

Environmental Review Team Report

Gravel Excavation

Montville, Connecticut

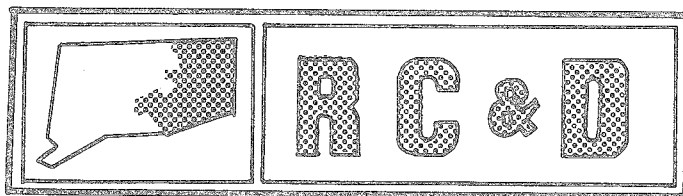


EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report
on

Gravel Excavation
Montville, Connecticut

October 1980

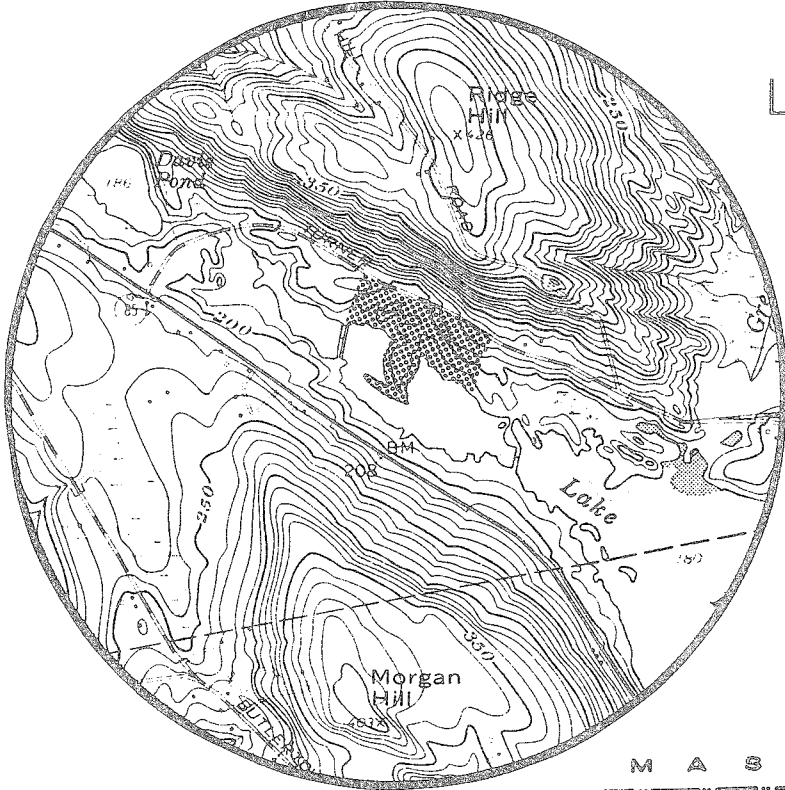


eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

GRAVEL EXCAVATION
MONTVILLE, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
NEW LONDON GRAVEL EXCAVATION
MONTVILLE, CONNECTICUT

This report is an outgrowth of a request from the Montville Zoning and Planning Commission to the New London County Soil and Water Conservation District (S&WCD). The 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.

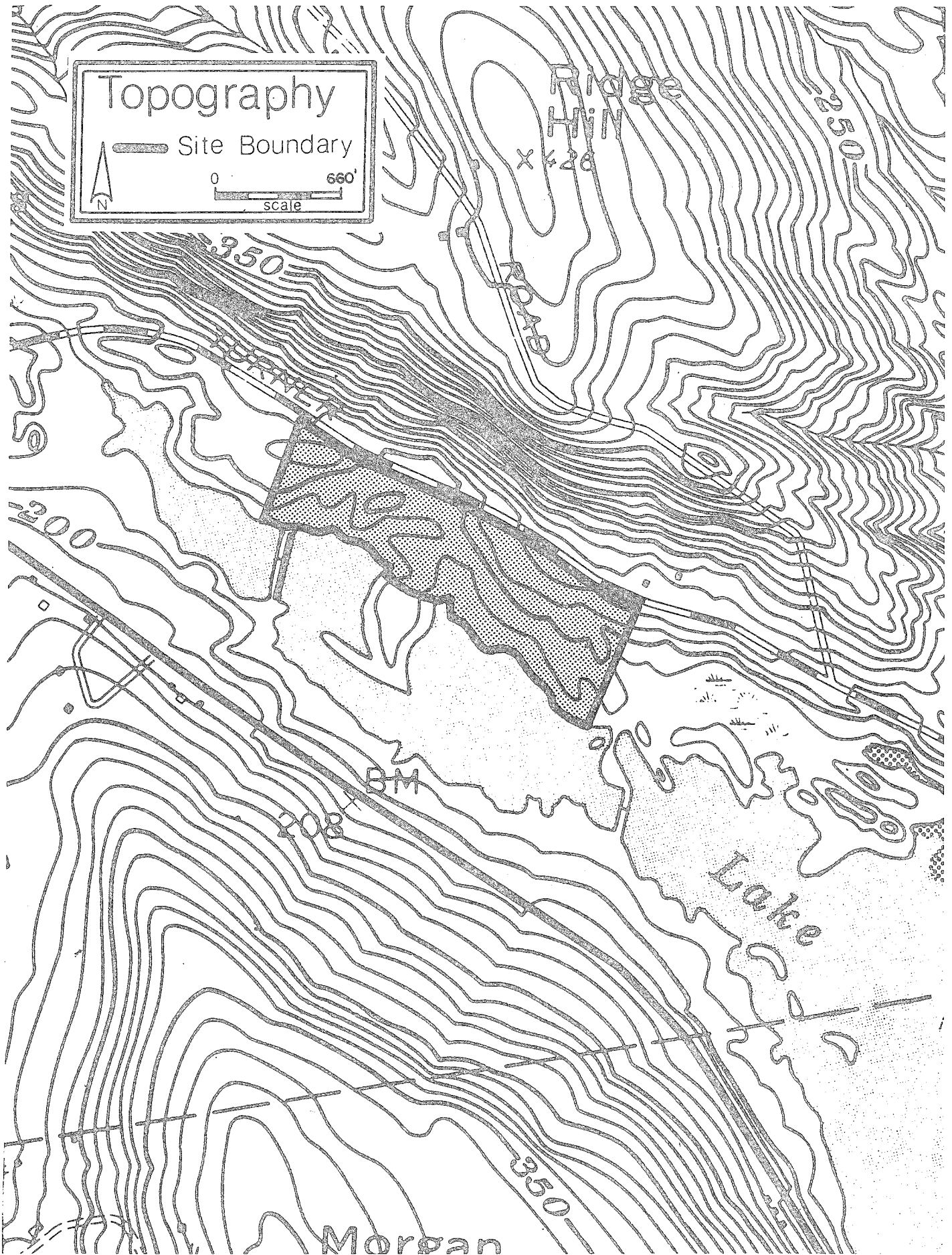
The ERT that field checked the site consisted of the following personnel: Gary Domian, District Conservationist, SCS; Mike Zizka, Geologist, Department of Environmental Protection (DEP); Rob Rocks, Forester, DEP; Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, September 4, 1980. 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 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 Montville. 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.



INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a 25± acre site at Lake Konomoc proposed for gravel excavation. The City of New London, Public Works Department will develop this "borrow area" to provide needed construction materials and to expand the capacity of Lake Konomoc. They are planning to abandon their existing "borrow pit" adjacent to the Lou Barnes Rock Crushing Plant on the west side of Chesterfield and Oakdale Roads. Access to the new site will be provided by Turner Road to Route 85.

A document explaining the proposal accompanied plans provided for the Team. The excavation will take place in three phases. Only the area designated in each phase will be stripped of vegetation at that time. Vegetation will be restored after completion of that phase of excavation. An undisturbed berm of natural material (soil and vegetation) will remain along the lake shoreline during excavation. Final excavation of the berm area will be planned to coincide with low water levels to minimize turbidity in the Lake. Operation of the excavation area will take place between 8 a.m. and 4:30 p.m. Use will be intermittent, averaging 16 hours use per week.

The Team is concerned with the effect of this proposal on the natural resource base of the site. In this case, most resources (sand, gravel and vegetation) will be removed. The site will be regraded, topsoil will be replaced and vegetation (evergreen trees) will be planted. It is the Team opinion that this operation, if procedures are followed as planned, will have little detrimental effect on the site. The major concern involves sedimentation of the lake during excavation of the berm material on the lake shore. A sediment and erosion control plan designed specifically for this phase of the gravel excavation may help to prevent unwanted sedimentation. Given the intermittent use of the site, truck traffic on Turner Road and Route 85, should not prove to be a problem for residents in the area.

ENVIRONMENTAL ASSESSMENT

GEOLOGY

The proposed gravel-removal site is located in an area encompassed by the Montville topographic quadrangle. A surficial geologic map of the quadrangle has been prepared by Richard Goldsmith and published by the U.S. Geological Survey (Map GQ-148). The map indicates that the site contains sediments that were deposited by meltwater streams in the valley presently occupied by Lake Konomoc. On-site inspection by the Team, as well as reports of materials in pits excavated in the general area of the property, suggests that sand and medium to coarse gravel make up the largest percentage of the sediments. Large boulders and angular stones observed on the site indicate that the sand and gravel is not always "clean:" poorly sorted mixtures of clay, silt, sand, gravel, and boulders may be intermixed irregularly. The depth to bedrock is not known, but the average depth probably exceeds 15 feet.

HYDROLOGY

Lake Konomoc is presently the source of the New London public water supply system. The lake is fed artificially by five reservoirs in the Latimer Brook watershed (Lake Konomoc itself is in the Lakes Pond Brook watershed; both streams flow into Niantic Bay). The accepted yield of the New London water supply system, according to a May, 1978, report by Camp, Dresser and McKee, Inc., is 6.13 million gallons per day. This figure is based on the drought period during the 1960s.

Connecticut Water Resources Bulletin No. 15 lists the storage capacity of Lake Konomoc as 672 million gallons, based upon a surface elevation of 180 feet. Following publication of that Bulletin, the spillway elevation of the lake was raised to 186 feet, increasing the storage capacity. The New London Department of Public Works and Utilities, Division of Water, estimates that the new spillway has roughly doubled the storage capacity, increasing it to 1,328 million gallons. An estimate supplied by the Water Resources Unit of the Department of Environmental Protection places the new storage capacity at only 973 million gallons. The best estimate probably lies between the two: the Team suggests a figure of about 1,127 million gallons.

The proposed excavation would again increase the storage capacity of the lake, this time by about 15 million gallons. This represents a percentage increase of only about 1%. The City of New London notes that retention time of water in the lake will also be increased, by about two days. The present retention time is approximately 183 days, so that the percentage increase would again be only about 1%. The additional volume therefore would have virtually no effect on either water supply potential or water quality in the lake. By the same token, flood-retention capacity of the lake would be increased, but by an insignificant amount.

This discussion may be summarized by saying that the hydrological effects of increasing Lake Konomoc's volume by excavation will be negligible: neither a detriment nor a benefit is foreseen. The major water-related concern therefore would be the potential for sedimentation into the lake during the removal phases.

SOILS

A detailed soils map of this site and detailed soils descriptions are 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 on the site. The soil limitation chart indicates the probable limitations of 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 Interim Soil Survey 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 gently sloping to sloping terraces, outwash plains, kames and eskers are occupied by Hinckley gravelly sandy loam. The soils are designated by the mapping unit symbol 60C. The symbol C denotes a 3-15% slope. Hinckley soils are formed in water sorted outwash. The soils are excessively drained and have rapid permeability in the surface layer and subsoil, and very rapid permeability in the substratum. Runoff is slow.

The low lying nearly level areas on stream terraces and outwash plains are occupied by Walpole sandy loam. The soils are designated by the soil mapping unit 466. Walpole soils formed in glacial outwash and have a sandy loam topsoil and subsoil and a loamy fine sand to gravelly sand substratum. The soils are poorly drained and have moderate permeability in the surface layer and subsoil, and rapid or very rapid permeability in the substratum. Surface runoff is slow. This soil is designated as a wetland soil and is regulated under Public Act 155.

The excavation of gravel from this site must meet the requirements set forth by the Town of Montville zoning regulations. The regulations call for plan maps, outline certain criteria for excavation depth and address the issue of erosion control, revegetation, and grading of finished slopes. The New London County Soil and Water Conservation District can develop a Sediment and Erosion Control Plan specifically for the site at the request of the land owner or land operator.

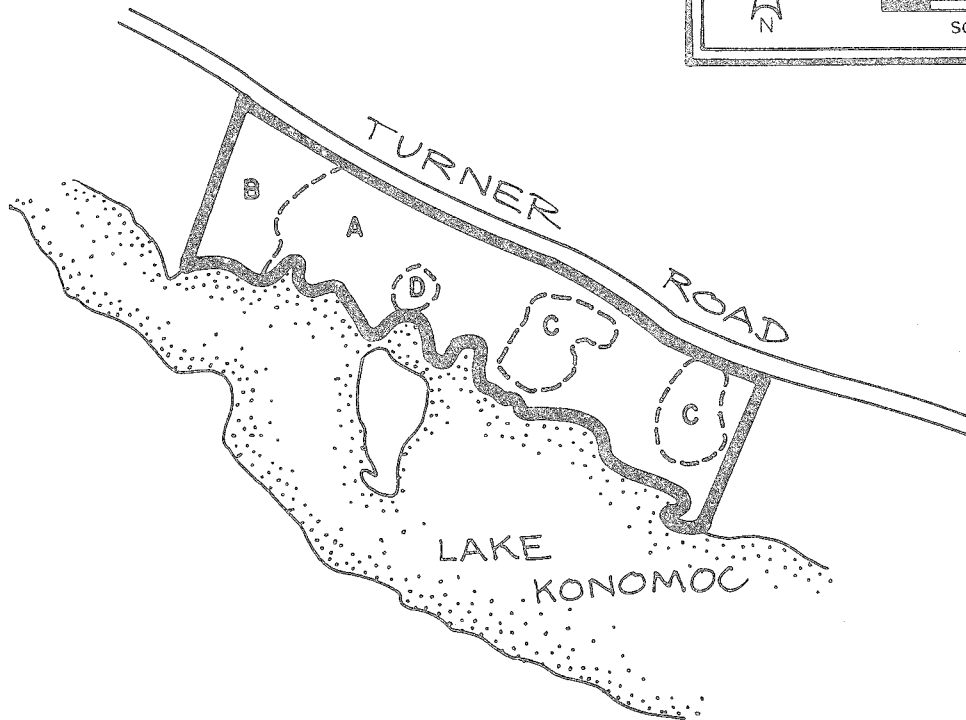
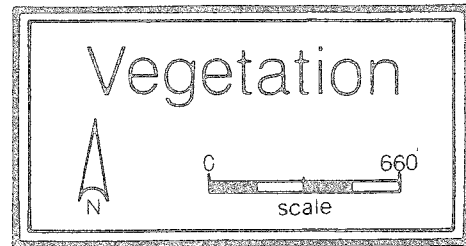
A buffer zone 50 to 75 feet wide will be left between the lake and the excavation area. This buffer zone will consist of soil in its natural state with the vegetation intact. The buffer will not be removed until excavation has ceased. The proposal calls for excavation to occur in 3 sections or "cells" with a life of 3 to 5 years for each cell. At the end of this period, the buffer zone will be removed during low water level, so that the lake can be allowed to flow into and cover the excavation site. The average lake elevation is 183 feet above mean sea level and the excavation will proceed to elevation 180 feet above mean sea level.

There is a culvert draining south under Turner Road that drains a steep watershed into what is now a wetland soil. During the spring or late fall, water draining onto the site can accumulate and cause ponding. This condition will need to be accommodated prior to excavation, so that excess water can be removed from the site without causing sedimentation to Lake Konomoc or creating limitations to removing gravel from the site.

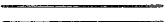


The quality of soil for use as a sand and gravel source is good, although the low level areas on site may have too much fine soil material to be used as sand and gravel. The fine soil can be stockpiled if it is not used and later applied to the side slopes and covered with topsoil for land reclamation.

VEGETATION

The 20± acre parcel proposed for gravel excavation by the Town of New London is completely forested. Four vegetation types are present. These include two mixed hardwood areas, one plantation and one hardwood swamp (see vegetation type map and vegetation type descriptions). Although the greater portion of the mixed hardwood areas have been harvested of sawtimber size trees, fuelwood from this area may still be utilized. An underplanting of eastern hemlock along Turner Road will enhance the proposed buffer strips ability to act as a vision barrier.



LEGEND

-  Road
-  Property Boundary
-  Vegetation Type Boundary

VEGETATION TYPE DESCRIPTION*

- TYPE A. Mixed hardwoods, 13-acres, Fully stocked, sapling to pole-size.
- TYPE B. Mixed hardwoods, 3 1/2-acres, Over stocked, pole to saw-timber-size.
- TYPE C. Plantation, 3-acres, Fully stocked, sapling-size.
- TYPE D. Hardwood swamp, 1/2-acre, overstocked, pole-size.

* Seedling-size = Trees less than 1 inch in diameter at 4 1/2 feet above the ground (d.b.h.)
 Sapling-size = Trees 1 to 5 inches in d.b.h.
 Pole-size = Trees 5 to 11 inches in d.b.h.
 Sawtimber-size = Trees 11 inches and greater in d.b.h.

Planting a combination of eastern white pine, eastern hemlock and larch on elevations greater than 185 after excavation would be desirable.

Vegetation Type Descriptions

Type A. (Mixed Hardwoods.) Clearing operations have already begun in this 13± acre stand. All sawtimber size trees have been felled. Standing vegetation consists of sapling to pole size white oak, black oak, scarlet oak, black birch, red maple, pignut hickory and scattered patches of American beech and big tooth aspen. The total volume which remains standing, ranges between 12 and 18 cords per acre. The understory is made up of flowering dogwood, maple-leaved viburnum, hop hornbeam, witch hazel, and scattered chestnut sprouts, highbush blueberry, shadbush, sassafras and occasional patches of mountain laurel. Huckleberry, club moss, wild sarsaparilla, striped pipsissewa, Christmas fern and hayscented fern form the ground cover in this stand.

Type B. (Mixed Hardwoods.) This 13 1/2± acre stand is identical to vegetation type A (mixed hardwoods), however, at the time of field investigation (August 29, 1980) it had not yet been harvested. As a result the stand is at the high end of fully-stocked, with pole to sawtimber-size trees. This vegetation type also differs from vegetation Type A, in that mountain laurel is the dominant understory vegetation.

Type C. (Plantation.) High quality sapling-size white spruce are present in this 3-acre fully-stocked stand. Most of these trees are too large to be utilized as Christmas trees. Interspersed within this stand are sapling size eastern red cedar, flowering dogwood, high bush blueberry, white ash seedlings, black cherry seedlings and winged sumac. Ground cover in this area is dominated by grasses, goldenrod, wild strawberry, poison ivy, Virginia creeper, raspberry, green-brier and bayberry.

Type D. (Hardwood Swamp.) Poor quality pole-size red maple in clumps are present along with scattered pole size swamp white oak in this 1/2± acre over-stocked stand. Highbush blueberry and royal fern are the other forms of vegetation present in this area.

Although the sawtimber has already been harvested from the majority of this tract, the sapling and pole size trees which remain should be utilized as fuel wood.

The mixed hardwood stand (vegetation type A) will still provide between 12 and 18 cords of fuelwood per acre, and the unharvested mixed hardwood stand (vegetation type B) will provide between 16 and 22 cords per acre.

As a result of the time schedule which has been set up by the City of New London, for clearing vegetation and excavation of this tract, it would be feasible to harvest some of the white spruce in the plantation (vegetation type C) for Christmas trees. Large white spruce could be topped and still provide quality Christmas trees.

The screening effect of the natural vegetation proposed to remain, approximately 70 to 100 feet wide along Turner Road, may be enhanced by an underplanting of eastern hemlock. These trees could be spaced from approximately 10 feet by 10 feet to 20 feet by 20 feet, depending on the completeness of screening desired.

It should be noted that the more sunlight which reaches these trees, the faster they will become an effective visual barrier. It may be desirable to remove approximately 1/3 of the trees which form the canopy in this area to assure that ample sunlight reaches the hemlock for fast growth. Only poor quality and damaged trees in the overstory should be removed from this area.

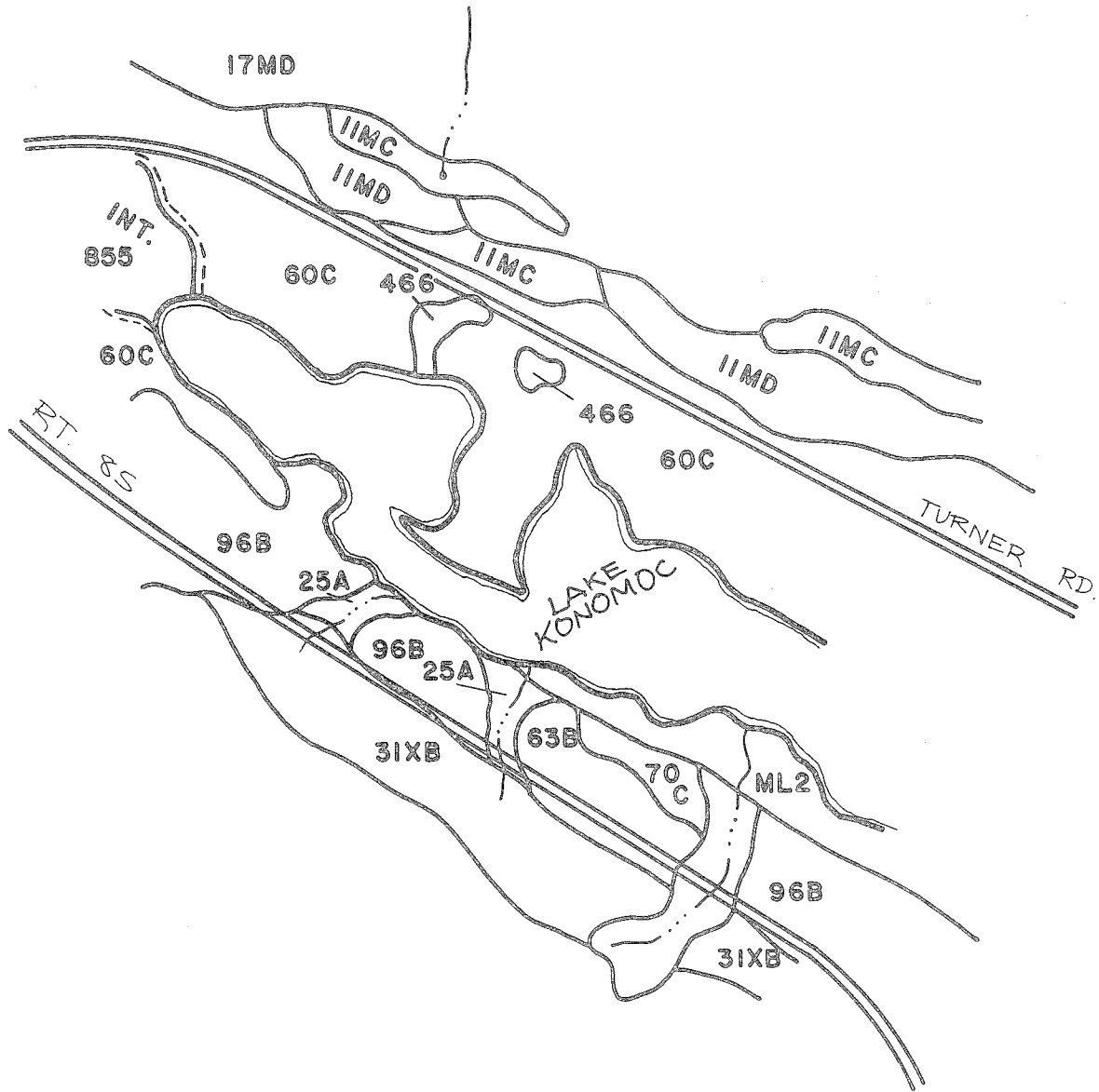
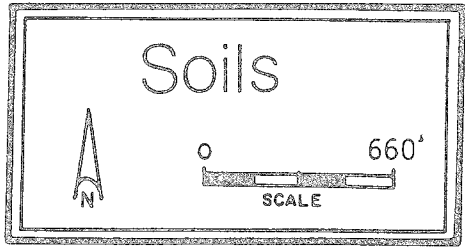
The proposed plan calls for Christmas tree planting on all areas where elevations are 185 feet and greater, above sea level. Unless Christmas trees are specifically desired for future sale, it might be desirable to plant a combination of eastern white pine, eastern hemlock and perhaps larch. These species may be planted in a random mix approximately 8 to 10 feet apart. They would be aesthetically appealing, help to reduce erosion and improve habitat for wildlife. In addition, they would not need as much maintenance as Christmas trees.

PLANNING CONCERNS

The surrounding land use is undeveloped. One house is located east of the project area along Turner Road. On a land use basis the excavation, which will be buffered along Turner Road, should have no effect on surrounding land uses. Trucks entering and leaving the site will travel about 1/2 mile on Turner Road to Route 85.

Since the project is in a public water supply watershed the only alternative land use is undeveloped. As envisioned, the project should have a minimum impact on the environment. The project as proposed has complied with the requirements of Section 4.32(A) of the Montville Zoning Regulations.

Appendix



GRAVEL EXCAVATION
MONTVILLE, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Construction Materials		
					Roadfill	Sand	Gravel Topsoil
Hinckley	60C	17	85	Slope, droughtings	Fair	Good	Poor
Walpole**	466	3	15	Wetness, excess fines	Poor	Fair	Poor
		20	100				

** Regulated wetland soil under P.A. 155.

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet.

Sand and gravel are used in great quantities in many kinds of construction. The ratings provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated good or fair has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

Topsoil is used in areas where vegetation is to be established and maintained.

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.

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.