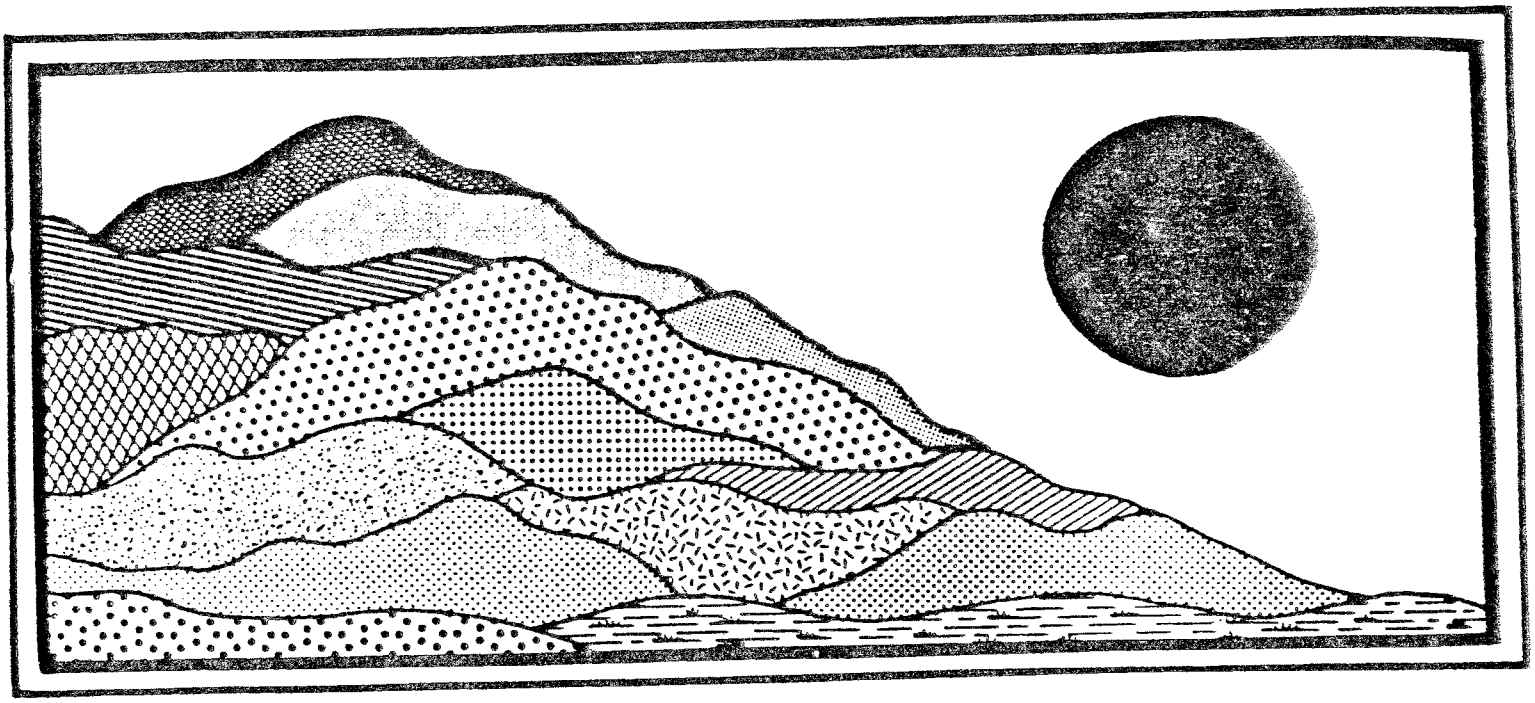
Barillari Peat Removal

Haddam, Connecticut

April 1986



ENVIRONMENTAL REVIEW TEAM REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Barillari
Peat Removal

Haddam, Connecticut

Review Date: FEBRUARY 20, 1986

Report Date: APRIL 1986

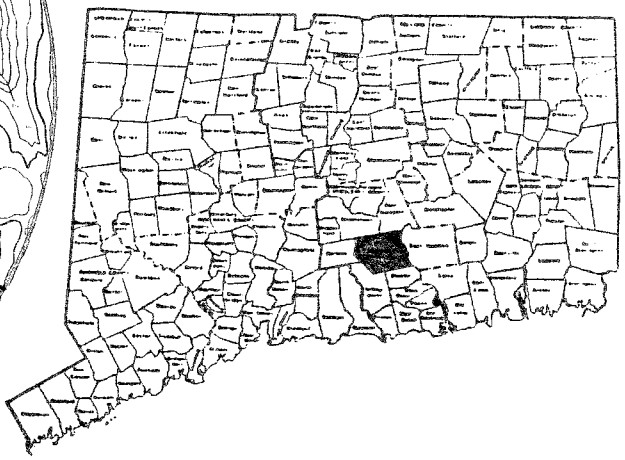
RC&D

ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234

Site Location

BARILLARI PEAT REMOVAL

HADDAM, CONNECTICUT



EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT
ON
THE BARILARRI PEAT REMOVAL
HADDAM, CONNECTICUT

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

The ERT met and field checked the site on Thursday, February 20, 1986. Team members participating on this review included:

Marc Beroz	-Resource Specialist - U.S.D.A. Soil Conservation Service
Tom Gilligan	-Planner-Midstate Regional Planning Agency
Bob Gilmore	-Environmental Analyst - DEP, Water Resources Unit
Ken Metzler	-Botanist - DEP, Natural Resources Center
Pat Scanlon	-District Conservationist - U.S.D.A., Soil Conservation Service
Eric Schluntz	-Fisheries Biologist - Department of Environmental Protection
Elaine Sych	-ERT Coordinator - Eastern Connecticut RC & D Area
Bill Warzecha	-Geologist - DEP, Natural Resources Center
Judy Wilson	-Wildlife Biologist - Department of Environmental Protection

Prior to the review day, each team member received a summary of the proposed project, a list of the Town's concerns, a general location map and a soils map and descriptions. During the field review the team members were given a topographic map and site plans. The Team met with and were accompanied by the Zoning Enforcement Officer, the applicant and the applicant's engineer. Following the review, reports from each team member were submitted to the ERT Coordinator for compilation and editing into this final report.

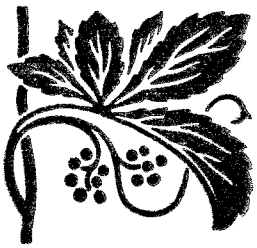
This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project--all final decisions and conclusions rest with the town and the landowner. This report identifies the existing resource base and evaluates its significance to the proposed development, and also suggests considerations that should be of concern to the developer and the Town. The results of this team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC & D Project Committee hopes you will find this report of value and assistance in making your decisions on this proposed peat excavation.

If you require any additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC & D Area
P. O. Box 198
Brooklyn, CT 06234

(203) 774-1253



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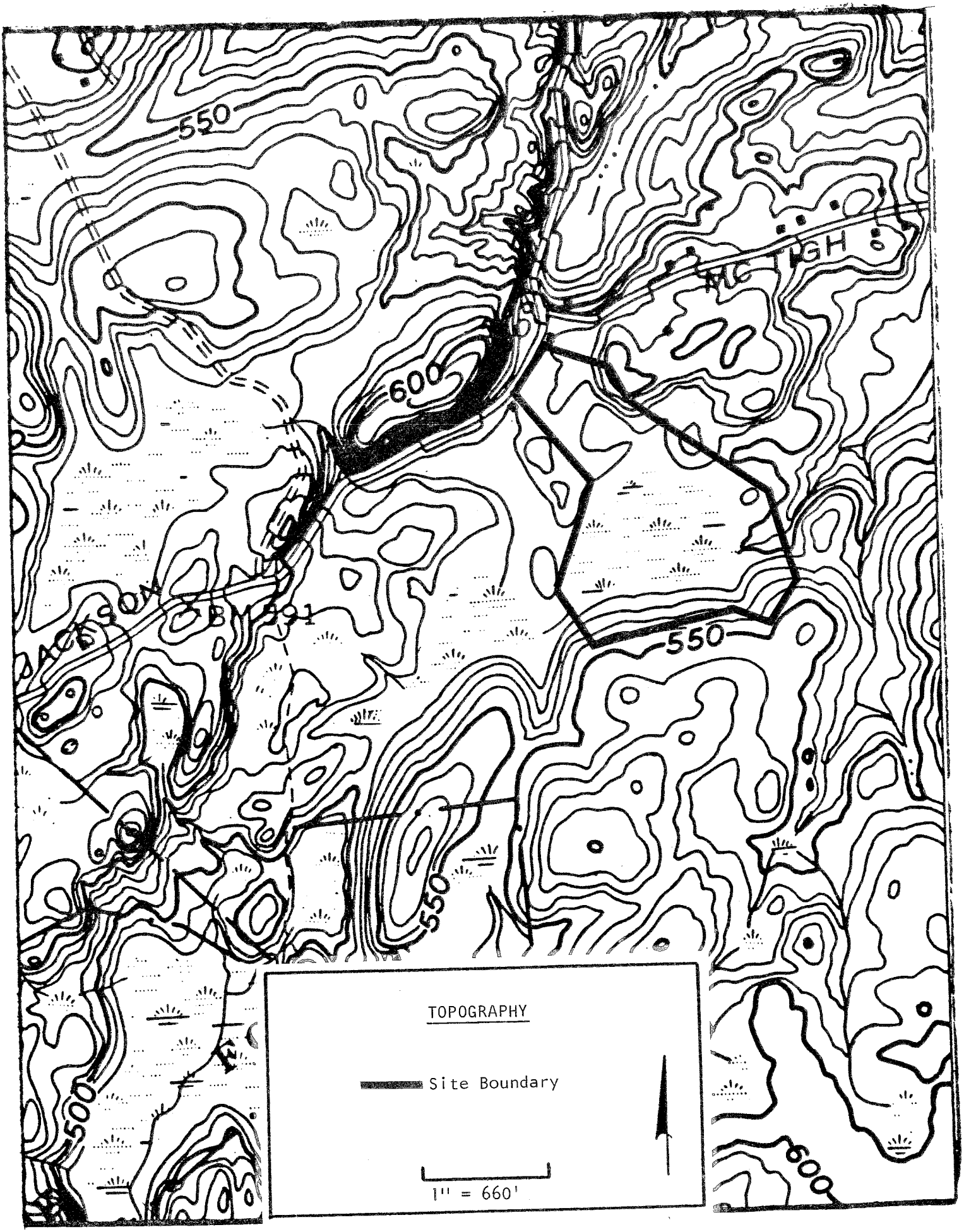
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TOPOGRAPHY
Site Boundary
1" = 660'

1. INTRODUCTION

The Haddam Planning and Zoning Commission and the Inland Wetlands Commission asked for the Environmental Review Team's assistance in reviewing a proposed peat removal operation.

The 22.7 acre parcel is located in southwest Haddam on Jackson Road. The site contains a wetland area, an old field area, and an area of hardwood forest. The wetland was at one time used for cranberry cultivation.

The applicant proposes to excavate a ± 7 acre site for peat. After the removal of peat is completed a ± 7 pond will remain. The project is expected to take two to three years to complete and an estimated 125,000 cubic yards of material will be removed.

The Town has asked the ERT to evaluate and comment upon various aspects of this proposal. This report contains information and recommendations dealing with the geology, hydrology, drainage impact, water quality, flood control, flow characteristics, erosion and sediment control, the impact on vegetation, wildlife, fish resources, and information concerning the truck traffic. Comments are also made about the "uniqueness" of the site.

2. TOPOGRAPHY AND SETTING

The proposed ± 7 acre pond, would be located within a 22.7 acre parcel of land situation in southwestern Haddam. Access to the site is available from the north via Jackson Road.

As shown by the accompanying topographic map, the property is comprised mostly of flat to gentle slopes; the exception is in the southern limits where land surface rises moderately from the wetlands in the central parts of the site. Maximum and minimum elevations on the property are 570 feet and 510 feet above mean sea level, respectively.

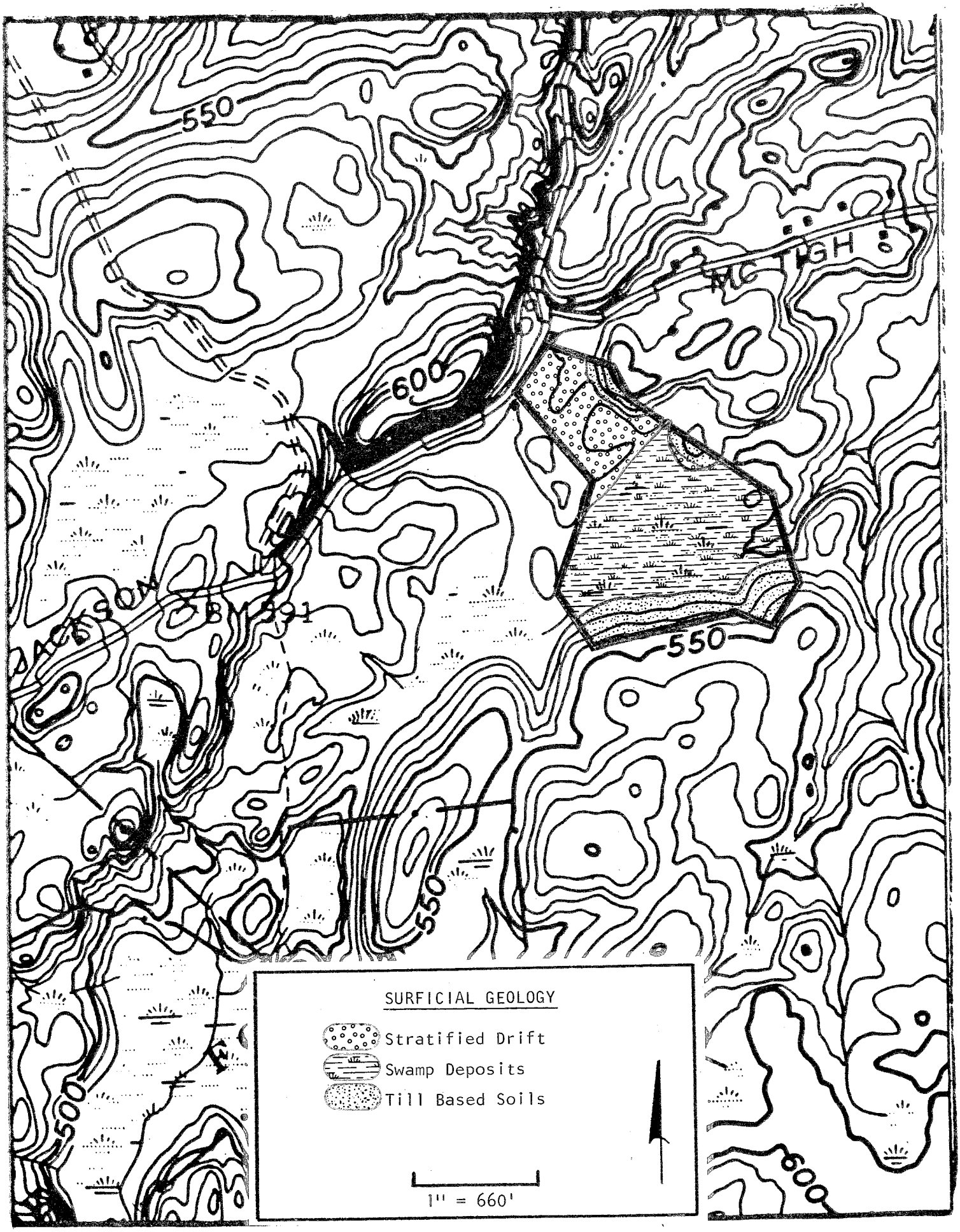
An unnamed tributary to Ponset Brook meanders west to east through the wetlands in the southcentral parts of the site.

3. GEOLOGY

3.1 Introduction

The subject parcel is encompassed by the Haddam topographic quadrangle. A bedrock geologic map (by Lawrence Lundgren, Map QR-37) and a surficial geologic map (by R. F. Flint, Map QR-36) have been published for the quadrangle by the Connecticut Geological and Natural History Survey.

The proposed pond site is located in an area on the parcel that is comprised of wetlands. Since the predominant vegetation in the wetlands consists of scrub shrubs, grasses and sedges with sparse tree growth, the proper hydrological name for the wetlands is a scrub/shrub swamp, as opposed to a "marsh" or "bog". If left undisturbed the existing scrub shrub swamp would eventually become a forested swamp. Generally speaking, the vegetation in a "marsh" consists mostly of grasses, sedges or rushes without trees, while a "bog" is covered with thick layers of sphagnum moss. According to the Team's Botanist, the swamp on the site is lacking sphagnum moss.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SURFICIAL GEOLOGY
Stratified Drift
Swamp Deposits
Till Based Soils
1" = 660'

3.2 Surficial Geology

The surficial geologic deposits of the swamp consist of silt, sand and clay mixed with decayed organic matter (peat and muck). Based on verbal communication with the applicant's engineer, probing data in the swamp suggests that the organic rich materials are thickest in the eastern parts of the swamp.

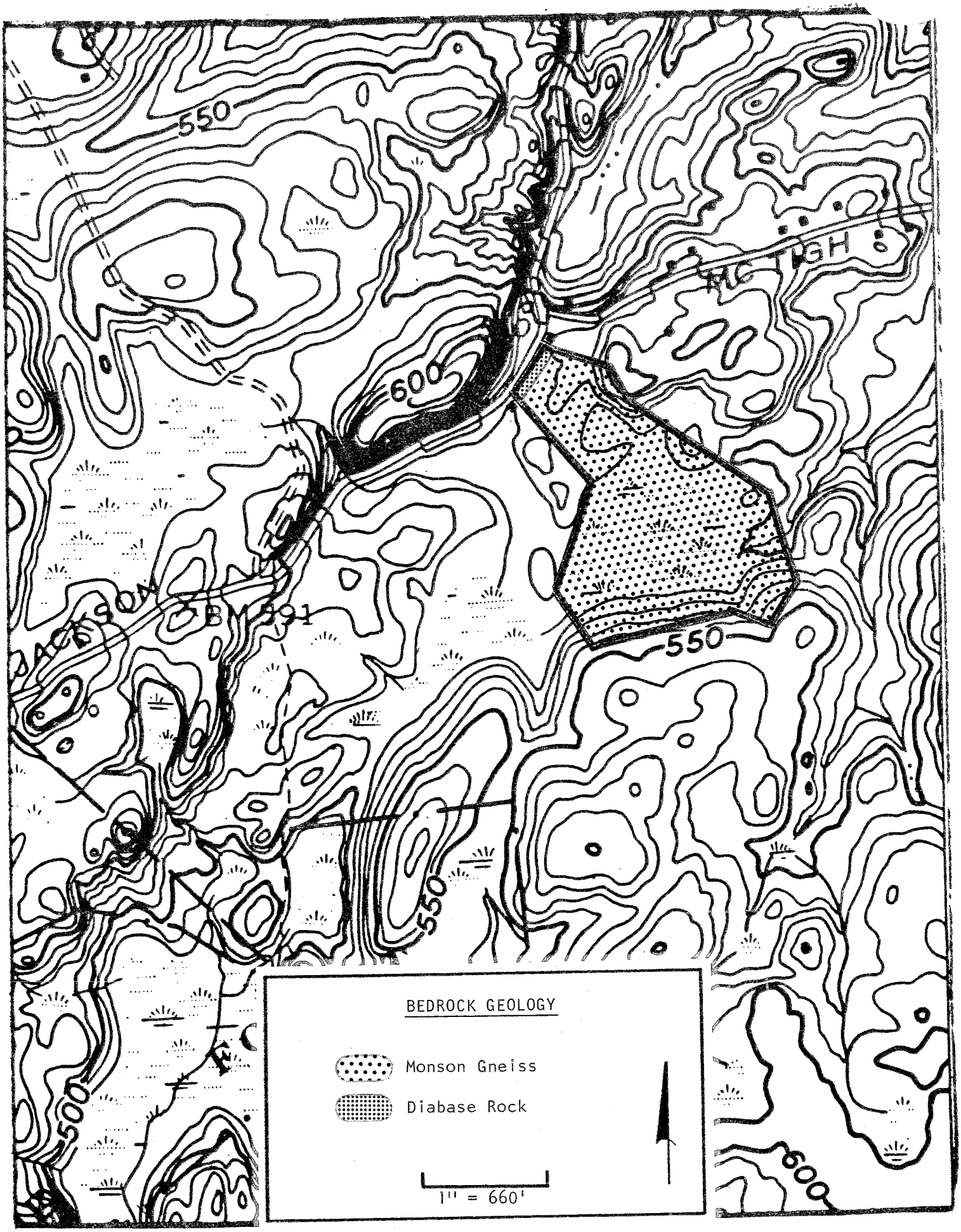
Although no boring was available for the swamp, it appears, based on surficial geologic mapping (QR-36), that the swamp is underlain by deposits know as ice-contact stratified drift. These materials were deposited by glacial melt-water streams generally in close relation to melting glacier ice. The predominant components of the stratified drift are sand and gravel, but some occasional silty or clayey layers may also be present. Stratified drift on the site is probably a very thin (3-4") layer of till (discussed below) which in turn is underlain by crystalline bedrock.

At the southern and eastern limits of the site, the swamp rises into a wooded hillside underlain by another type of glacial sediment, known as till. The till was deposited directly from an ice sheet, and it therefore lacks the sorting (the separation of grain sizes) and the layering that is characteristic of stratified drift. Till contains particles ranging from clay to boulders, and it varies considerably in its textural characteristics. The soils map for this parcel suggests that the till is a gravelly sand. The till in the eastern part appears to be relatively thin, probably ranging between 1 foot and 5 feet below ground surface, till in the southern parts is probably deeper, perhaps 7-10 feet.

The surficial geology of the site is primarily a product of glaciation. According to Flint, evidence shows that ice covered the Haddam area only once in the last million years. As the ice sheet flowed across the area in a NW to SE direction, it covered most of the rocky uplands with a blanket of till. During its final retreat about 10,000-12,000 years ago, the ice stagnated at the margins of active glacial ice or in isolated masses in some lowland regions. The meltwater streams carried the rock debris away from the dead ice, depositing it in the major stream valleys. Dead ice partly filled the valleys during this depositional phase; sand, silt, and gravel were laid down around and over the dead piece of ice. When the ice finally melted, the glacial sediments collapsed to form wet or dry basins. The swamp on the site appears to have been a wet one. Over time, this glacial pond filled with sediments eroding from the surrounding watershed and vegetation, leading to the present swamp.

3.3 Bedrock Geology

Bedrock is at or near ground surface at the northern, western and eastern limits of the property. Except for a very thin sliver in the northern limits along Jackson Road, bedrock underlying the property is classified as Monson Gneiss, a unit of the early Ordivician geologic period, approximately 500 million years old. Lundgren describes these very old and complexly folded rocks as a gray, quartz-plagioclase gneiss with black amphibolite layers. The terms "gneiss" and "amphibolite" in the preceding sentence refer to crystalline, metamorphic rocks; that is, rocks which have been altered by great heat and pressure deep within the earth's crust. "Gneisses" are characterized by a banded appearance. This is due mainly to the mineral arrangement in the rock, which alternates thin bands of elongated or flaky minerals with layers of more granular minerals. "Amphibolites" are rocks composed mainly of minerals in the amphibole group (usually hornblende).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BM 591
BEDROCK GEOLOGY
Monson Gneiss
Diabase Rock
1" = 660'

Monson Gneiss has been quarried extensively in the region, probably for dimension stone.

The northern boundary of the property marks the location were two different rock types (Monson Gneiss and Diabase) come together. Based on map QR-37, it appears that a very tiny sliver of diabase may underlie the northern limits of the site along Jackson Road. It should be pointed out that diabase forms extensive outcrops on the west side of Jackson Road. Mainly because of its strong resistance to erosional processes, outcroppings of the diabase, referred to as the Higganum diabase dike, can be traced from the coast of Connecticut into northern Massachusetts. "Diabase" is a dark gray volcanic rock composed largely of the minerals plagioclase and pyroxene. Accessory minerals include opaques; devitrified (process whereby glassy rocks break up into crystalline minerals) glass, quartz or olivine. Lundgren suggests that the diabase underlying the property intruded the Monson Gneiss during the Late Triassic or possibly Jurassic geologic period (138-230 million years ago). Therefore, these rocks are much younger than the Monson Gneiss.

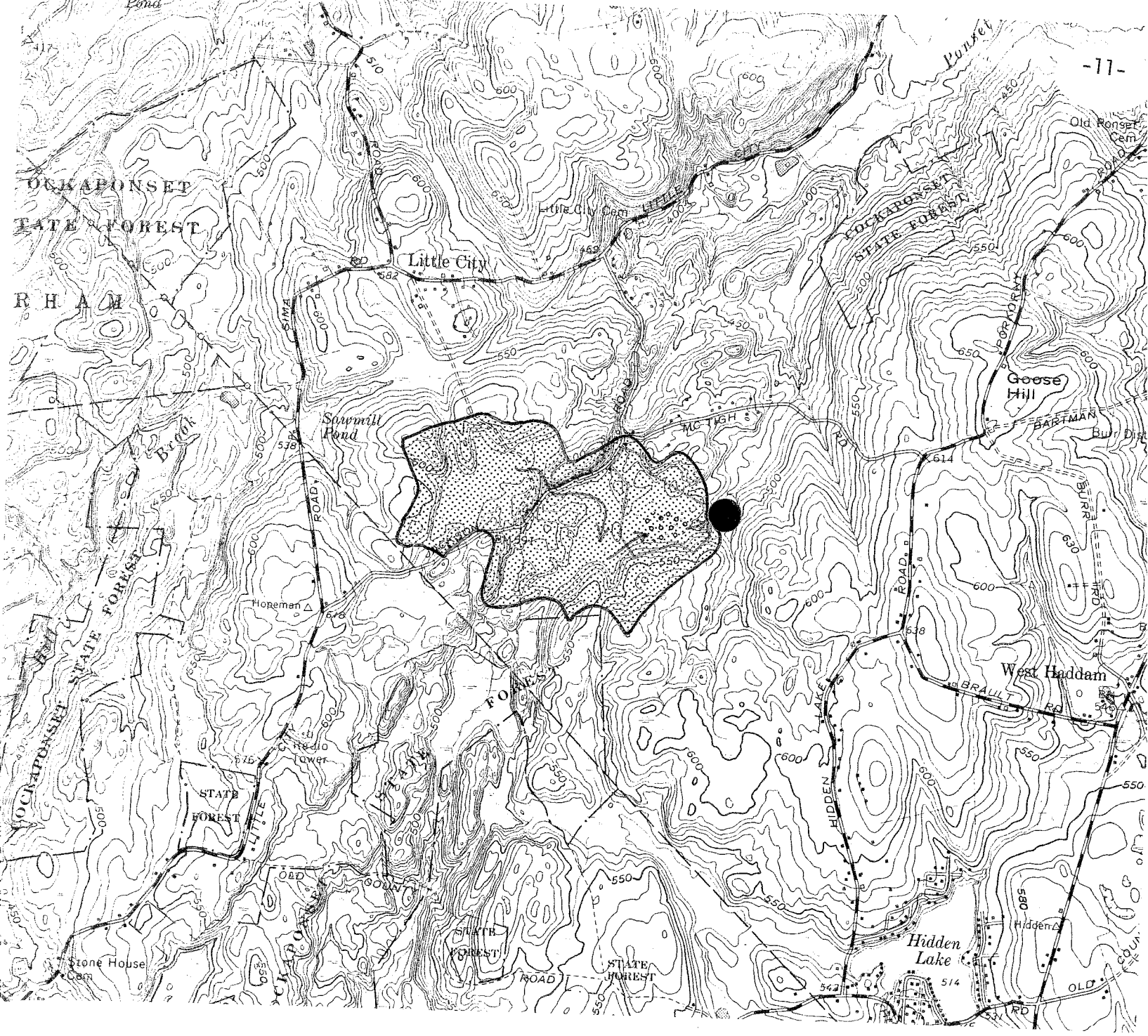
Since the depth of the proposed pond is about 10 feet and since the unconsolidated materials covering bedrock in the swamp are thicker than 10 feet, the underlying bedrock should not pose any major problems with respect to the proposed project.

4. HYDROLOGY

4.1 Introduction

The proposed ± 7 acre pond is located entirely within the watershed of an unnamed tributary to Ponset Brook. This tributary, which originates in a wetland on the north side of Jackson Road flows in an east-west direction through the wetland in the central parts of the property. Based on visual observations made during the field review, the streamcourse was free-flowing and forms a well-defined channel. The outlet for the wetland in the eastern parts is constricted by a rock and earth dam which includes an ± 18" pipe. The dam and pipe were probably built in conjunction with a former cranberry bog which was operated in the wetlands. From the dam, the stream flows in a northeasterly direction for about one and a half miles ultimately merging with Ponset Brook.

Team members were asked to address several water-related concerns raised by town officials regarding the proposed pond excavation. It should be pointed out that it is very difficult to analyze the potential hydrological effects as they relate to the proposed project. Very little data has been collected and documented for the type of activity planned on the site. The authors of a report entitled "Peatland Hydrology" contained in American Water Resources Association publication Wetland Functions and Value: The State of Our Understanding states that, "Our greatest lack of knowledge is in predicting the hydrologic impacts of drainage and peat harvesting". Although it is beyond the scope of this report to evaluate all possible future conditions of the project, the following discussion of pertinent factors should help the town evaluate the proposed pond excavation.



WATERSHED BOUNDARY

Site Boundary

Watercourses showing direction of flow

Design Point at the 18" culvert at the dam

Watershed boundary for stream meandering through the wetlands on the site

Proposed pond location (approximate)

SCALE 1" = 2000'

4.2 Description of Watershed

Water flowing into the wetland on the property consists of ground and surface water inflow from the surrounding drainage area, and rainfall over the swamp itself. The total watershed of the wetland, to the point where the unnamed stream passes through the 18" culvert, includes approximately 190 acres or ± .3 square miles. There may be some leakage or inflow of surface water or groundwater in a wetland in the southern portion of the watershed during dry or wet periods, respectively. This boundary was not field checked. An accompanying map, delineates the watershed boundary discussed above.

4.3 Stream Flow Characteristics

Water flowing out of the wetland consists of surface and groundwater and evapotranspiration from the wetland. It is the potential for change in total evaporation that must be considered in predicting whether a change in long-term base flows will occur in the outflow stream. The reason is, total water inputs to the site, whether it remains a wetland or is converted to a pond, will not be altered. As long as the basin, once it is emptied of organic material is refilled to its present water level, the streamflow changes will depend entirely on whether or not the pond surface loses more or less water to evaporation than the swamp did to both evaporation and transpiration. Although there is no information on the wetland in question as to present rates of evaporation, data recently obtained from other swamps suggests that evapotranspiration usually exceeds evaporation from a free-water surface (Source: "Water Resources and Wetlands", a report contained in the American Water Resources Association symposium publication). Therefore, base streamflows for the outlet stream during hot, dry periods may increase if a pond is created. During spring thaws, the wetlands might be expected to thaw less rapidly than a free ice-and-snow surface (such as a pond), so that the normally heavy spring streamflows may be reduced by the presence of the wetland. On the other hand, creation of the pond could lead to higher spring flows. The applicants engineer stated on the review day that a wetland fringe would be maintained around the pond. It seems likely that this would have at least some effect on the long-term base flow of the outlet stream.

4.4 Filling the Pond

It was assumed that the pond would fill to the level existing presently in the swamp. First, the applicant's engineer stated on the review day that the dam and the 18" pipe controlling the outflow stream would not be disturbed. If the dam is modified, it may be subject to permit by DEP's Water Resources Unit. Therefore, if any modification of the dam is planned, the applicant should contact the Water Resources Unit at 566-7220. Second, according to present plans, the bottom of the pond would consist of peat and sand in places underlain by either sand, till or bedrock. The presence of these geologic materials will not allow rapid groundwater outflow. If they did, one would not expect the swamp to exist as it does today. Finally, using a statistical average for flow rates of ungaged streams in Connecticut, based on the size of the contributing watershed, it may be estimated that the long-term average surface inflow to the swamp basin is about .7 cubic feet per second (cfs). At this rate, the entire planned excavation could fill in about 25 days. It should be pointed out that this estimate is based on the 190-acre watershed described earlier in this section.

4.4 Filling the Pond continued

Since the pond will be excavated over a two to three year period, it seems likely that it would take less time for any particular section of the pond to fill. Most of the filling would occur during the wet time of the year, normally spring and late fall. Evaporation would also be lowest during this time of year.

4.5 Flood Storage

According to the Flood Boundary and Floodway Map for Haddam, published by the Federal Insurance Administration, the area proposed for excavation is located within the 500-year floodprone zone. Since it lies within this zone, it may be assumed that it has at least some value for flood-storage. The effectiveness of the proposed 7 acre pond as opposed to the present swamp for providing flood-storage and reducing flood flow is very difficult to assess. Generally, watersheds are evaluated for flood storage capabilities by adding total swampy and ponding areas; i.e., the two different systems are not distinquished in the evaluation. This suggests that the two are approximately equally effective. Nevertheless, to the extent that precipitation onto the wetland may percolate through the hummocks of "land" above the water table while precipitation onto the pond would reach the surface instantly, a certain additional retentive ability (a "sponge" effect) may exist in the swamp. This, of course, would be partly or perhaps totally offset by the volume of potential storage space that the "land" itself occupies. Another factor to consider is the extent to which the swamp vegetation and microtopography itself slows surface flow rates. This factor would, in turn, depend upon the existing water or ice level at the time of the flood-causing storm event or snow-melt: the lower the water level, the greater the slowing effect of the wetland on surface flows. In conclusion, it seems likely that the difference between the proposed pond and existing swamp in terms of flood-storage would be relatively small.

4.6 Water Quality

Another water-related concern expressed by Town officials on the review was water quality. Besides their ability to store floodwater, wetlands also have the ability to trap sediment and maintain water quality. A pond may also provide the same function, especially trapping sediment.

Town officials questioned on the review day the potential for changes in water quality. In this regard, it is recommended that a detailed erosion and sediment control plan be formulated and carefully followed through all phases of the project, if it is approved. Hopefully, this will reduce the potential for substantial deterioration of water quality on and off site.

The existing pH of the outlet stream is not known, but it seems likely that it would be acidic due to the presence of the organic-rich soils in the swamp. Since the present proposal calls for maintaining a wetland fringe around the pond, organic soils, which tend to be highly acidic in this part of the state would not be completely removed. As a result, it seems likely that pH levels would remain on the acidic side.

4.6 Water Quality continued

If all of the organic soils were removed from the basin, the pH values of the outflowing stream could possibly decrease in the long run. However, it should be pointed out that during and immediately following the proposed pond excavation, the acidity and iron/maganese levels may increase dramatically because of the disruption of the organic material.

Acidification of the outlet stream could conceivably kill fish in downstream areas and affect local vegetation. The town should require the applicant to address this potential concern. For example, there may be a need to buffer the outflowing stream from the excavated area to an acceptable level. Interested persons should read the Fish Resources section of the report for further information on this subject.

4.7 Stream Relocation

Present plans indicate that the proposed ± 7 acre pond would be located in the eastern parts of the swamp on the site. According to the applicant's engineer, probes in the swamp indicated that peat depths were most favorable northwest of the existing dam site. Peat depths became shallower to the west. In order to construct the pond the applicant's engineer is proposing to temporarily re-locate the existing stream channel that meanders through the swamp to the south. An earthen berm would be constructed to physically separate existing and proposed channels. The plan also calls for the construction of a sediment basin near the existing dam site. This basin would hopefully trap any sediment from reaching the outlet stream. Mining of the peat would begin in western parts of the swamp working towards the sediment basin area.

The proposed stream re-location may require a permit from DEP's Water Resources Unit. It is recommended that the applicant contact the Water Resources Unit concerning this matter. Diverting the existing stream to the south may lead to streambank erosion along the new channel carrying unwanted silt downstream. The applicant's engineer should present to the Town how the stream re-location to be accomplished and the mitigative measures employed to prevent the potential for streambank erosion and siltation to downstream areas. The latter could lead to the deterioration of water quality to the outflowing stream and possibly Ponsett Brook. Perhaps consideration should be given to not re-locating the channel.

4.8 Additional Concerns

According to the proposed plan, an 8" diesal pump, which is capable of pumping 2,000 gallons per minute has been listed as part of the equipment to be used. It appears that there may be a need to de-water in order to mine the peat. If more than 50,000 gallons of water is pumped from any surface or groundwater sources in the project area in any twenty-four hour period, it may require a diversion permit from the DEP's Water Resources Unit.

Also, it is recommended that the applicant's engineer survey adjoining properties for well locations and well types. Depending upon the ultimate pumping rate required for de-watering processes, if needed, there may be a chance of mutual interference with nearby wells.

5. SOILS

5.1 Introduction

A detailed soils map of the site is included in this section of the report. Soil types were field checked by Marc Beroz, SCS Soil Resource Specialist, following the ERT site visit. One change made on the published soil survey map as a result of this investigation is indicated on the map in this report. Soil boundary lines on the map should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site.

5.2 The Upland Soils

Upland soils in the north and northwestern portions of the parcel are the well-drained Agawam fine sandy loam on 3 to 8 percent slopes (map symbol AFB) and excessively drained Hinckley gravelly sandy loam on 3 to 15 percent slopes (map symbol HkC). Both soil types are formed on glacial outwash and stratified drift sands and gravels.

Two house sites are planned for this area of the parcel. The Agawam soil has slight limitations for buildings with basements and septic tank absorption fields and the Hinckley soil has moderate limitations for both uses due to slope. Both soils have rapid permeabilities and ground water could become polluted if on-site septic systems are not properly designed.

The V-shaped symbols within the Hinckley soil unit indicate the presence of rock outcrops. Depth to ledge should be determined prior to siting on-site septic systems.

Agawam fine sandy loam is a prime farmland soil of national importance.

5.3 Soil to be Used to Create Dikes

Along the southern boundary of the parcel are Canton and Charlton extremely stony fine sandy loams on 3 to 15 percent slopes (map symbod CdD). It is within this soil area that the developer proposes to obtain fill to create dikes along the existing stream channel and around the sediment basin. These soils have moderate to severe limitations as dike material due to seepage and piping. It is recommended that the material be tested for its suitability and an alternative source of suitable material be identified.

5.4 Lowland Soils

Lowland soils include the moderately well drained Ninigret fine sandy loams on 0 to 5 percent slopes (map symbol NnA), and the very poorly drained organic Carlisle muck (soil symbol Ce). A small area of poorly and very poorly drained Leicester, Ridgebury and Whitman extremely stony fine sandy loams (map symbol LG) occurs in the southwest corner of the parcel where the stream enters the site.

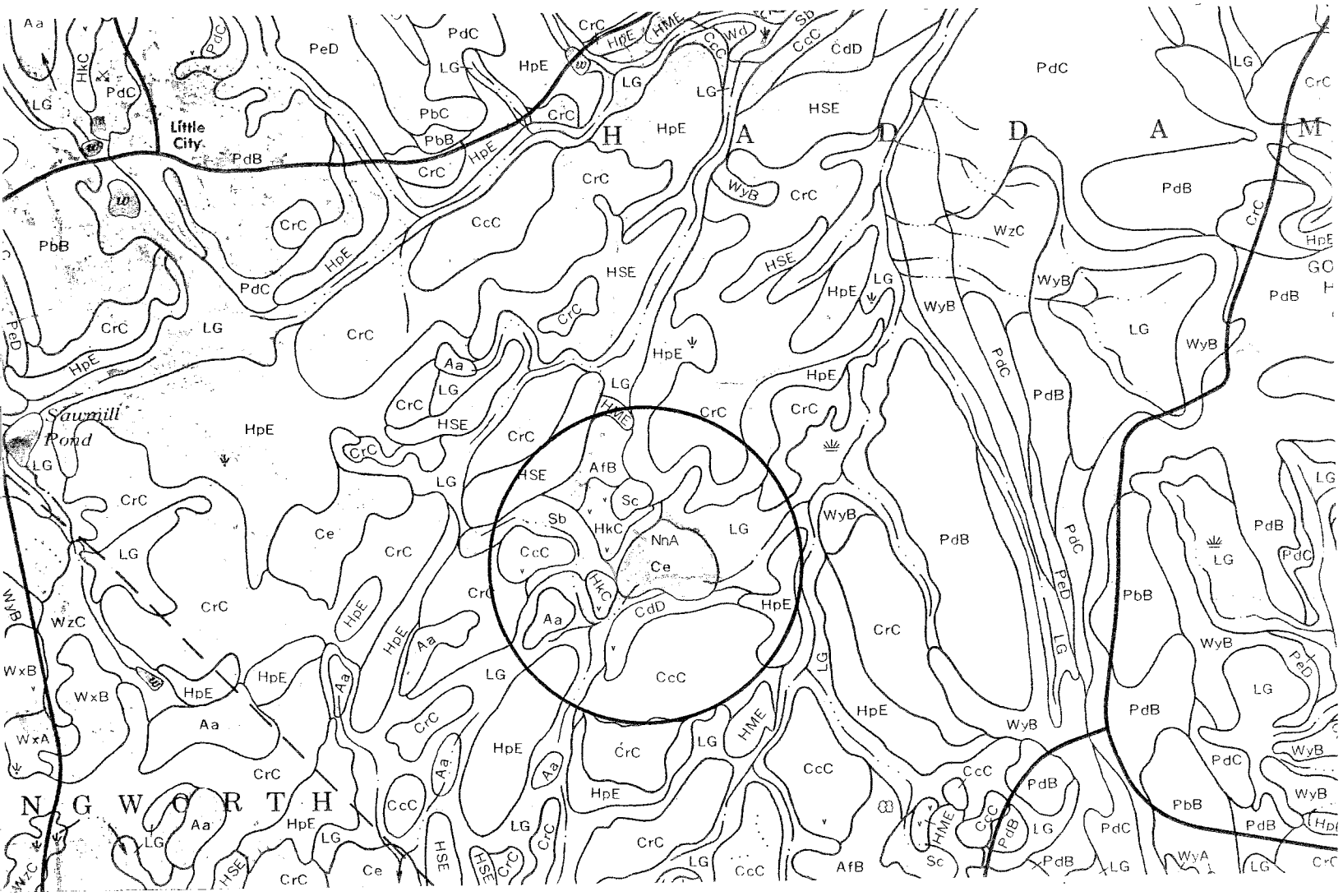
Carlisle muck and Leicester, Ridgebury, and Whitman extremely stony fine sandy loams are inland-wetland soils regulated under P.A. 155.

The proposed excavation project lies entirely within the Carlisle muck soils. The soil is formed in woody organic deposits in bogs and other depressional areas.

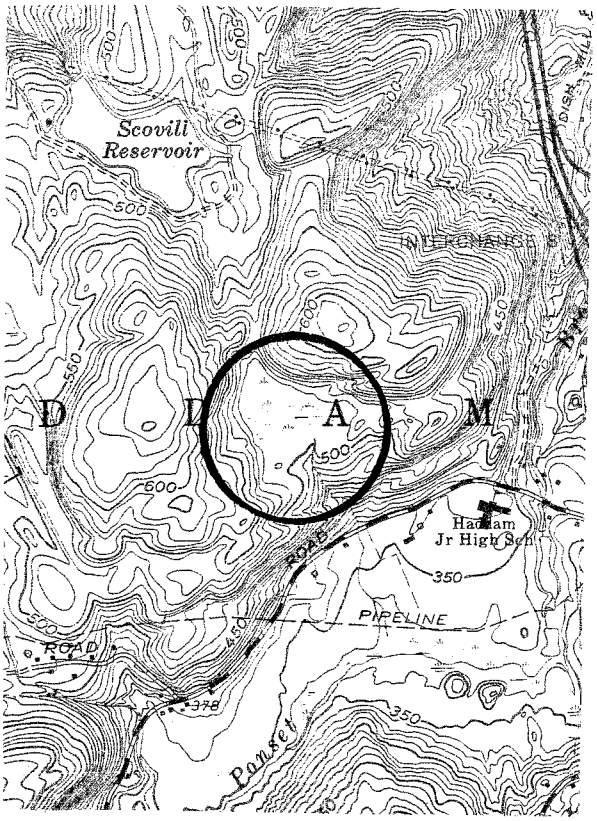
United States Department of Agriculture
Soil Conservation Service

Middlesex County USDA-SCS
Middlesex County Extension Center
Haddam, CT 06438
345-3219

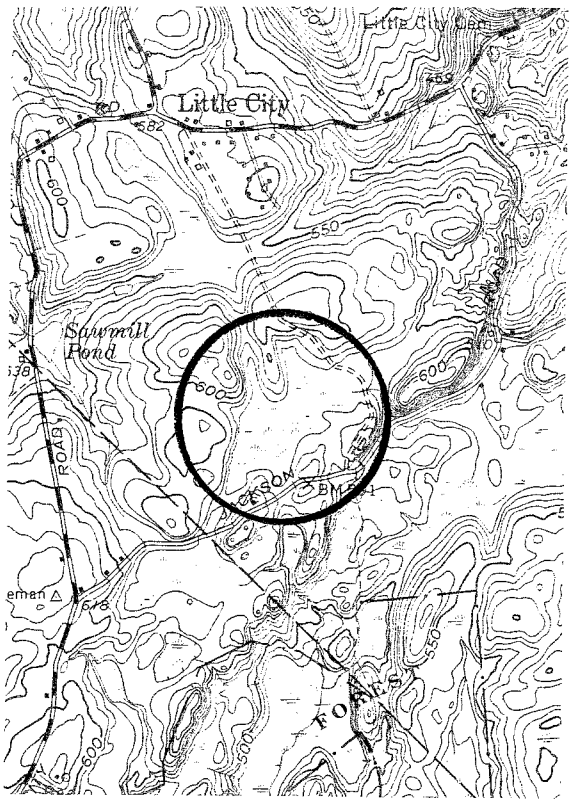
SCALE 1" = 1230'



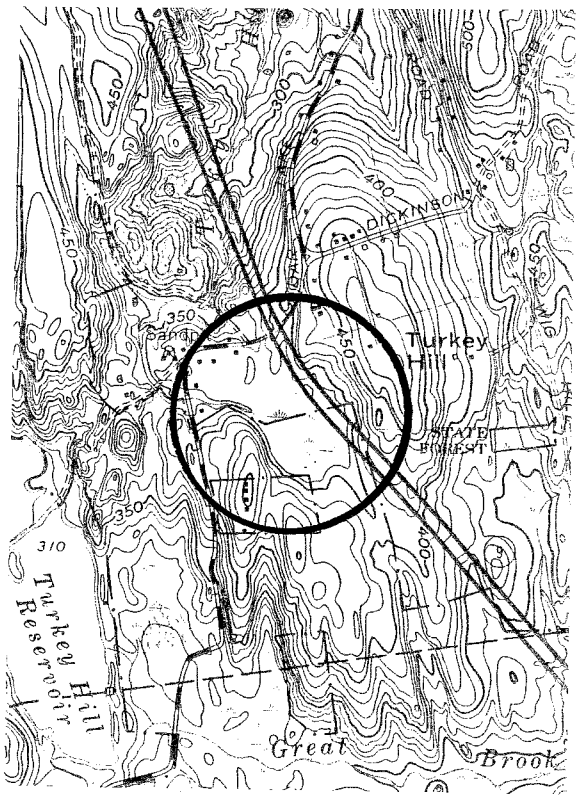
OTHER LOCATIONS OF CARLISLE MUCK IN HADDAM
ACCORDING TO THE SOIL SURVEY FOR MIDDLESEX COUNTY



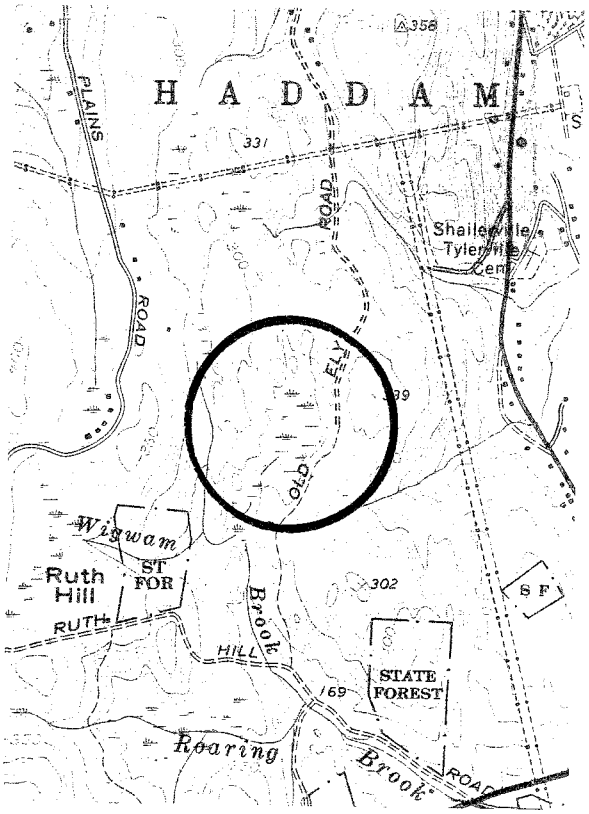
1. South of Scovill Reservoir



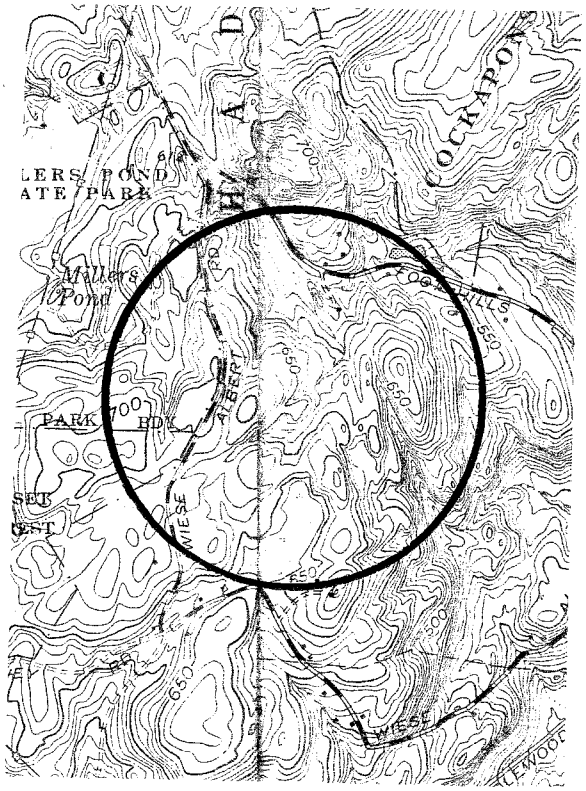
2. North side of Jackson Road



3. Along Route 9 east of Turkey Hill Reservoir



4. West of Old Ely Road on Wigwam Brook



5. Areas north of Wiese Albert Road
west of Foothills Road

5.4 Lowland Soils continued

It is rated as poor for standard topsoil due to the excess humus. It is probably suitable for nursery use as an organic matter amendment.

5.5 Sediment and Erosion Control

Of concern is the proposed diversion of the stream and proper construction and stabilization of the dikes. There is potential for subsidence of the muck underlying the dikes due to the weight of the fill and site dewatering activities. This could contribute to dike instability and possible failure.

Control of sediment during the excavation should be a critical component of the planning process. Sediment and erosion control measures should be implemented prior to site distrubance and maintained through the proposed activity in order to provide effective protection.

5.6 Other Units of Carlisle Muck in Haddam

According to the Soil Survey for Middlesex County, other units of Carlisle muck in Haddam are located in the following areas:

1. South of Scovill Reservoir
2. North side of Jackson Road
3. Along Route 9 east of Turkey Hill Reservoir
4. West of Old Ely Road on Wigwam Brook
5. Areas north of Wiese Albert Road west of Foothills Road

6. THE WETLAND FROM A WATER RESOURCES VIEWPOINT

6.1 Description of Wetland

The wetland associated with the site being considered for the proposed peat excavation activities is composed of wooded swamp, shrub swamp, marsh and open water habitats. Based upon the USDA Soil Conservation Service Soil Survey, the weland complex is approximately 45 acres in size. The wetland is irregularly shaped, thereby forming a fair amount of habitat edge between the wetland and adjoining upland habitat. Approximately 95% of the habitat surrounding the wetland is forested. The present wetland habitat developed as the result of persistent drainage restriction.

6.2 Wetland Habitat and Value

The wetland habitat at the site of the proposed peat excavation is dominated by sedges and ericaceous shrubs, most notably leatherleaf (cahmaedaphne galyculata). This wetland is not a classical bog-type wetland. The wetland as it presently exists provides important benefits to society by providing water quality renovation, and by providing habitat for a variety of wildlife species. In its present state, this wetland has intrinsic aesthetic, scientific research and educational values associated with a wetland containing a mixture of habitats with different vegetative structural qualities.

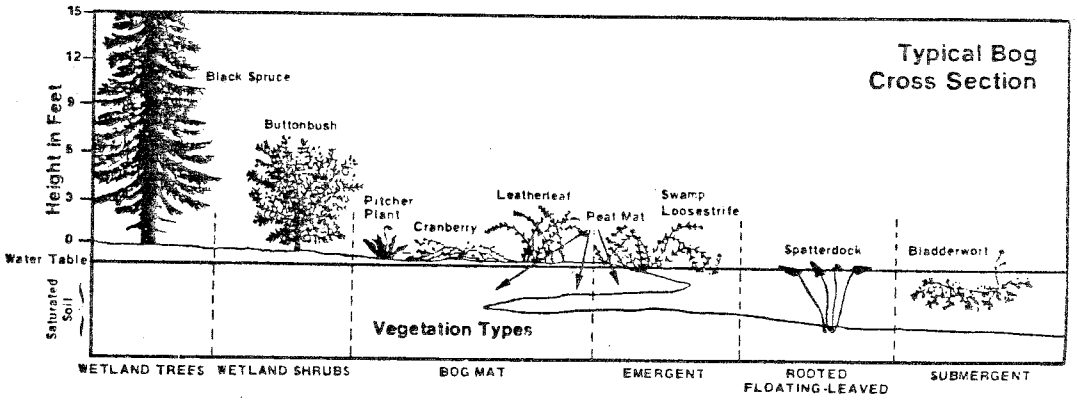
6.3 Creation of a Pond

The creation of ± 7 acres of open water habitat through excavation of peat deposits will result in the direct loss of ± 7 acres of vegetated wetland habitat. The loss of this habitat would result in a decrease in the habitat diversity within this wetland since a significant portion of the sedge and leatherleaf dominated habitat would be eliminated. The creation of ± 7 acres of open water habitat would not provide a significant increased benefit to local wildlife populations since there presently exists two larger bodies of open water within 1.5 miles of this wetland; one is ± 34 acres and a second ± 20 acres in size.

Additionally, there are 8 ponds ranging in size from 1 to 3 acres within one (1) mile of this wetland. A ± 7 acres of open water habitat at this site would not provide a significant benefit to any fisheries.

6.4 Conclusion

This wetland is presently a healthy and productive ecosystem. There are no other wetlands in the immediate vicinity that possess the same habitat conditions. The present habitat conditions in this wetland provide an enhancement to the local landscape and encourage wildlife species diversity.



Cross-section of a typical bog.

7. THE WETLAND FROM A BOTANICAL VIEWPOINT

7.1 Description of the Wetland

The area of concern is a depression in deposits of sand and gravel that is filled with organic peats and mucks. The site was previously used for the cultivation of cranberries and has not been managed for quite some time. The cranberry operation was probably abandoned prior to the 1930's due to problems with the Blackheaded fireworm, problems with the pesticide used to control it, and economic constraints. The area appears not to have changed significantly as to how it appears on the 1934 aerial photographs, although it is probable that the area of high shrubs has expanded over time. A similar, larger cranberry bog is located approximately 1.5 miles to the south in Killingworth, an area that is presently partially active.

7.2 Vegetation

The present vegetation of the site is dominated primarily by wetland shrubs, with three major zones:

1) The shrub swamp - an area composed primarily of a dense thicket of highbush blueberry, with scattered leatherleaf, buttonbush, sweet pepperbush, maleberry and winterberry shrubs. This vegetation type occupies the major portion of the basin.

2) The "bog" mat - an area dominated by low growing leatherleaf, with patches of ferns, grasses and sedges and cranberry. This vegetation type forms a border on the western side of the basin.

3) The stream border - an area with free-flowing water with an open vegetation of Alder shrubs, grasses and sedges, and ferns.

7.3 Significance of the Wetland

Within the State of Connecticut, there are approximately 50 bogs, with less than 20 of state-wide ecological significance. The term bog, as defined in this report, refers to peatlands dominated by dwarf ericaceous shrubs such as leatherleaf, sheep laurel, bog laurel, bog rosemary, huckleberry, cranberries, and Sphagnum moss. These areas are more technically referred to as poor fens; poor since their nutrient availability is low, fens since they derive the majority of their nutrients from groundwater. In all of Middlesex county, only one bog is mapped by the Connecticut Natural Diversity Data Base, a bog mat north of Lake Hayward in the town of East Haddam. No bogs are listed and mapped in the town of Haddam. In this respect, this area has significance to the town, but there is some question as to the natural and undisturbed nature of this wetland.

Arguments opposed to the destruction of this wetland include:

1) The "cranberry bog" to the south in Killingworth contains a small undistrubed area with two plants species of special concern, one which grows no where else in Connecticut but is abundant in the southern states, the other which grows only one other place in Connecticut, and has limited occurrences through its range. Since the proposed excavation was visited on a snow-covered day, it is possible that either of these plants could have been overlooked.

7.3 Significance of the Wetland continued

2) The wetland appears to have remained stable for 50 + years. This proposal would result in the destruction of a manipulated but stable wetland habitat with a replacement by an artificial pond of tenuous stability.

Arguments in favor of the proposal include the fact that since the "bog" mat on the western portion of the basin will not be impacted, the creation of the pond may in fact "improve" the habitat and allow for the better development of the bog into the pond over time.

7.4 Environmental Impacts

1) This porposal will significantly alter the present vegetation of a wetland basin by the removal of the living portion of the majority of plant material and the underlying peats and mucks to a depth of 10 feet.

2) This proposal will result at least in the temporary diversion of a stream through a created channel in an upland area, significantly increasing the risk of soil erosion and the sedimentation of material within the downstream portion of the stream.

3) The rechannelization of the stream into the newly created pond may result in a flush of water high in organic material, organic acids, and water of low pH into a tributary of a state stocked trout stream with unclear environmental impacts to the biota.

7.5 Recommendations

If the proposed wetland excavation is approved, the following recommendations should be taken into consideration.

1) Isolate the stream in its present course in order to eliminate the environmental hazards of erosion, sedimentation, and deterioration of downstream water quality.

2) Leave the buffer of the "bog" mat vegetation on the western side of the basin to maintain biological diversity and allow for natural recolonization of the site.

3) Excavate the pond as a separate entity allowing for the filtration of water through ground materials before it is discharged into the adjoining stream.

8. FISH RESOURCES

8.1 Fish Habitat

The Barillari peat removal site is located at the headwaters of Ponset Brook. The site currently contains little fish habitat. Lower sections of Ponset Brook, however, contain good trout and dace habitat. The State stocks 300 yearling brook trout in Ponset Brook and 1200 adult brown and rainbow trout in Higganum Reservoir, the brook's major impoundment, each spring.

8.2 Acidification

The removal of peat may cause acidification thereby reducing stream pH levels and endangering fish and other aquatic organisms. Careful attention to the proposed pH monitoring, liming and sedimentation control measures should prevent significant adverse impact on Ponset Brook and Higganum Reservoir fish habitat.

8.3 Suitable Fish Species

The creation of a pond on this site may provide suitable habitat for coldwater and warmwater fish species if pH levels are suitable.

9. WILDLIFE RESOURCES

9.1 Wildlife Habitat

The 22.7 acre site is located at Jackson and McTigh Roads in Higganum. The wetland area was at one time used as a cranberry bog. The area is composed of the wetland area which contains herbaceous plants and shrubs and has standing water present, an old field area and an area of hardwood forest.

The proposal calls for the removal of 125,000 yards of peat which will create a 7 acre pond, leaving some wetland as is.

The southeastern border of the property is adjacent to an isolated block of Cockaponset State Forest.

The site currently offers good wildlife habitat primarily because it offers a diversity of cover types, wetland, old field and hardwood forest. This diversity of habitats is important to wildlife because it usually satisfies more species requirements for food, nesting, cover, etc., than does an area containing all one cover or vegetative type. An interspersion of cover types generally creates the most favorable wildlife habitat.

There are also abundant snags and cavity trees on the areas which serve as feeding and nesting sites for birds and mammals.

Wetland habitat in general provides a rich variety of food, cover, nesting and brood sites for a great number of wildlife species. These sites can provide breeding and nesting sites for waterfowl and habitat for more than 50 species of game and non-game species including beaver, fox, mink, muskrat, oppossum and white-tailed deer.

9.2 Peat Excavation

The activity generated while the peat is being removed may negatively impact wildlife in the area simply due to the disturbance by men and machinery. As the project is proposed now, this would only be a temporary disturbance. This may cause some species of wildlife to leave the area while work is going on. But some species of wildlife show great adaptations to man-made disturbances.

9.3 Benefits of Pond Creation

The creation of a 7 acre pond (10 feet deep) upon completion of the project would probably make the area more attractive to wildlife than it is currently, as long as water quality and the pH level was not adversely effected on a long term basis. The open water would further serve to diversify the habitat with improved habitat for non-game species such as turtles and snakes.

During the operation as many snags (dead and dying trees) and cavity trees (dead or live trees with holes in them suitable for wildlife use) should be preserved as possible.

9.4 Conclusion

In conclusion, the area currently offers good wildlife habitat. Creation of a 7 acre pond should enhance the area because it will create greater habitat diversity, if water quality is not negatively effected on a long term basis. The project will create a disturbance to wildlife, but this should only be temporary.

10. PLANNING INFORMATION

10.1 Description of Project Area

The project area is in the west southwest portion of Haddam, off of Jackson and McTigh Roads. The entire parcel consists of 22.71 acres, of which 7± acres will be used as a peat excavation site. A 22' wide 840'± long truck haul road is proposed and will run from the north side of the excavation site through the "undisturbed" portion of the parcel to Jackson Road.

10.2 Length of Project and Material to be Excavated

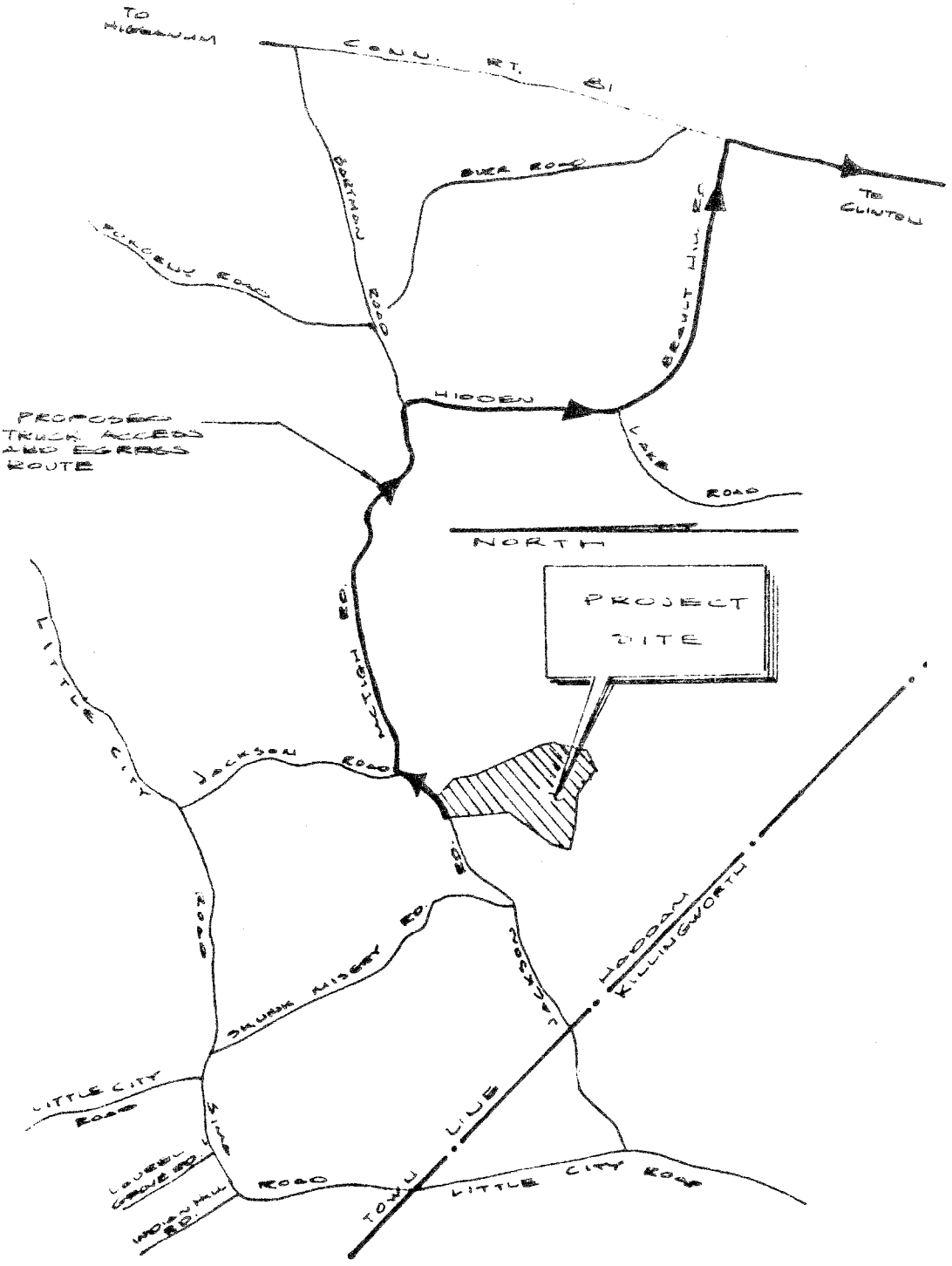
It is projected that the duration of the project will be two (2) to three (3) years, operating 7:00 a.m. to 5:00 p.m. on weekdays from May to November. The amount of material to be removed from the site is estimated at 125,000 cubic yards.

10.3 Proposed Truck Route and Traffic Study

The proposed truck route will run from the site onto Jackson Road to McTigh Road. It will run the length of that road and then onto Burr Road, to where it intersects Route 81. The route is approximately 1.1 miles long and passes 37 single family homes. Each of the roadways has an oiled surface.

A three day traffic study indicates that McTigh Road handles most of the vehicular activity within the area with the average daily traffic consisting of 74 vehicles.

PROPOSED TRUCK ROUTE



LOCATION MAP
SCALE: 1"=2000'

10.3 Proposed Truck Route and Traffic Study continued

There will be four (4) trucks used to haul the material and each will have a 30 cubic yard trailer capacity and will be making 8 trips per day. It is estimated that if the material is loaded onto the trucks upon extraction, the total weight of each vehicle to travel on the roadways will be 80,000 pounds. (2,160 lbs/cy x 30 + 15,200 lbs./truck).

II. SUMMARY

Note: This is a brief summary of the major concerns, comments and recommendations of the Team. You are strongly urged to read the entire report and refer back to specific sections of the report in order to obtain all the information concerning a specific topic. The numbers in parentheses refer to a section in the report.

-- The correct hydrological name for the wetland on this site is a scrub/shrub swamp, it is not a "bog" because it lacks sphagnum moss. (3.1, 7.2, 7.3)

-- The surficial geologic deposits of the swamp consist of silt, sand and clay mixed with decayed organic matter (peat and muck). (3.2, 5.2, 5.4)

-- The underlying bedrock should not pose any major problems with respect to the proposed excavation of material. (3.3)

-- It is difficult to analyze the potential hydrological effects of the proposed project because of the lack of data for the type of activity planned for the site. (4.1)

-- Data obtained from other swamps suggest that evapotranspiration usually exceeds evaporation from a free-water surface. As a result, base streamflows during not, dry periods may increase if a pond is created. During spring thaws the normally heavy spring streamflows may be reduced by the presence of a swamp. Conversely, creation of a pond could lead to higher spring flows. Maintaining a wetland fringe would have some effect on the long-term base flow of the outlet stream. (4.3)

-- If the dam to the outlet stream is modified it may be subject to permit from the DEP's Water Resource Unit. (4.4)

-- It can be estimated that the long-term average surface inflow to the swamp basin is about .7 cubic feet per second (cfs). At this rate the entire planned excavation could fill in about 25 days. Since the excavation will be over a 2 to 3 year time peiod it is likely that it would take less time for any particular section to fill. (4.4)

-- It seems likely that the difference between the proposed pond and the existing swamp in terms of flood storage would be relatively small. (4.5)

-- It is recommended that a detailed erosion and sediment control plan be formulated and followed through all phases of the project. (4.6, 5.5, 7.4)

-- During and immediately following the proposed excavation the acidity and iron/manganese levels may increase greatly because of the disruption of the organic material. (4.6, 7.4)

-- Acidification of the outlet stream could conceivably kill fish in downstream areas and affect local vegetation. The Town should require the applicant to address this potential concern. (4.6, 7.4, 8.2)

-- The proposed stream re-location may require a permit from DEP's Water Resources Unit. (4.7)

-- Diverting the existing stream to the south may lead to streambank erosion along the new channel carrying unwanted silt downstream. The applicant's engineer should present to the Town how the re-location is to be accomplished and the mitigative measures to be taken to prevent potential erosion and sediment problems. (4.7)

-- Perhaps consideration should be given to not re-locating the channel. (4.7)

-- If de-watering is to take place, and if more than 50,000 gallons of water is pumped from any surface or groundwater sources in the project area in any 24 hour period, a diversion permit may be required from the DEP's Water Resources Unit. (4.8)

-- It is recommended that the applicant's engineer survey adjoining properties for well locations and well types because there may be a chance of mutual interference with nearby wells from de-watering processes. (4.8)

-- One change has been made on the published soil survey map as a result of a field check. This has been shown on the soils map included in this report. (5.1)

-- The area of the parcel where two house sites are planned have soils with rapid permeability and groundwater could become polluted if on-site septic systems are not properly designed. Depth to ledge on the Hinckley soil unit should be determined prior to siting septic systems. (5.2)

-- The Canton and Charlton (CdD) soils that the developer proposes to use to create dikes have moderate to severe limitations as dike material due to seepage and piping. It is recommended that the material be tested for its suitability and an alternative source of material be identified. (5.3, 5.5)

-- The proposed excavation lies entirely within the Carlisle muck soils (Ce). It is probably suitable for nursery use as an organic matter amendment. (5.4)

-- There is concern about the proposed diversion of the stream and proper construction and stabilization of the dikes. There is potential for subsidence of the muck underlying the dikes due to the weight of the fill and site de-watering activities. This could contribute to dike instability and possible failure. (5.5)

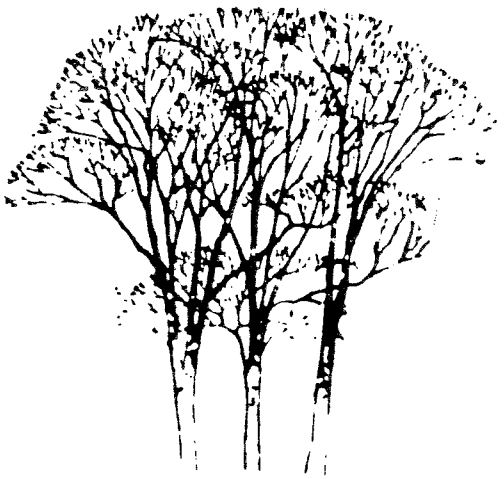
-- According to the Soil Survey for Middlesex County there are five (5) other areas with units of Carlisle muck in Haddam. (5.6)

-- Based upon the USDA Soil Conservation Soil Survey the wetland is approximately 45 acres in size. (6.1)

-- The wetland as it presently exists provides important benefits to society. (6.2)

-- The creation of a ± 7 acre pond would not provide a significant increased benefit to local wildlife populations. (6.3)

-- The present habitat conditions provide an enhancement to the local landscape and encourage wildlife species diversity. (6.4)



-- A similar, larger, partially active cranberry bog is located approximately 1.5 miles to the south of this site in Killingworth. (7.1)

-- The present vegetation of the wetland is dominated by wetland shrubs, with three major zones: 1) the shrub swamp, 2) the "bog" mat and 3) the stream border. (7.2)

-- No bogs are listed and mapped in the Town of Haddam, in this respect, this area has significance to the town. But there is a question as to the natural and undisturbed nature of this wetland. (7.3, 3.1)

-- Since the site was field checked on a day when snow covered the ground, it is possible that two (2) plant species of special concern were overlooked. Both species occur in the "cranberry bog" to the south in Killingworth. (7.3)

-- An argument against the proposal is that the excavation would result in the destruction of a manipulated but stable wetland with replacement by an artifical pond of tenuous stability. (7.3)

-- An argument in favor of the proposal is that since the "bog" mat on the western portion of the basin will not be impacted, the creation of the pond may improve the habitat and allow for the better development of the bog into the pond over time. (7.3)

-- This proposal will significantly alter the present vegetation of the wetland basis. (7.4)

-- It is recommended that 1) the stream be isolated in its present course to eliminate the hazards of erosion, sedimentation, and deterioration of downstream water quality, 2) that a buffer of the "bog" mat vegetation on the western side be left to maintain biological diversity and to allow for natural recolonization of the site and 3) excavate the pond as a separate entity allowing for the filtration of water through ground materials before it is discharged into the adjoining stream. (7.5)

-- The excavation site is located at the headwaters of Ponset Brook. The State stocks yearling brook trout in Ponset Brook and adult brown and rainbow trout in Higganum Reservoir, the brook's major impoundment, each spring. (8.1)

-- Careful attention to pH monitoring, liming and erosion and sedimentation control measures should prevent adverse impact on Ponset Brook and Higganum Reservoir fish habitat. (8.2)

-- The site currently offers good wildlife habitat primarily because it offers a diversity of cover types. (9.1)

-- The activity generated by the peat removal may negatively impact wildlife in the area due to the men and machinery. As the project is proposed now (2 to 3 years) this would be only a temporary disturbance. (9.2)

-- The creation of a pond would probably make the area more attractive to wildlife, as long as water quality and the pH level were not affected on a long-term basis. (9.3)

-- Snag (dead and dying) and cavity trees should be retained for wildlife use. (9.3)

-- The proposed truck route will run from the site to Jackson Road to McTigh Road, then onto Burr Road, to where it intersects Route 81. The route is approximately 1.1 miles in length and passes 37 single family homes. Each road has an oiled surface. (10.3)

-- A three day traffic study indicates that McTigh Road handles most of the vehicular activity within the area. The average daily traffic consists of 74 vehicles. (10.3)

-- It is estimated that if the extracted material is loaded onto the trucks (30 cubic yard capacity), the total weight of each vehicle to travel on the roadways will be 80,000 pounds. (10.3)

Appendix

12.1 SOILS DESCRIPTIONS

AfB—Agawam fine sandy loam, 3 to 8 percent slopes. This gently sloping, well drained soil is on stream terraces and outwash plains. Mapped areas are dominantly irregular in shape and range mostly from 2 to 25 acres.

Typically, this Agawam soil has a dark brown, fine sandy loam surface layer 9 inches thick. The subsoil is dark yellowish brown fine sandy loam 15 inches thick. The substratum is light olive brown sand and very gravelly coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Merrimac soils, well drained Haven soils, moderately well drained Ninigret soils, and poorly drained Raypol and Walpole soils. Included areas make up about 15 percent of this map unit.

Permeability of the Agawam soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. This soil warms up and dries out rapidly in the spring. Unless limed, the soil is strongly acid or medium acid.

Most areas of this soil are cleared and used for cultivated crops, hay, or pasture, or they are idle. Other areas are used for community development, or they are in woodland.

This soil is well suited to cultivated crops. The hazard of erosion is moderate. Minimum tillage and the use of cover crops help to control erosion.

This soil is suited to trees. Machine planting is practical.

Onsite septic systems function with normal design and installation, but they pollute the ground water in places. Slopes of excavated areas are unstable. Lawns are easy to establish and maintain. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

This soil is in capability subclass IIe.

CdD—Canton and Charlton extremely stony fine sandy loams, 15 to 35 percent slopes. These moderately steep to steep, well drained soils are on glacial till upland hills, plains, and ridges. Stones and boulders cover 8 to 25 percent of the surface. Mapped areas are dominantly irregular or long and narrow in shape and mostly 2 to 50 acres.

The mapped acreage of this undifferentiated group is about 55 percent Canton soil, 25 percent Charlton soil, and 20 percent other soils. Mapped areas consist of Canton soil or Charlton soil, or both. These soils were mapped together because there are no major differences in use and management.

Typically, the Canton soil has a black, fine sandy loam surface layer 1 inch thick. The subsoil is dark yellowish brown fine sandy loam and sandy loam 23 inches thick. The substratum is grayish brown gravelly sand to a depth of 60 inches or more.

Typically, the Charlton soil has a very dark grayish brown, fine sandy loam surface layer 3 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown fine sandy loam 26 inches thick. The substratum is grayish brown fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of well drained Narragansett, Paxton, and Montauk soils.

Permeability of the Canton soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is very rapid. The Canton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is very rapid. The Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Most areas of these soils are wooded. A few areas are cleared and are idle.

These soils are not suited to cultivated crops. Stones and boulders make the use of farm equipment impractical. The hazard of erosion is severe. Maintaining a permanent plant cover helps to control erosion.

These soils are suited to trees. Stoniness makes machine planting impractical. Careful layout of woodland roads is needed to prevent erosion.

Steepness of slope is a major limitation for community development. Onsite septic systems need special design and installation to prevent effluent from seeping to the surface in areas downslope from the leaching system. Stones and boulders need to be removed for landscaping. Quickly establishing a plant cover and using mulch and netting, temporary diversions, and sediment basins help to control erosion during construction.

These soils are in capability subclass VIIs.

Ce—Carlisle muck. This nearly level, very poorly drained soil is in pockets and depressions of flood plains, stream terraces, outwash plains, and glacial till uplands. Mapped areas are dominantly irregular in shape and mostly 2 to 50 acres. Slopes range from 0 to 2 percent.

Typically, this Carlisle soil has black and dark reddish brown, muck organic deposits to a depth of 60 inches or more.

Included with this soil in mapping are small areas of poorly drained Limerick Variant and Rippowam soils and very poorly drained Adrian, Palms, Scarboro, and Whitman soils. Included areas make up about 10 percent of this map unit.

The Carlisle soil has a high water table near or above the surface for most of the year. Permeability is moderately rapid. The available water capacity is high. Runoff is very slow. The soil is strongly acid through slightly acid.

Most areas of this soil are wooded. A few areas are cleared and are idle.

This soil is not suited to cultivated crops because of wetness. Most areas do not have a suitable drainage outlet.

This soil is poorly suited to trees. Machine planting is not practical. Windthrow is common because of the shallow rooting depth above the high water table.

This soil is generally not suited to community development. Onsite septic systems are not feasible without extensive filling. The organic material does not support foundations. If drained, the organic layers shrink and subside. Lawns are difficult to maintain.

This soil is in capability subclass VIw.

HkC—Hinckley gravelly sandy loam, 3 to 15 percent slopes. This gently sloping and sloping, excessively drained soil is on stream terraces, outwash plains, kames, and eskers (fig. 5). Mapped areas are dominantly irregular in shape and mostly 2 to 25 acres.

Typically, this Hinckley soil has a dark brown, gravelly sandy loam surface layer 7 inches thick. The subsoil is yellowish brown gravelly loamy sand 15 inches thick. The substratum is brownish yellow very gravelly coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils, somewhat excessively drained Merrimac soils, well drained Agawam and Haven soils, and moderately well drained Sudbury soils. A few areas have a gravelly silt loam surface layer and subsoil. Included areas make up about 20 percent of this map unit.

Permeability of the Hinckley soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Runoff is medium or rapid. Hinckley soil warms up and dries out rapidly in the spring. Unless limed, it is strongly acid or medium acid.

Most areas of this soil are cleared and used for cultivated crops, hay, or pasture, or they are idle. Many areas are in community developments. Other areas are in woodland.

This soil is suited to cultivated crops. Hinckley soil is droughty, and irrigation is needed. The hazard of erosion is moderate or severe. Minimum tillage and the use of cover crops help to control erosion.

This soil is suited to trees. Machine planting is practical.

Onsite septic systems function with normal design and installation, but they pollute the ground water in places. Slopes of excavated areas are unstable. Lawns and gardens require watering in summer. Quickly establishing a plant cover and using mulch and netting, temporary diversions, and sediment basins help to control erosion during construction.

This soil is in capability subclass IVs.

LG—Leicester, Ridgebury, and Whitman extremely stony fine sandy loams. This unit consists of nearly level to gently sloping, poorly drained and very poorly drained soils in drainageways and depressions of glacial till uplands. Areas are long and narrow or irregular in shape and range from 3 to 200 acres. Slopes range from 0 to 5 percent and are mostly 50 to 300 feet long. This unit has more than 3 percent of the surface covered with stones and boulders. The total acreage of this unit is about 40 percent Leicester soils, 25 percent Ridgebury soils, 15 percent Whitman soils and 20 percent other soils. The soils of this unit were mapped together because they react similarly to most uses and to management. Some areas of this unit contain only one of the major soils, and some areas contain two or three.

Typically, the surface layer of the Leicester soils is very dark brown fine sandy loam 7 inches thick. The subsoil is grayish brown and brown, mottled fine sandy loam 26 inches thick. The substratum is 9 inches of brown, mottled fine sandy loam over yellowish brown, mottled gravelly sandy loam to a depth of 60 inches or more.

Typically, the surface layer of the Ridgebury soils is very dark gray fine sandy loam 7 inches thick. The subsoil is 17 inches thick. The upper 8 inches is grayish brown, mottled fine sandy loam, and the lower 9 inches is grayish brown and brown, mottled sandy loam. The substratum is brown, mottled, firm fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of the Whitman soils is black fine sandy loam 5 inches thick. The subsoil is dark gray, grayish brown, and light brownish gray, mottled fine sandy loam 17 inches thick. The substratum is light brownish gray, mottled, firm fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas that are made up of as much as 5 acres of moderately well drained Woodbridge soils, poorly drained Walpole soils, and very poorly drained Adrian soils. Also included are a few small areas of soils that have slopes of as much as 10 percent.

The permeability of the Leicester soils is moderate or moderately rapid. Available water capacity is moderate. Runoff is slow. Unlimed areas of the Leicester soils are very strongly acid or strongly acid above a depth of 40 inches and very strongly to medium acid below 40 inches.

The permeability of the Ridgebury soils is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. Available water capacity is moderate. Runoff is slow. Unlimed areas of the Ridgebury soils are very strongly acid to medium acid.

The permeability of the Whitman soils is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. Available water capacity is moderate. Runoff is very slow or ponded. Unlimed areas of the Whitman soils are very strongly acid to slightly acid.

Most areas of this unit are wooded (fig. 5). A few small areas are used for pasture, and a few are idle. A few small, scattered areas are filled and used for community development.

The soils of this unit are poorly suited to cultivated crops. Stoniness and wetness are the major limitations. Farming is not practical on these soils.

The soils of this unit are suited to trees. The shallow rooting zone above the high water table causes tree windthrow. The use of equipment is limited by stones and wetness.

These soils have poor potential for community development. Wetness, stoniness, and the slow to very slow permeability of the substratum in the Ridgebury and Whitman soils are major limitations. These soils are not suited to community development unless they are extensively filled. Where practical, artificial drains help prevent unstable footings and wet basements. If the soils are cleared, removing stones and boulders is often difficult. In places, onsite septic systems are not feasible; in other places they require very careful design and installation. Capability subclass VIIs; woodland suitability group 4x for Leicester and Ridgebury parts, 5x for Whitman part.

Nn—Ninigret fine sandy loam. This nearly level to gently sloping, moderately well drained soil is on outwash plains and stream terraces. Mapped areas are dominantly irregular in shape and mostly 2 to 15 acres. Slopes range from 0 to 5 percent.

Typically, this Ninigret soil has a very dark grayish brown, fine sandy loam surface layer 8 inches thick. The subsoil is yellowish brown, mottled fine sandy loam 18 inches thick. The substratum is pale brown, mottled loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Agawam and Haven soils, moderately well drained Sudbury and Tisbury soils, and poorly drained Raypol and Walpole soils. Included areas make up about 15 percent of this map unit.

The Ninigret soil has a seasonal high water table at a depth of about 20 inches. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is high. Runoff is slow or medium. Ninigret soil warms up and dries out slowly in the spring. Unless limed, it is strongly acid or medium acid.

Most areas of this soil are cleared and used for cultivated crops, hay, or pasture, or they are idle. Other areas are in woodland. A few areas are in community developments.

This soil is well suited to cultivated crops. Wetness limits the use of farming equipment early in spring and late in fall. The hazard of erosion is slight to moderate. Minimum tillage and the use of cover crops help to control erosion.

This soil is suited to trees. Machine planting is practical.

The major limiting factor for community development is the seasonal high water table. Onsite septic systems need special design and installation, and fill is required in many places. Onsite septic systems pollute the ground water in places. Slopes of excavated areas are unstable. Foundation drains help to prevent wet basements. Lawns are wet early in spring and late in fall. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

This soil is in capability subclass IIw.

About The Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area--an 86 town area.

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, a statement identifying the specific areas of concern the Team should address, and the time available for completion of the ERT study. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Elaine A. Sych (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.