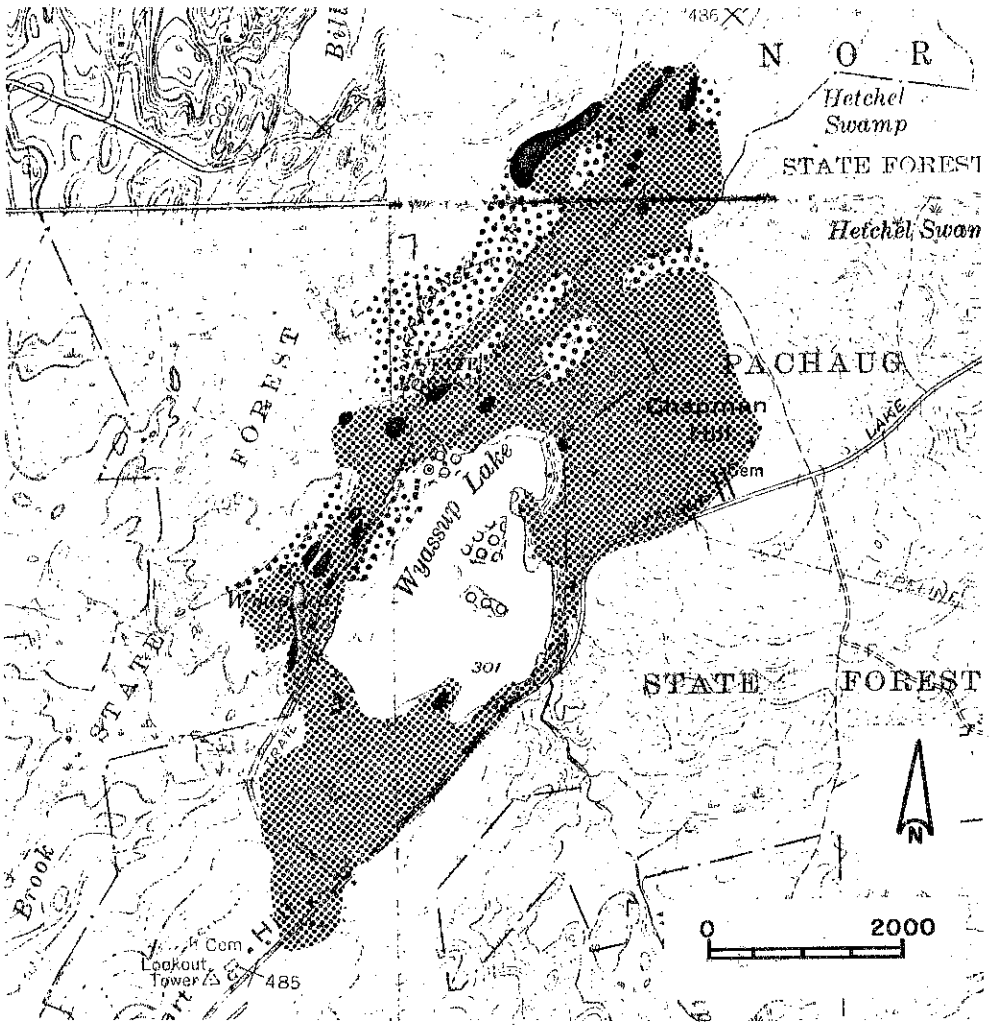
By utilizing a strictly in-house classification system developed for Water Compliance Unit purposes, Team members have classified Wyassup Lake as Meso-Oligotrophic. This informal catagory applies to those lakes which are generally low in fertility and productivity but which do exhibit some indications of enrichment. For example, small portions of the littoral zone may be vegetated with aquatic macrophytes.

The upland watershed area of Wyassup Lake totals approximately 518 acres, the surface area of the lake measures approximately 93 acres, the lake volume totals 825 acre feet and the lake's mean depth is 8.9 feet. Wyassup Lake is natural in origin, although its level has been slightly raised by a small dam. Water level is subject to considerable fluctuation due to the small watershed area which supplies water to the lake, this fluctuation is exclusive of that produced by intentional drawdown.

Wyassup Lake is noted to be located in that ecoregion with Connecticut's longest growing season and warmest mean annual temperature in the Department of Environmental Protection's publication "Rare and Endangered Species and their Habitats". It is a warm water lake, thermally stratified and currently managed for both cold and warm water fish (e.g. trout and bass). To date there is no evidence to suspect occurrence of nuisance blooms of phytoplankton.



WATERSHED AREA



SURFICIAL GEOLOGY

- Till
- Stratified Drift
- Bedrock Outcrops
- Areas of numerous bedrock outcrops/ very thin glacial till

ENVIRONMENTAL ASSESSMENT

GEOLOGY

The watershed of Wyassup Lake is located in an area of rugged topography controlled by bedrock knobs and ridges. The rock types are predominantly quartzite, amphibolite, and felsic gneiss. The linear pattern of the ridges, which trend southwest to northeast, reflects the strike of the metamorphic foliation in the rocks. Other bedrock geologic information is contained in two U.S. Geological Survey publications: Bedrock Geologic Map of the Ashaway Quadrangle, Map GQ-403; and Bedrock Geologic Map of the Voluntown Quadrangle, Map GQ-436. Both reports were written by Thomas Feininger.

Surficial geologic information pertaining to the watershed includes Surficial Geology of the Ashaway Quadrangle, U.S.G.S. Map GQ-712, by J.P. Schafer, and Surficial Geologic Map of the Voluntown Quadrangle, U.S.G.S. Map GQ-469, by Thomas Feininger. Over most of the watershed the depth of overburden is small. Areas of outcrop are numerous, particularly in the north and west sections. The surficial geology is shown in an accompanying illustration. Almost all of the overburden is glacial till, a deposit that was formed when ice overrode the region, abrading and fragmenting bedrock surfaces and bulldozing the preexisting soil layers. Because of its mode of origin, till is a complex mixture of clay, silt, sand, gravel, and boulders. In eastern Connecticut till is often quite compact and resistant to penetration by hand tools.

The other type of overburden in the watershed is stratified drift, an accumulation of particles deposited by glacial meltwaters. Composed largely of sand and gravel, stratified drift is principally restricted to the islands in the lake and to a small percentage of the shoreline.

DRAINAGE AREA

Data is not presently available on tributary water quality parameters or from precipitation stations.

There are only two permanent streams shown draining upland areas and both have wetlands as headwater sources. There are two other wetland areas in the Wyassup Lake drainage area which may be the source of intermittent streams. Unfortunately, as there is evidence to suggest that wetlands act as water treatment systems, none of these wetlands intercept drainage from the several dozen cottages fringing the lake. These wetlands do however, reduce lake nutrient input entering as precipitation.

The relatively dense, second-growth hardwoods which dominate the uplands, act as an effective filtering system, attenuating the nutrients received from precipitation and serving to prevent soil erosion.

GEOLOGIC ASPECTS OF WATER QUALITY

Most houses in the watershed are located on the periphery of the lake. Past

methods of sewage disposal have ranged from simple privies to complete septic tank and drainage field systems. It is believed that most current landowners have installed septic tanks and that the use of privies or other primitive disposal methods is now largely clandestine.

As a result of the proximity of the houses to the lake, the relatively steep slopes at the shoreline, and the thinness of the overburden, most wastewater discharged from houses probably enters the lake within a relatively short period of time. Under ideal conditions, septic effluent would be filtered through several feet of natural soil before reaching the groundwater table. The geologic attributes of the watershed, however, are far from ideal; they are, in fact, less desirable than those found around most other small lakes in Connecticut. Drainage may be retarded by the nearness of bedrock to the surface and by the high water-table conditions that commonly occur in shallow soils. Leachate from most local septic systems probably flows laterally, possibly along the bedrock-till interface, into Wyassup Lake. Some attenuation of contaminants must occur as the wastewater passes through the soil, but in the areas of steepest slopes, thinnest overburden cover, or closest proximity to the lake, these effects are minimal. In brief, it seems highly likely that the lake is now being affected by septic effluent. The extent of the problem depends upon the exact type, location, and frequency of use of each individual waste-disposal system.

Further development in the watershed or a zoning change to allow year-round residency at all lake-front dwellings will increase the risk of serious damage to the lake. Of these situations, the zoning change may be most worth consideration. Presently, small clusters of houses exist along several parts of the shoreline. Some dwellings in these clusters have lot sizes less than an acre. In a geologic environment so poorly suited to subsurface sewage disposal, the six-month "rest" period allowed each septic system may be the most significant factor in ameliorating problems from overtaxed drainage fields. Similarly, added development near the lake, which is especially likely under year-round zoning, will seriously burden the renovative capacity of the surficial deposits. Still another consideration is the seasonal nature of septic system reliability. Drainage fields that seem efficient in summer may not be adequate at other times. It is assumed that most six-month residents occupy their dwellings in the late spring, summer, and early fall. These are the times of year when evapotranspiration is high and the soil dries out rapidly. If the zoning change is approved, residents will be using their waste-disposal systems when the soil is more likely to be wet and the water table high. Improper functioning or failure of some of the systems and appearance of leachate at the surface would not be unexpected. Finally, year-round sewage disposal in the clustered areas of the shoreline may lead to the introduction of undesirable elements into the local potable water supply. Factors enhancing this potential include the shallowness of the overburden and the quartz-rich nature of the bedrock, which tends to make fractures within the rock more open.

SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320'/inch scale to 660'/inch, the soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types of the site. The soil limitation chart

indicates the probable limitations for each of the soils for on-site sewage disposal, buildings with basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication New London County, Connecticut: Interim Soils Report, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soil Groups For Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

The soils most representative of the Wyassup Lake watershed include the Hollis-Narragansett series, the Ridgebury, Leicester and Whitman series, and the Narragansett-Gloucester series. These soils are severely limited for installation of on-site septic systems due to large stones, depth to bedrock, slope, and wetness.

The Hollis series consists of gently sloping, sloping, moderately steep and steep, shallow, well drained soils on uplands where relief is influenced by the underlying bedrock. They formed in glacial till less than 20 inches deep, over granite, gneiss and schist bedrock. Hollis soils have moderate permeability. Major development limitations are related to depth to bedrock, rockiness and slope.

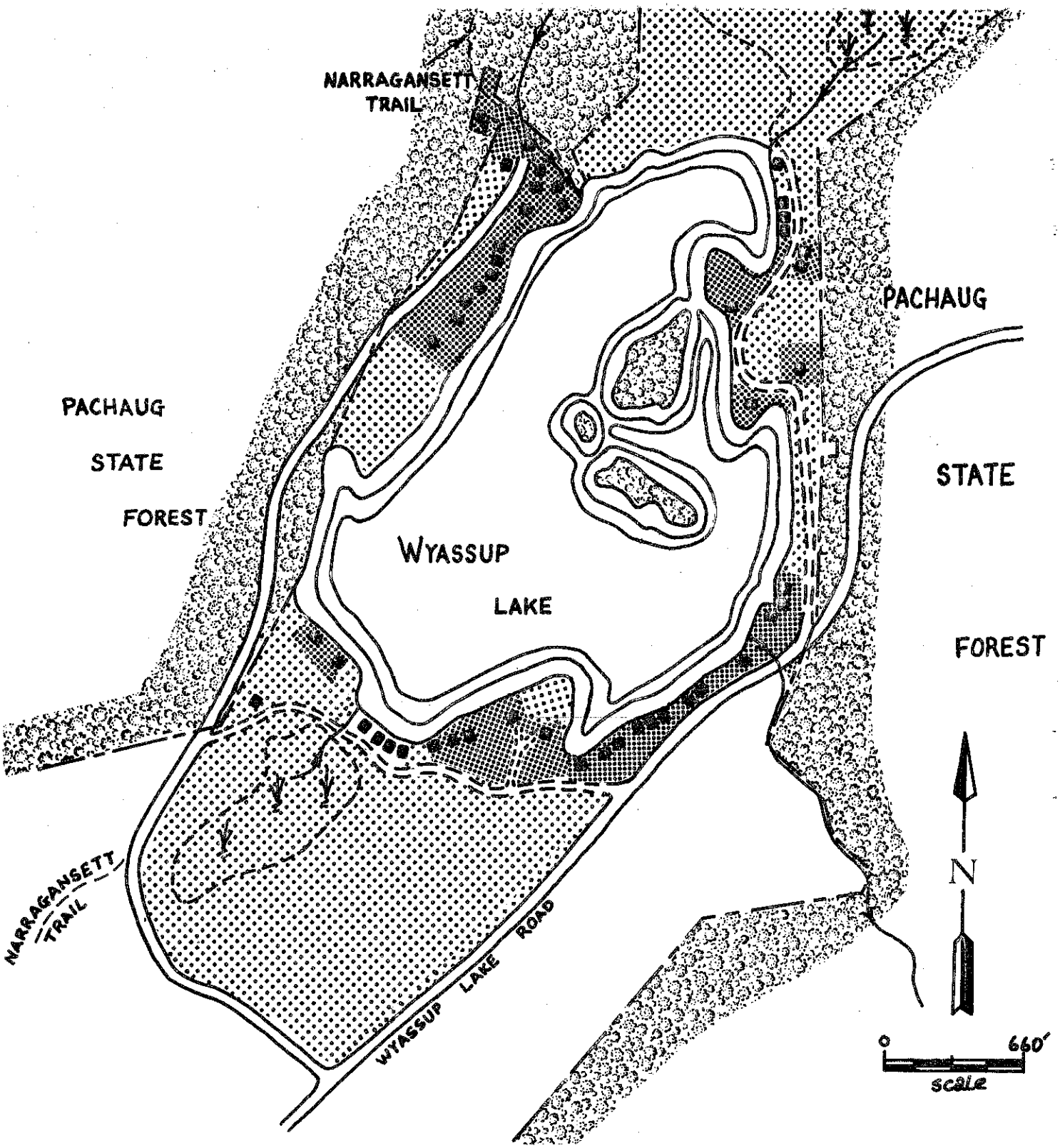
The Narragansett series consists of gently sloping, sloping and moderately steep, well drained soils on uplands. They formed in silt mantled friable glacial till. Narragansett soils have moderate permeability in the surface layer and subsoil, and moderately rapid or rapid permeability in the surface layer and subsoil, and moderately rapid or rapid permeability in the substratum. Major limitations are related to stoniness.

The Ridgebury, Leicester and Whitman series are wetland soils in such close combination as to be indistinguishable as separate mapping units at the scale at which these soils are mapped. This soils complex exhibits characteristics of all three soil types.

The Ridgebury series consists of nearly level, poorly drained soils on drumlins, and rounded or elongated hills of uplands. They formed in compact glacial till. Ridgebury soils have moderate to moderately rapid permeability in the surface layer and subsoil, slow or very slow permeability in the substratum (fragipan), and a high water table at or near the surface during 7 to 9 months of the year. Major limitations are related to stoniness, wetness, and slow permeability in the substratum.

The Leicester series consists of nearly level, poorly drained soils on uplands. They formed in friable glacial till. Leicester soils have moderately rapid permeability and a high water table at or near the surface during 7 to 9 months of the year. Major limitations are related to wetness and stoniness.

The Whitman series consists of nearly level, very poorly drained soils on uplands. They formed in compact flacial till. Whitman soils have moderate to moderately rapid permeability in the surface layer and subsoil, slow or very slow permeability in the substratum (fragipan), and a water table at or near the surface 9 to 10 months of the year. Major limitations are related to slow permeability wetness and stoniness.



VEGETATION MAP

LEGEND

- Wetlands & Water Courses
- Paved Roads
- Unimproved Roads
- Trails
- State Forest Boundary
- Buildings
- State Forest
- Undeveloped Watershed Area
- Water
- Developed Watershed Area

Any soil disturbance in this watershed, over one acre in size, should follow a sediment and erosion control plan. Connecticut's Erosion and Sediment Control Handbook, published by the Soil Conservation Service will aid both the developer and the Town in preparing and approving an adequate erosion and sediment control plan. Standards and specifications for both mechanical and vegetative practices listed within the handbook are available at the New London County Soil Conservation Service office, Norwich, Connecticut.

FOREST RESOURCES

A significant portion of the Wyassup Lake Watershed is in land maintained by the State of Connecticut as Pachaug State Forest. As these lands will remain in forest, unaffected by any zoning change, they will be excluded from this discussion.

All lands surrounding Wyassup Lake are forested primarily in white oak, red oak, scarlet oak, beech, and birch, with red maple represented in the wetter areas. Dogwood is plentiful, as is mountain laurel. With the exception of the northern section of the watershed, where hemlock and pine comprise a large portion of the stand, softwoods are present primarily as ornamentals. Pitch pine and white pine, white spruce and Norway spruce, larch, white cedar and yew are represented.

In general, development has resulted in removal of approximately 50 percent of the forest vegetation from individual house lots. The remaining vegetation has the same species composition as the original stand, but in a much lower density. In areas which have already been developed, a zoning change should have minimal effect on the forest vegetation. In areas which are currently undeveloped, a zoning change may effect the forested portion of the watershed by removal of up to 50 percent of the vegetation on the lots to be developed, thereby increasing runoff and the amount of septic effluent which may reach the lake.

WATER SUPPLY

Water supply for existing dwellings and the general area is (or would be) from individual on-site water sources. There is probably little or no information available on the water supplier for many of the older cottages or seasonal dwellings. The provision of having adequate and safe water supplies is and must be a prime concern when considering public health. The Public Health Code specifies certain requirements for the installation of private, on-site residential wells. In general, such wells are to be located at a relatively high point of the property compatible with the general layout and surroundings. A minimum separating distance of 75 feet from any system for sewage disposal is to be provided. Other separating distances, such as from surface water bodies, storm and building drains, are also required. (Section 19-13 - B20) When lots tend to be relatively small and where the topography and soil conditions are not particularly favorable, the problems of proper location for well sites and chance for possible well contamination, are more pronounced.

In considering possible rezoning of the area to allow building conversions for year round use permits for wells are not to be issued for lots unless it can be demonstrated to the local health department that subsurface sewage disposal

systems can be installed, which would also meet and be in compliance with present day code regulations.

WASTE DISPOSAL

Sewage disposal for the existing dwellings in the area is by on-site means consisting of privies and/or some form of a subsurface sewage disposal system. Where newer dwellings may have a sewage disposal system consisting of a septic tank followed by an approved type leaching area, it is doubtful that the older dwellings (cottages) would have more than some form of a leaching cesspool to handle waste water from a kitchen sink, and possibly a bathroom with a shower (bathtub) and a hand sink.

Based on visual observations, soil mapping data, and consideration of the physical features, it is apparent that proper subsurface sewage disposal would present considerable difficulty on much of the property. In particular, the underlying shallow ledge rock and slope would be of great concern.

In an area where public sewerage facilities are not available and are not being considered, and where several adverse site conditions exist, special attention and evaluation of the land should be given before considering on-site sewage disposal. Certainly the size of the lots, which would reflect overall density, should be a governing factor. It has been, for a number of years, the policy of the State Department of Health to recommend at least one acre lots where both individual wells and sewage disposal systems are utilized, provided site conditions are favorable for such purposes. However, where conditions are not favorable, where the protection of a water body would be most important and where the area is rural and remote much larger lots would be warranted. In some cases, it may not be feasible to provide on-site systems for water carriage sewage disposal.

It would appear that many of the properties having an older cottage or dwelling should be investigated during the time of the year when the properties are occupied in order to ensure satisfactory means of waste disposal. Cottages or dwellings which do not comply with existing Public Health Code regulations and the lot(s) cannot meet established criteria for sewage disposal, should not be converted or used for year around occupancy.

ALTERNATIVE METHODS OF SEWAGE DISPOSAL

The Public Health Code presently requires all sewage to be disposed of by connection to public sewers or, if not available, by conventional subsurface sewage disposal systems. All other methods, such as non-water flushing toilets (including incinerator and compost types) and holding tanks, must be approved by the State Department of Health.

The Department will consider each location individually and will not give a general approval to any type of system for possible use. The situations in which the use of such facilities would generally receive the most favorable consideration would be:

a) where there is an existing sewage overflow that would be most difficult

to correct due to little or no available land area or unsuitable site conditions. A no-flush toilet would substantially help reduce the volume of sewage.

b) seasonal use in remote areas or areas where privies have been and are generally being used. However, soil conditions would still have to be suitable in order to be able to install a sewage system with one half the capacity (tank and leaching area) needed for the usual house waste disposal system.

In new construction, where an alternative method of disposal may be considered or proposed by the owner at the time, the property needs to be investigated and found satisfactory in order that a complete, conventional subsurface sewage disposal system could be installed. The investigation should clearly indicate that such an approval would be given for the site. Initially, the entire system would not have to be constructed but one should know the land would be capable of supporting such a system if needed (depending upon the acceptability of a non-flush system to users or possible difficulties with the manner in which the unit should function or problems with maintenance and repairs).

CULTURAL PATTERNS

Twenty-five homes, as shown on the USGS topographic map (photorevised 1972), are located on Hollis-Narragansett soils (204D) which are severely limited for on site sewage disposal. Eight houses are shown occupying Narragansett-Gloucester and Enfield soils which are rated as having moderate limitations for on-site sewage disposal. It is likely that most of the existing subsurface sewage systems feature poor construction and are rarely, if ever inspected. Field inspection revealed newer housing that has been or is being constructed on these same soil types. Many of these homes are serviced by narrow unimproved roads (paved with dirt or gravel), these would have to be upgraded should a zoning change occur, to allow for access by emergency vehicles or fuel trucks during the winter months.

More than one-half the drainage area is in private ownership, most of this portion is directly abutting the lake.

The State maintains a small boat launch on the lake's western shore and periodically draws down the lake for the convenience of the cottage owners.

PLANNING CONSIDERATIONS

The Wyassup Lake area falls within the recreation, reservation and preserve category of the Town Plan of Development. The area is zoned at 20,000 square foot lots for seasonal residential uses and 80,000 square foot lots for any other residential use. Based on the physical limitations of the land cited by the geologist, soil scientist, and DEP personnel, it would appear prudent to keep these current zoning requirements to decrease the chances of future lake problems. Any removal of the 20,000 square foot requirement for Wyassup Lake home owners would also have to apply to all other seasonally zoned areas in North Stonington because any requirement for a particular zoning category has to be uniform throughout the entire zone.

Any requests for conversions to year-round use should meet the requirements of the State Health Code Sections 19-13-B20a to 19-13-B26, Section 19-13-B100 and the

year-round zoning requirements. Section 19-13-B100 of the Connecticut State Health Code deals with conversions in Connecticut and directs that all requirements of the Health Code be met except for the one hundred percent reserve area.

As new and alternative septic systems become available in Connecticut there should be some statewide effort to evaluate their effect on lot size requirements around inland water bodies. The Lakes Management Committee of the Statewide 208 water quality planning program has recommended that there be formed an Office of Lake Preservation and Restoration within the Connecticut Department of Environmental Protection. Under Section 314 of the Federal Clean Water Act Amendments of 1972 (also amended by the Clean Water Act of 1977) 70% federal funding could be available to Connecticut for diagnostic lake studies and restorative lake measures. This office should evaluate these new systems to determine their proper and correct role in lakefront development.

CONCLUSIONS

As Wyassup Lake has the morphologic characteristics of those waterbodies which tend toward achievement of a mesotrophic condition (moderate nutrient enrichment, aperiodic phytoplankton blooms and/or moderate weedbed presence), it is apparent that some combination of indigenous chemical, physical and biological parameters are working to buffer lakewaters which prevents excessive phytoplankton growth. The carrying capacity of Wyassup Lake for nutrients at a level which will prevent algal blooms is unknown. The existence of aquatic macrophytes suggests sediment and/or disolved nutrients are sufficient to support aquatic plants. These aquatic macrophytes therefore, may well be functioning as nutrient sinks. In the absence of a "weedbed" map, it is difficult to ascertain whether these nutrients are increasing in time or also causing algal problems.

Given the lake's relatively shallow nature, warm waters, fluctuating water level, unsewered urban areas, potential for further development and/or more intense use, unsuitable soils for such use and development, the morphologic tendency towards mesotrophic conditions, we believe that there is a good potential for this lake to become more enriched with nutrients and that this enrichment will be manifest in increased macrophyte growth and/or periodic nuisance algal blooms.

At this time, we have no reason to suspect that Wyassup Lake is subject to a level of nutrient enrichment which would manifest itself in nuisance algal blooms. We do not have sufficient water quality data to recommend limitations be placed on seasonal or annual occupancy of existing cottages. We do believe, however, that there is good reason to exercise caution in performance of land use activities. We urge periodic water quality monitoring be performed and local officials notified of this lake's finite capacity to absorb nutrients.

RECOMMENDATIONS

The following minimal precautions should be initiated to prevent or alleviate the effect of those activities or conditions which could very well lead to public health or nuisance water quality problems.

Public Health - The existing subsurface disposal systems should be inspected to determine their operating effectiveness and to determine whether they meet Connecticut Public Health Code criteria for year-round use. The inspection program should be performed annually; any systems found below health code criteria or malfunctioning should be repaired or replaced. It can be assumed that those systems which do not meet year-round use criteria will fail to provide adequate sanitary waste treatment if subjected to more than seasonal use. Obviously, this excessive usage would result in a public health nuisance, would be illegal and would necessitate system replacement or abandonment.

* All cottage owners should be notified of the varied no-discharge toilets available if their existing systems are found wanting and further advised no-discharge systems must be sanctioned by local health officials.

* Water conservation measures should be undertaken to minimize introduction of detergents, solids, nutrients, pathogenic bacteria and viruses to the lake. Such water conservation measures will also prolong subsurface system life span.

* Use of home pesticides and herbicides should be limited due to their potential toxic effects on water life.

* Installation or repair of all septic tanks and construction or repair of associated leach fields should be stringently monitored. No subsurface system should be approved until the leach field has been carefully inspected and its design approved.

Eutrophication - Eutrophication or lake aging, is due to nutrient enrichment and is the major threat to lake water quality in Connecticut. Phosphorous is usually the growth limiting nutrient in Connecticut lakes and any activity which increases lake phosphorous content will accelerate eutrophication and degrade water quality. The Section 208, special lake studies, are presently evaluating the potential varied land uses have for phosphorous contribution to lake waters. Reports on these studies will be available by November of this year. They should be used to critically evaluate the potential impact the proposed zoning changes will have on eutrophication of Wyassup Lake. We should note subsurface sewage systems which meet health code requirements and operate effectively may, under some conditions, contribute significant quantities of phosphorous to a lake.

* Further, lawn fertilizers should be judisciously applied as the application site is in close proximity to the lake and any major storm event could easily carry these fertilizers in surface runoff.

* Any upland soil scarification should be critically monitored and all appropriate erosion and sedimentation controls utilized to prevent shoaling and turbidity problems.

* All wetlands should be maintained in their present state; any activity which will impair their functional role as sediment traps and nutrient sinks should not be permitted.

* All permanent and ephemeral watercourses should remain unaltered to decrease sediment input.

Monitoring - The following annual data collection effort is recommended as a minimum program to assess trophic status and changes in trophic condition. This data should be collected in accordance with accepted practices of the federal Environmental Protection Agency and be forwarded to the lakes management coordinator of the Water Compliance Unit, D.E.P. for analysis.

1. Spring overturn - composite surface water samples for total phosphorous, total nitrogen and ammonia nitrogen.

2. Summer stratification - deep hole monitoring for dissolved oxygen and temperature profile. Mapping of aquatic macrophytes; include, species identification and density. Composite surface phytoplankton samples for species identification and enumeration.

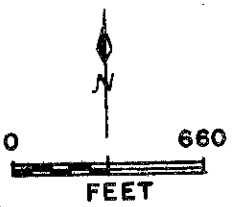
3. Phytoplankton bloom sampling - species identification and enumeration. Notation of bloom duration.

4. Fall overturn - composite surface water sample for total phosphorous, total nitrogen and ammonia nitrogen.

Appendix

SOILS
North Stonington

THE MAP IS AN ENLARGEMENT FROM THE ORIGINAL 1320'/INCH SCALE TO 660'/INCH



PREPARED BY UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

ADVANCE COPY, SUBJECT TO CHANGE NOV. 1977

WYASSUP LAKE

NORTH STONINGTON, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Urban Use Limitations			
				On-site Sewage	Buildings with Basements	Streets and Parking	Landscaping
Enfield	213BC			Slight	Slight	Moderate Frost action	Slight
Haven	63B			Slight	Slight	Slight	Slight
Hinckley	60BC			Moderate Slope	Moderate Slope	Moderate Slope	Moderate Slope Too sandy
Adrian Palms	91			Severe Wetness Floods	Severe Wetness Floods	Severe Wetness Frost action Low strength	Severe Wetness
Narragansett	650XB			Moderate Large stones	Moderate Large stones	Moderate Frost action	Moderate Large stones
Narragansett-Gloucester	210BC			Severe Large stones	Severe Large stones	Moderate Slope Frost action	Severe Large stones
Ridgebury, Leicester and Whitman	27M			Severe Wetness Percs slowly	Severe Wetness	Severe Wetness Frost action	Severe Large stones Wetness
Narragansett-Hollis	200BC						
Narragansett part				Moderate Large stones	Moderate Large stones	Moderate Large stones	Moderate Large stones
Hollis part				Severe Depth to rock	Severe Depth to rock	Severe Depth to rock	Severe Depth to rock

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Urban Use Limitations			
				On-site Sewage	Buildings with Basements	Streets and Parking	Landscaping
Hollis-Narragansett	204D						
Hollis part				Severe Slope Depth to rock	Severe Slope Depth to rock	Severe Slope Depth to rock	Severe Slope Depth to rock
Narragansett part				Severe Slope	Severe Slope	Severe Slope	Severe Slope
Hollis-Rock outcrop	17MBC			See Hollis part of 200BC above			
Hollis-Rock outcrop	173MB			See Hollis part of 204D above			
Rumney	58			Severe Floods Wetness	Severe Floods Wetness	Severe Wetness Frost action	Severe Floods Wetness
Carlisle	92			Severe Floods Wetness	Severe Wetness Low strength Floods	Severe Excess humus Floods	Severe Excess humus Floods

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

GLOSSARY

Aperiodic - at irregular time intervals.

Aquatic Macrophytes - multi-celled aquatic plant life.

Eutrophic - state of high nutrient enrichment of lake water, generally of poor transparency during summer months, often with an oxygen deficiency near the lake bottom.

Littoral Zone - shore region.

Mesotrophic - state of moderate nutrient level and good conditions for most forms of freshwater fish.

Nutrient Sink - An organism which acts as a trap for chemical nutrients suspended in lake water, by incorporating these nutrients in their body structure.

Oligotrophic - state of low nutrient level and very clear water.

Pathogenic - capable of causing disease.

Phytoplankton - microscopic aquatic plant life.

Thermal Stratification - A temperature distribution in which the lake water is distinctly layered because of thermal density differences.

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 activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, 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 (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.