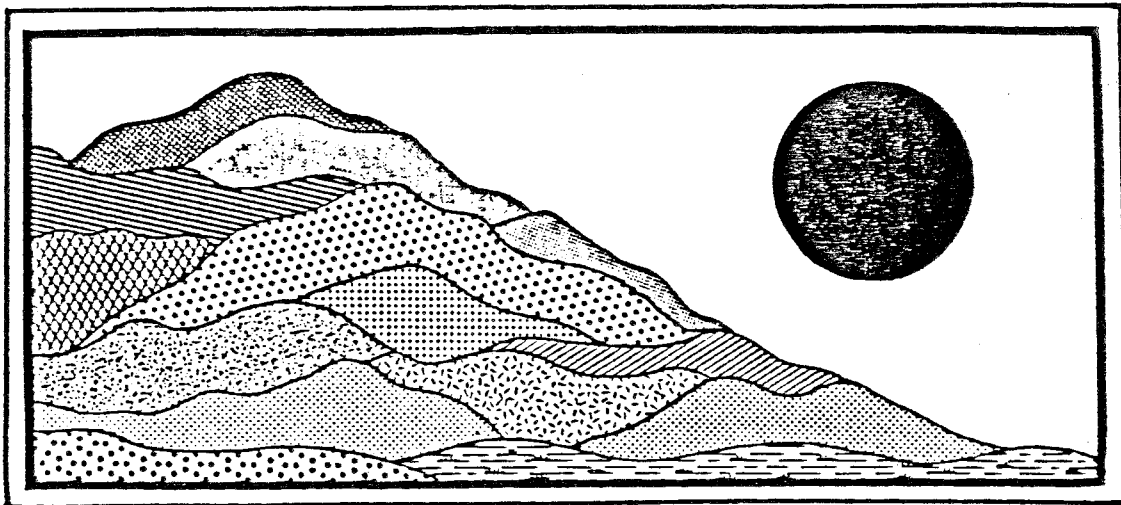


York Estates

North Stonington

Connecticut

December 1987



ENVIRONMENTAL

REVIEW TEAM

REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

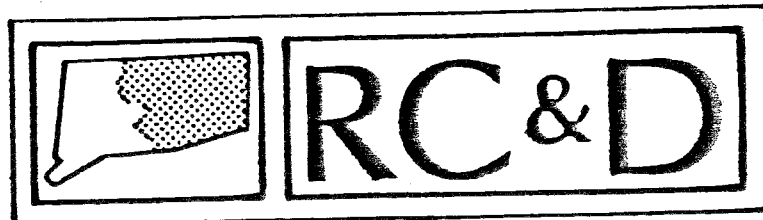
York Estates

North Stonington

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Review Date: *OCTOBER 27, 1987*

Report Date: *DECEMBER 1987*



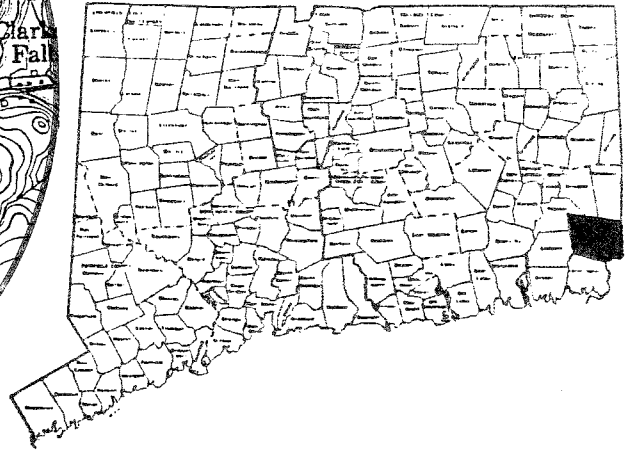
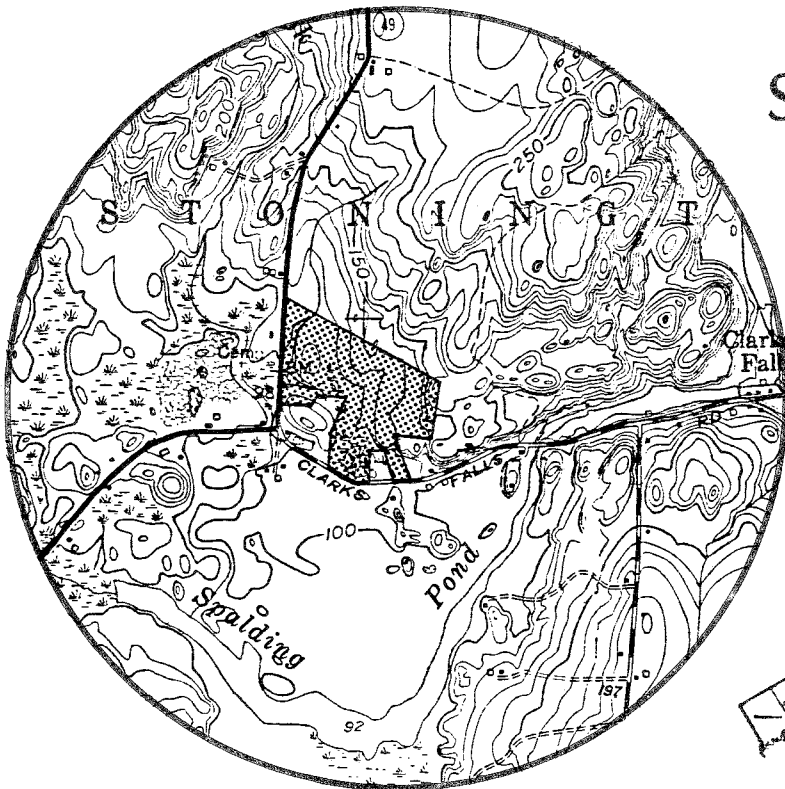
ENVIRONMENTAL REVIEW TEAM

PO BOX 198

BROOKLYN, CONNECTICUT 06234

Site Location

YORK ESTATES SUBDIVISION
NORTH STONINGTON, CONNECTICUT



EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT

ON

YORK ESTATES SUBDIVISION

NORTH STONINGTON, CONNECTICUT

This report is an outgrowth of a request from the North Stonington Conservation and Inland Wetlands Agency to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. 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 Tuesday, October 27, 1987. Team members participating on this review included:

- Don Capellaro --Sanitarian --CT Department of Health
- Barry Cavanna --District Conservationist - U.S.D.A. Soil Conservation Service
- Doug Cooper --Principal Environmental Analyst - DEP Water Resources
- Brian Murphy --Fisheries Biologist --DEP- Eastern District Headquarters
- Harry Siebert --Transportation Planner - DOT, Bureau of Planning
- Elaine Sych --ERT Coordinator - Eastern CT RC&D Area
- Bill Warzecha --Geologist - DEP, Natural Resources Center

Prior to the review day, each team member received a summary of the proposed project, a list of the Town's concerns, location maps and a soils map. During the field review the team members were given topographic maps and subdivision plans. The Team met with, and were accompanied by Commission members, the property owner, his engineer and consulting ecologist. 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 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 Executive Committee hopes you will find this report of value and assistance in making your decisions on this proposed subdivision.

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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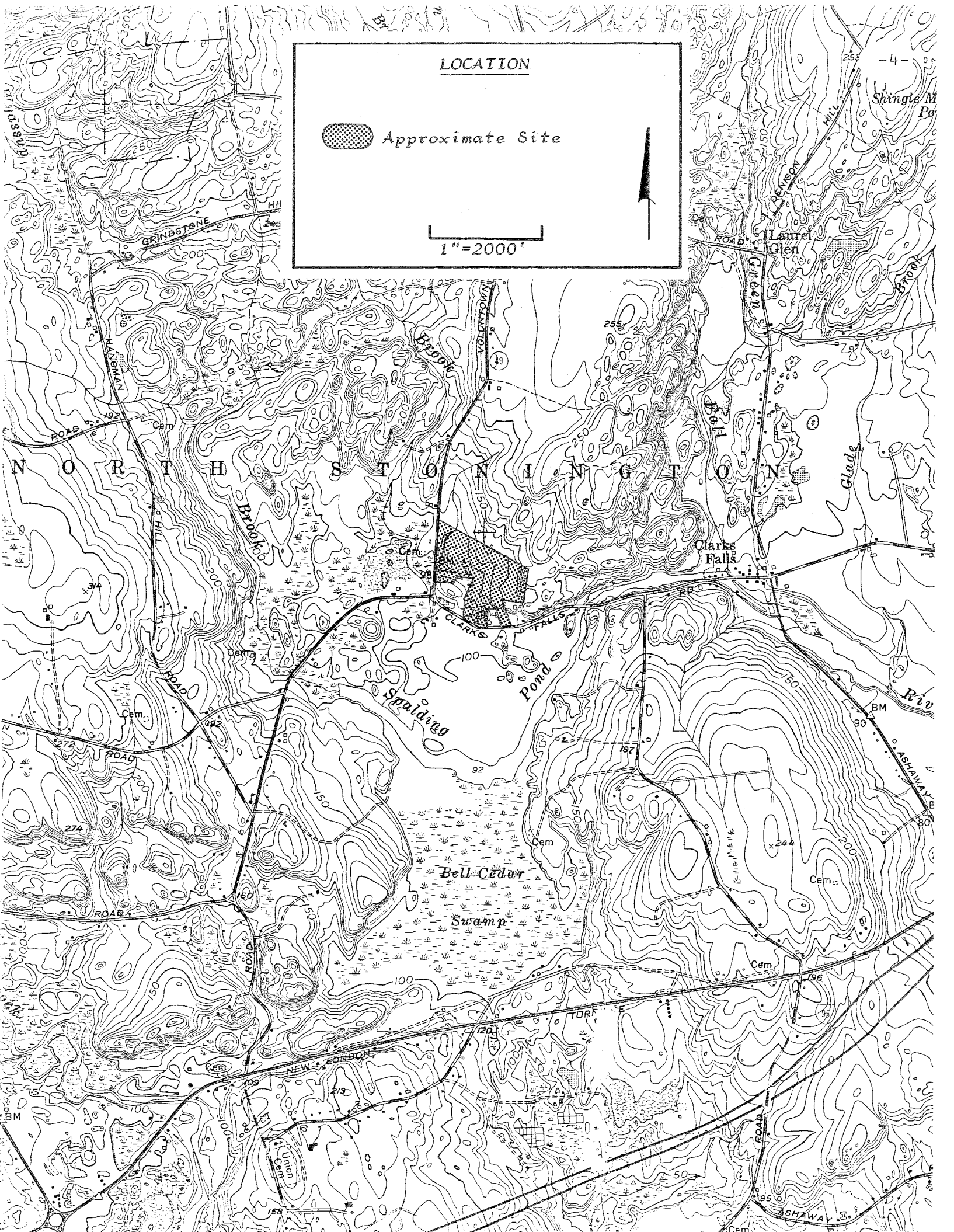
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LOCATION



Approximate Site

1" = 2000'



1. INTRODUCTION

The Eastern Connecticut Environmental Review Team has been asked to review and comment upon the proposed York Estates Subdivision. DiCesare Bently Engineers and Consultants for the applicant have prepared the plans which the Team members reviewed.

The following sections contain information, recommendations and discuss areas of concern relative to the proposal. A brief summary at the end of the report highlights these findings.

2. TOPOGRAPHY AND SETTING

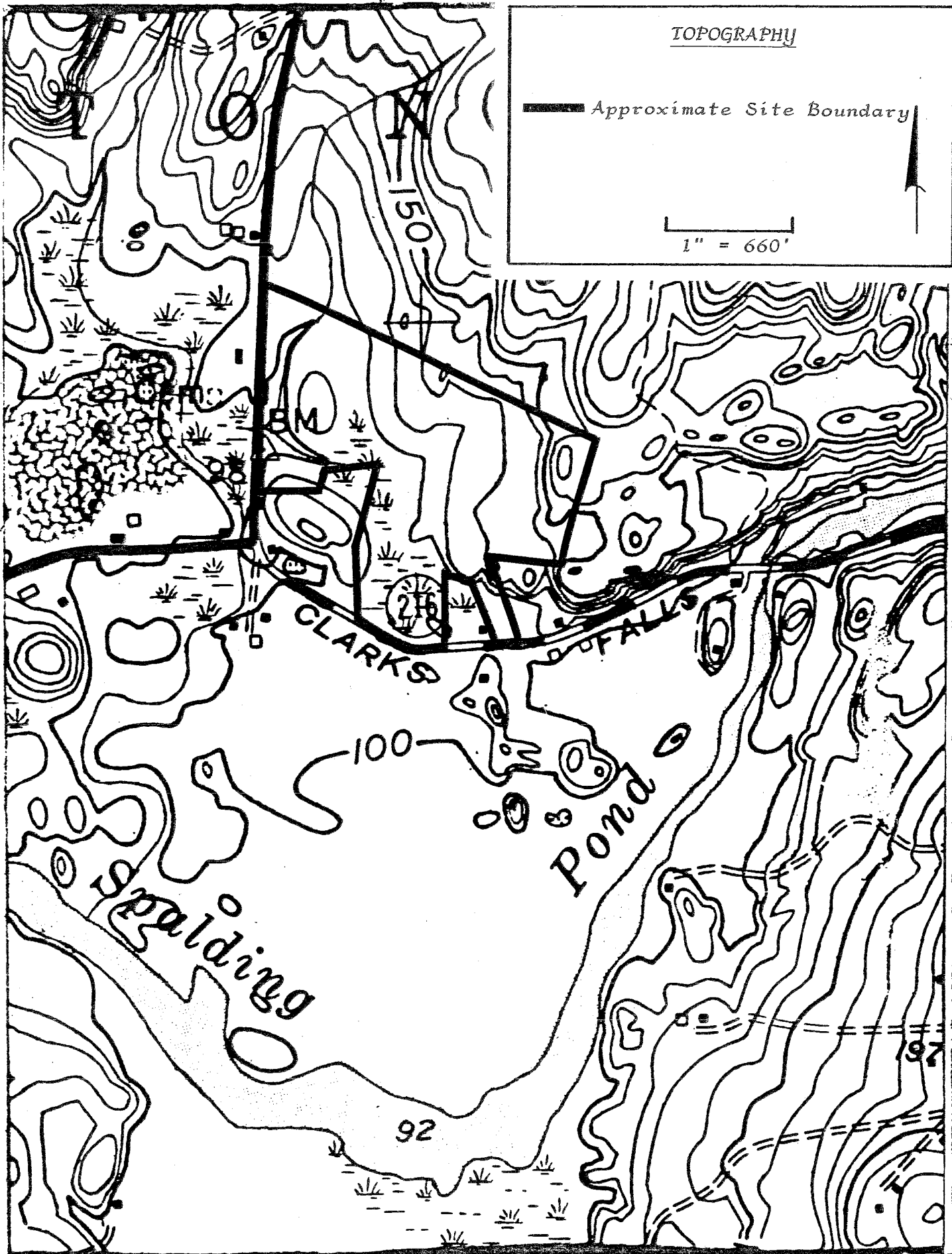
The proposed subdivision site is located in the eastern part of North Stonington. It consists of + 32 acres of wooded land, on which 5-building lots are presently proposed. Lots range in size from 3.38 acres to 10.78 acres. The irregularly shaped parcel of land is bounded on the west by Voluntown Road (Route 49) and on the south by Clarks Falls Road (Route 216). A network of gravel packed roads traverse the site. These roads will provide access to four lots. Utilizing these existing roads will eliminate the need for creating new wetland crossings. It should be pointed out that some modification of these three existing wetland crossings will be necessary.

Land-use in the area is characterized by low density single family homes and agriculture. The land north and east of the site is largely wooded and undeveloped.

The majority of the site is dominated by slopes which rise gently northward from the wetlands in the southern part to the upland part. The topography of the upland section of the site is controlled mainly by the underlying bedrock.

Maximum and minimum elevations on the site are about 170 feet and 100 feet above mean sea level.

A string of ponds are visible in the western part along Route 49. They were constructed in the early 1970's by excavating and impounding an unnamed tributary to Pendleton Hill Brook. The streamcourse flows in a southerly direction to Lot 5. At that point, it makes a 90° turn to the west, passing under Route 49 and ultimately discharging into Pendleton Hill Brook. According to Town officials, overtopping of Route 49 by flood waters in the lowlying area where the stream passes under the road (Route 49) occurs during certain storm events. (See Section 10 for further information)



3. BEDROCK AND SURFICIAL GEOLOGY

The property is located entirely within the Ashaway topographic quadrangle. A bedrock geologic quadrangle (Map GQ-403, by Tomas Feininger) and a surficial geologic map (Map GQ-712, by J. P. Schafer) have been produced for the quadrangle by the U. S. Geological Survey.

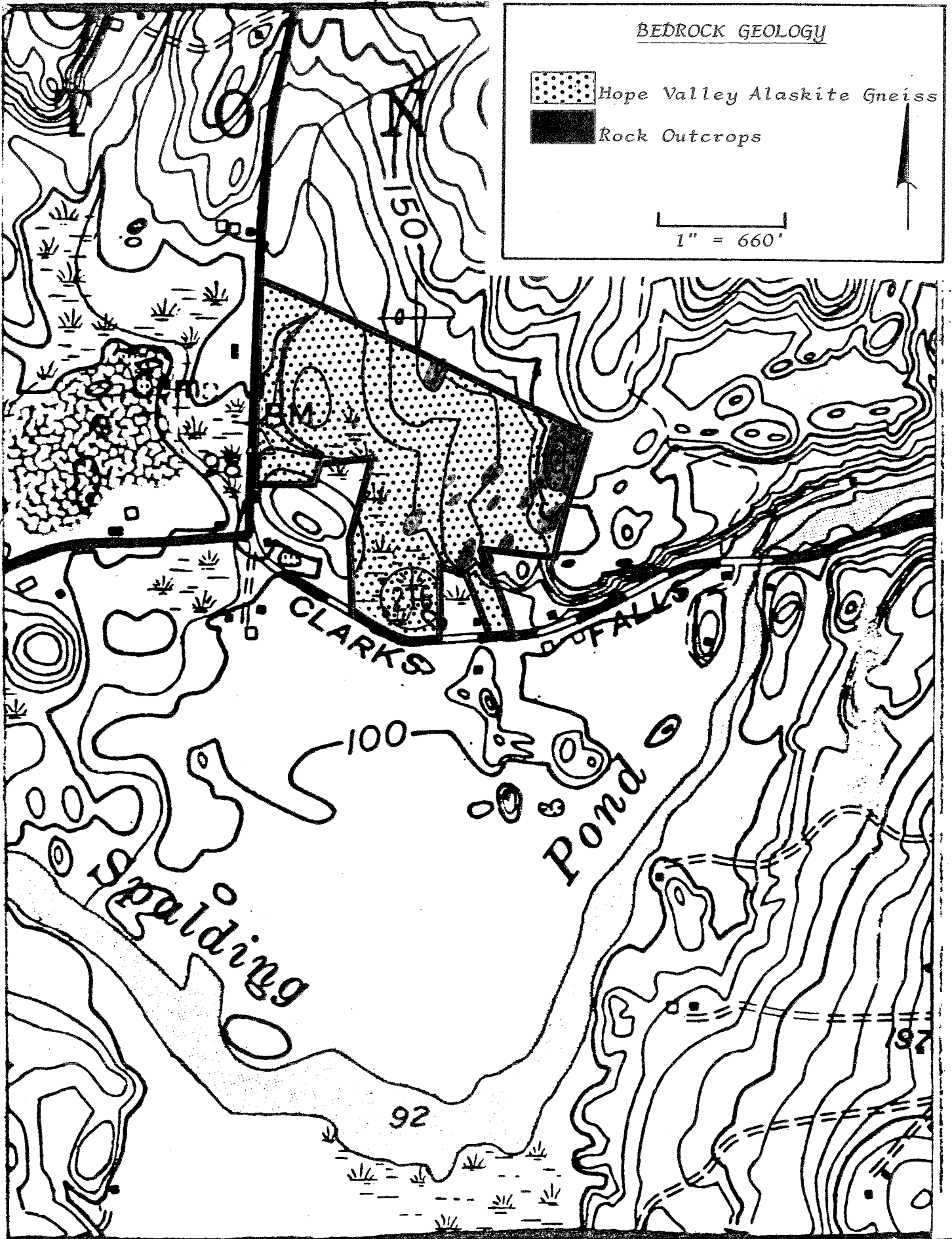
Except for the western part of the site, which contain sandy, gravelly deposits, the site is covered by a relatively thin blanket of glacial sediment called till. The till consists of a light gray mixture of sediments that range in size from clay size particles to large boulders. Based on deep test hole data and soil mapping information, the texture of the till on the site is generally sandy and loose as opposed to silty and tightly compacted. These sediments were deposited by glacial ice as it moved across the bedrock surface from north to south-southeast. It is 10 feet (or less) thick in most places.

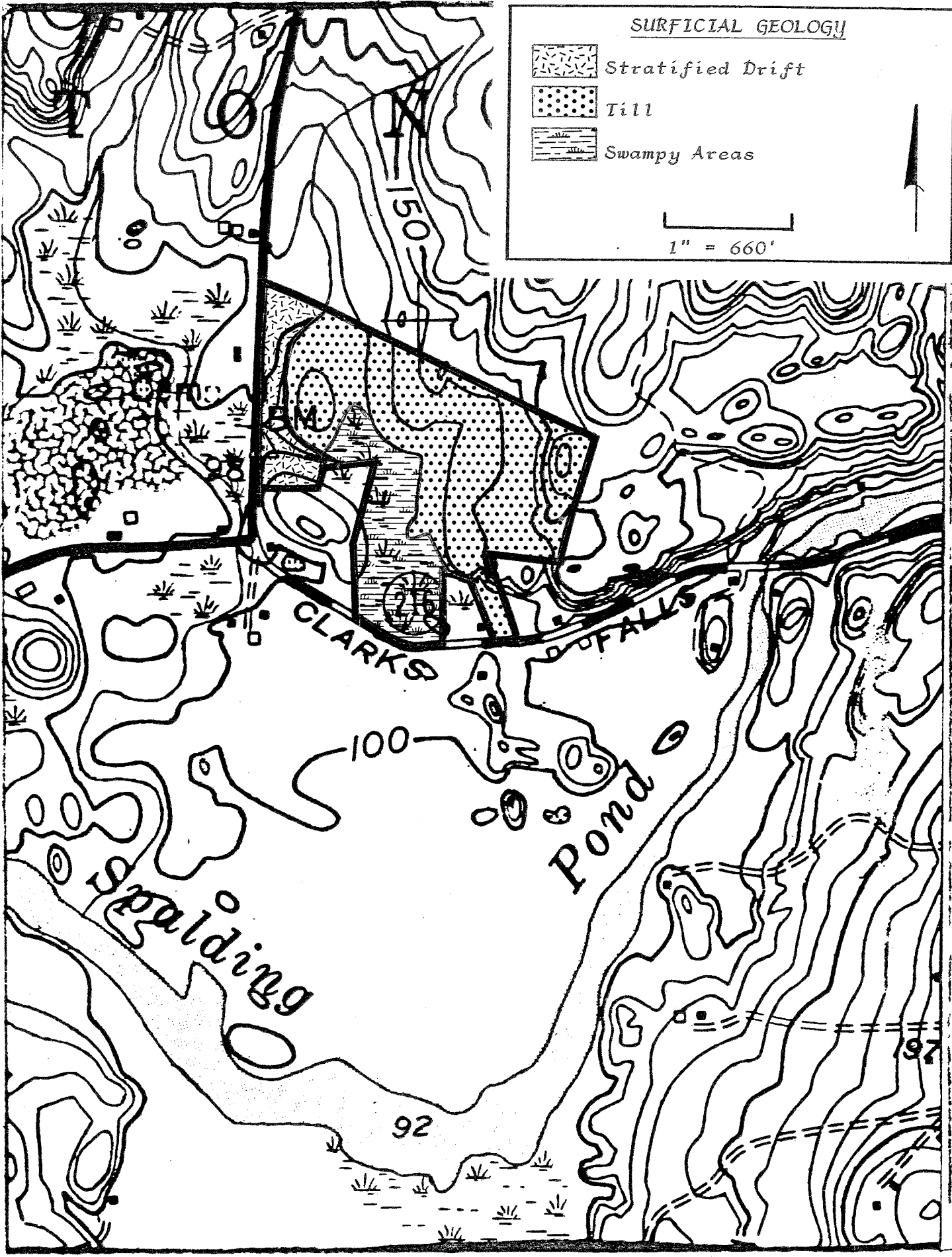
The sandy, gravelly deposits in the western part were deposited by glacial meltwater streams during ice retreat in the Spalding Pond area. They probably do not exceed much more than 10 feet in most places.

Overlying the sandy, gravelly deposits in the southern part is swamp and marsh deposits consisting of muck, peat, silt and sand.

As mentioned earlier, bedrock is at or near ground surface in several areas of the site. The bedrock geology of the site has been well described by Tomas Feininger in Map GQ-403. He identifies the bedrock underlying the site as Hope Valley Alaskite Gneiss. It consists of a light pink, medium to coarse grained alaskite gneiss, composed of the mineral microcline, quartz, albite or sodic oligoclase. Minor minerals include biotite, muscovite and magnetite. It is believed that the rock mass formed from molten magma which was subsequently metamorphosed (geologically altered by great heat and pressure).

A gneiss is a metamorphic rock in which thin bands of elongate or flaky minerals alternate with layers of granular minerals. This gives the rock a banded appearance. The adjective "alaskite" refers to light-colored rocks, which contain little or no dark colored minerals such as biotite or hornblende and which form from molten material, i.e., magma.





The underlying bedrock is a source of water to many homes in the region and will be the likely source of domestic water to homes in the proposed subdivision.

Based on soil mapping data, deep test hole information and present septic system locations, the geology of the site should pose no major obstacles for the development of five building lots on 32 acres. Deep test hole information indicates that conventional septic systems can be installed on each lot. Potential areas of concern such as high water tables, shallow bedrock and slow percolation rates were not found in any of the deep test holes except 3A where bedrock was encountered at about 1.5 feet below ground level. The latter area was abandoned and another site (3-B) was chosen and found to be satisfactory. Because of the fast percolation rate (1.3 minute/inch) results on Lot 6, it is recommended that the well and septic system be separated by more than the prescribed 75 feet in order to adequately protect the well from septic effluent. All well locations should be shown on the plan. (Also refer to Section 7, SEWAGE DISPOSAL)

The applicant plans to utilize existing wetland road crossings for access to four (4) lots. This will require upgrading of the road bed and installation of larger diameter drainage pipes. These modifications should have little or no impact on the wetlands provided a sound erosion and sediment control plan is closely followed. Any work in these areas should be done during the dry time of the year.

4. SOILS

--See accompanying chart for Soil Potential Ratings

--Erosion and Sediment Control Plan should be detailed for the proposed driveway construction. Since the driveways are to serve 2 lots, the common portion should be constructed by the developer and the detailed Erosion and Sediment Control Plan should be provided.

--The Agawam/Merrimac soils have rapid percs and, as such, there should be double separating distance between septic systems and wells. Consideration should be given to doubling the buffer between the systems and the wetlands.

SOIL POTENTIAL RATINGS FOR SEPTIC TANK
ABSORPTION FIELDS BY MAP UNIT

MAP SYMBOL & MAP UNIT NAME	POTENTIAL RATING	CONCERNS	CORRECTIVE MEASURES	ADDITIONAL CONSIDERATIONS
AfB - Agawam	High	Fast perc rate	Double separating distance between wells and absorption field.	
CcB-Canton and Charlton	Very High	None	None	None
CrC-Charlton	Very High	None		Feasibility study, increase area of investigation to utilize the deepest soils. Verify depth to bedrock.
Hollis	Extremely Low	Depth to bedrock.		
CrD-Charlton	High#	Slope	Design and installation to accommodate for slope.	Same as above, in addition investigate utilizing flattest slopes.
Hollis	Extremely Low	Slope, depth to bedrock.		
HrC-Hollis and rock outcrop	Extremely Low	Depth to bedrock.		Same as for CrC.
Charlton	Very High	None		
HrD-Hollis and rock outcrop	Extremely Low	Depth to bedrock, slope.		Same as CrD
Charlton	High#	Slope.	Design and installation to accommodate for slope.	
MyB - Merrimac	High	Fast perc rate	Double separating distance between wells and absorption field.	
Sf - Scarboro	Extremely Low	Fast perc rate, depth to water table.		Drainage needed. Access to drainage outlet unlikely.
SxB-Sutton	Low	Depth to water table.	Fill, curtain drain and drainage swale.	Access to drainage outlet.

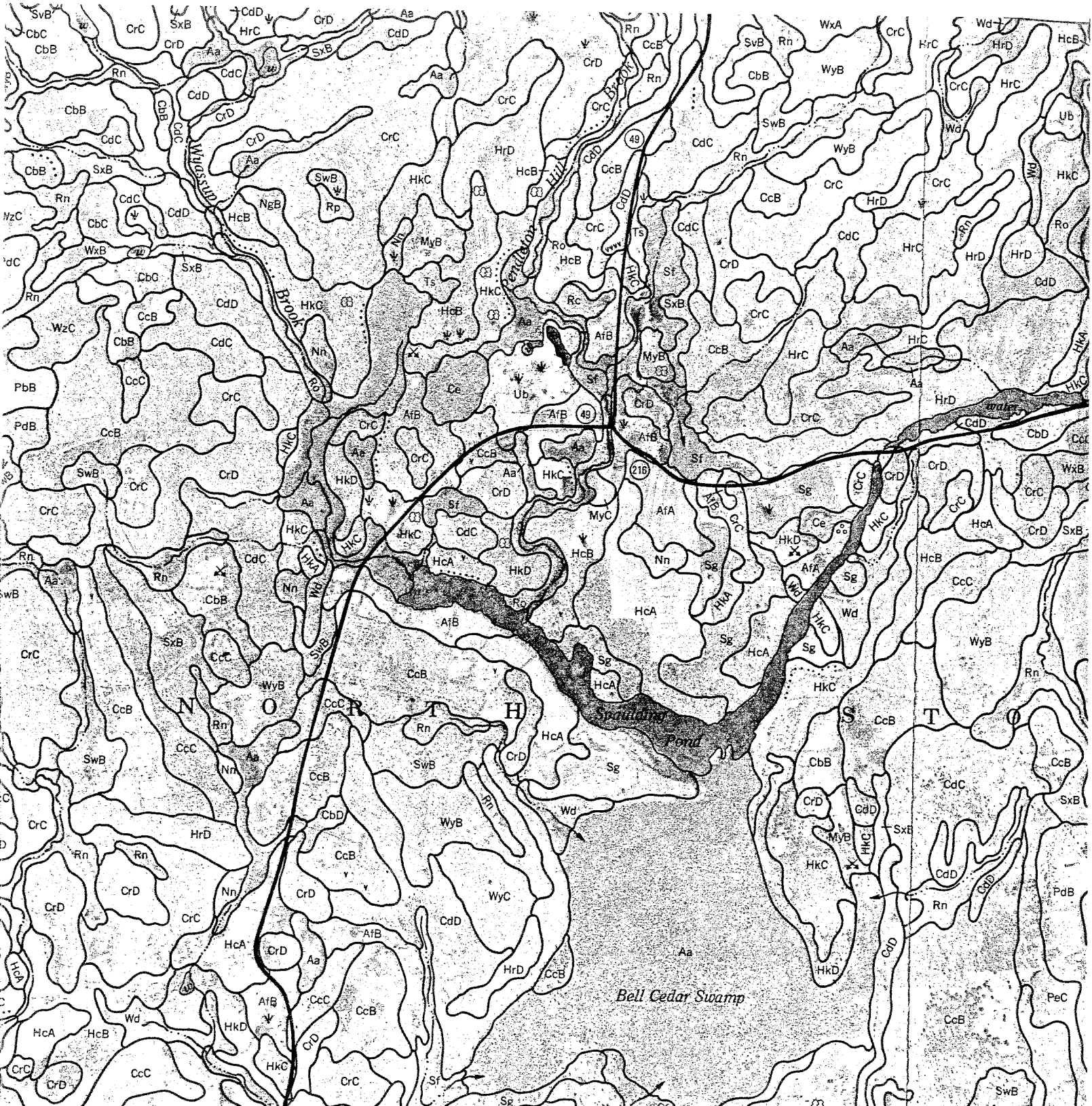


United States
Department of
Agriculture

Soil
Conservation
Service

New London County USDA-SCS
562 New London Turnpike
Norwich, CT 06360
887-4163

Scale 1" = 1320'



5. HYDROLOGY

Most of the parcel lies within the drainage area of the unnamed stream located in the western part. This stream is tributary to Pendleton Hill Brook, which ultimately empties into Spalding Pond. At its intersection with Route 49 (near Lot 5), the stream drains an area of 173 acres. The remainder of the site flows into the wetland area in the southern part. It is then routed under Clarks Falls Road and ultimately into Spalding Pond.

Based on drainage calculations supplied to Team members by the project engineer it is indicated that the proposed five (5) lots would increase runoff from the 172 acre drainage area by four percent (4%). This does not account for natural storage available in ponds and wetlands in the eastern and southern part, respectively.

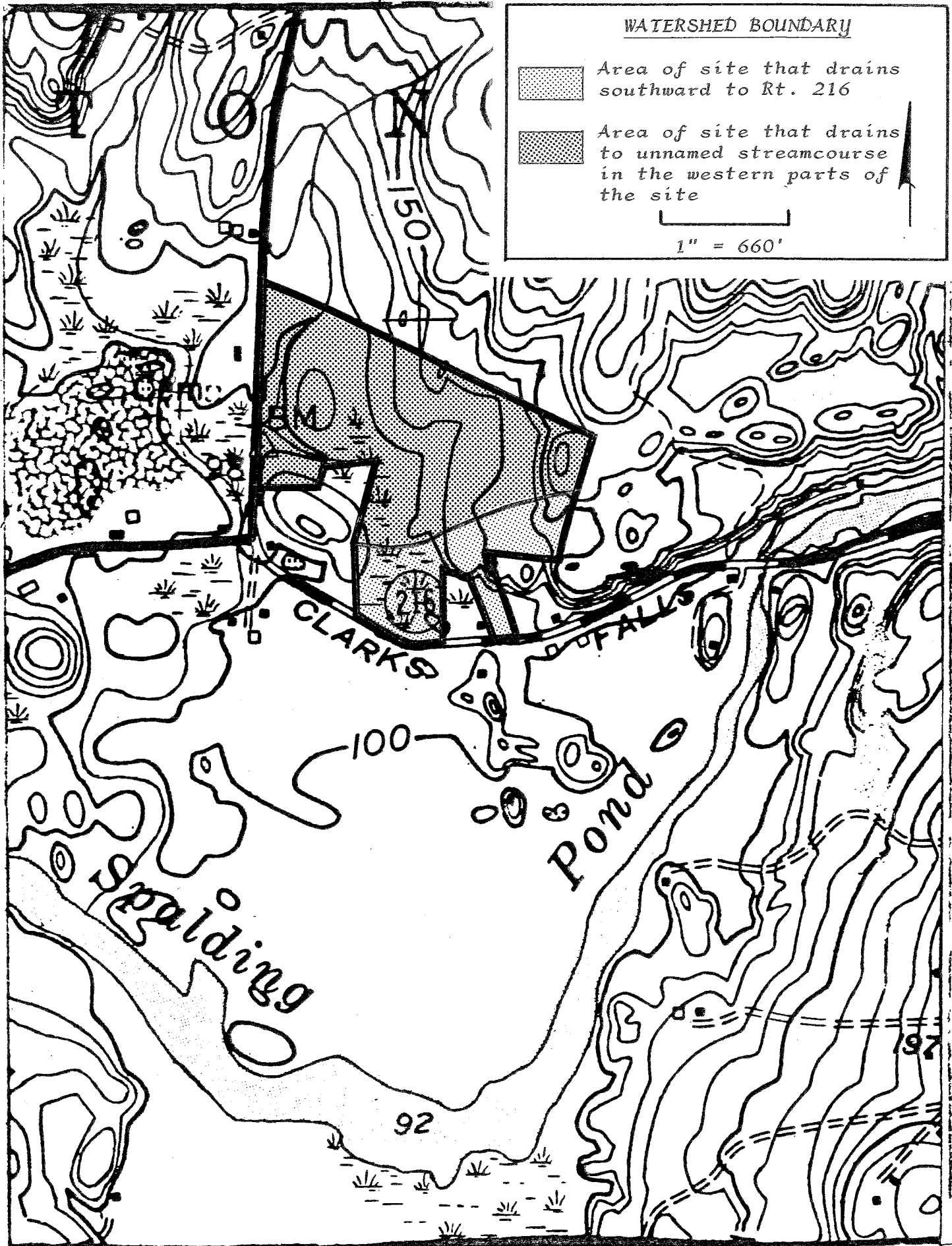
Because of the low densities proposed under the present plan and the availability of natural detention areas, it does not seem that on-site detention will be required.

As mentioned earlier in the report, the remainder of the 173 acre drainage area is largely undeveloped. As a result, future development in the watershed could have a significant impact on the potential for flooding and/or streambank erosion in the drainage area. Therefore, it is strongly suggested that each developer do his/her part to control runoff from their respective developments, if necessary.

The flooding problem at a low point on Route 49 discussed earlier in the report should be taken into consideration, since uncontrolled runoff in the 172 acre drainage area could further aggravate this existing problem. Each developer should provide a stormwater management plan which includes pre- and post-development runoff calculations for town review.

6. WETLANDS REVIEW

The plans and specifications for the subdivision project relative to potential wetland impacts and in light of the issues raised by the North Stonington Conservation Commission and Wetlands Agency have been reviewed, the findings are as follows:



WATERSHED BOUNDARY



Area of site that drains southward to Rt. 216



Area of site that drains to unnamed streamcourse in the western parts of the site



1" = 660'

CLARK'S

FALLS

Spalding

Pond

100

92

197

1) The regulated wetlands and watercourses on the site have been delineated by a certified soil scientist and have been transferred to the subdivision map by survey methods. This is highly desirable in that it renders a relatively accurate portrayal of regulated areas for land use decision making.

2) The proposal calls for five (5) proposed building lots ranging from three (3) to ten (10) acres in size. Based upon review of these lots there is an adequate area of non-wetland soils existing on each proposed lot to provide a suitable home-site for construction of single family residences and the associated wells, septic systems and other utilities.

3) The routes of access to lots numbered 1, 2, 5 and 6 will require the traverse of regulated wetlands. It appears that the site design has chosen the most appropriate locations of disturbance. These driveway crossings will be the locations where erosion control efforts will be most important to protection of the wetland/watercourse resource. The plan activity be re-submitted with specific site development details. This will enable the wetlands agency to further review detailed standards for driveway construction and erosion control measures.

4) Based on the relatively low density of development proposed for this subdivision, it is felt that no significant impacts to wetlands or watercourses on or off the site will result from development of this property provided due care is exercised in the implementation of erosion controls, septic system design and installation, and driveway construction. It is suggested that future homesites maintain a minimum 50 feet undisturbed buffer between regulated areas and the homesites on each lot to further minimize any potential collateral impacts during construction, earthwork and grading. Such buffer areas will also serve to protect the integrity of the wetlands, watercourses and ponds for wildlife.

5) On occasion, conservation easements or deed restrictions can be imposed to add a higher level of protection to important wetlands, streams or ponds to give future homeowners guidance in the appropriate management of the wetland portions of their lots. Such restriction can: (1) Permit brush cutting but discourage clear cutting of trees; (2) Prohibit lawn or ornamental landscaping of the pond or wetland edge while permitting plantings which may encourage wildlife or birdlife; (3) Restrict construction of outbuildings or other accessory uses in or around important wetland features.

7. SEWAGE DISPOSAL

Soils on lots along Route 49 appear to be more permeable than those on Route 216 although the latter 2 lots have good drainage soils. Lot 1, however, apparently contains an area where rock outcrops are present and a larger area where bedrock could be scattered and at a shallow depth. The main concern would be to identify a sufficiently large area with an adequate depth of soil capable of accommodating the necessary amount of subsurface leaching area. Apparently shallow ledge was encountered at one test hole on Lot 5. Although none was found in the second hole identified, further testing is warranted. Soils for the most part in this area (along Route 49) are indicated as being quite permeable, more so with increased depth. Also, with the presence of surface water and wetlands there is more of a tendency for groundwater to be relatively high, although not critically so. However, due to the type of soils (s) present it would be prudent to keep leach systems as shallow as possible and spread out in order to minimize possible adverse effects on the immediate underlying groundwater table.

Due to the low density of lots and with sufficient testing, proper design and construction practices the site appears to be generally feasible for the intended purpose.

8. WATER SUPPLY

Water supply for the proposed lots is to be provided by individual on-site wells.

In general, private wells should be located to the high side of lots with proper separating distance from on-site sewage disposal systems and other potential sources of pollution, particularly buried fuel storage tanks. Wells must also be properly separated from water impoundments, watercourses and drains and be protected from surface runoff and erosion problems.

Properly constructed drilled wells will generally afford the greatest level of protection against possible sources of pollution. Also, drilled wells usually allow for more flexibility in actual site placement. In this particular subdivision where most lots have pervious soils consisting of sand or sandy gravel which are saturated by groundwater at not too extensive depths, there may be more of a tendency to utilize shallow dug wells. Such wells, if used, must be carefully located and constructed if they are to remain free of contamination. These wells, like drilled ones,

are to be constructed by persons who are state licensed for the installation of this type of well. The primary consideration in the construction of such wells is the prevention of the entrance of contaminating material directly from ground surface or in the subsurface water which has entered the well with insufficient soil filtration. There is also indications that some of the lots may have excessively fast seepage. This could require doubling the normal minimum separating distance between a well and subsurface sewage disposal system in order to provide additional protection for sanitary water quality. However, as these would be large lots there should be adequate space available to locate and maintain proper distances. (Refer to Section 3 and 4 for additional comments)

9. FISH RESOURCES

Site Description

The proposed York Estates subdivision contains a total of three (3) small man-made ponds. Water level in all ponds was extremely low at the time of the field review (10/27/87). The ponds eventually drain into Pendleton Hill Brook. Waters of this brook are classified by the Department of Environmental Protection (DEP) as "Class A". Designated uses for a "Class A" watercourse are: potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply, and other legitimate uses.

Fish Population

Ponds on this property support limited populations of warmwater fish such as chain pickerel and bluegill sunfish. Conversely, Pendleton Hill Brook supports a valuable recreational coldwater fishery. Fish species expected to inhabit this brook are: native (wild) brook trout, longnose dace, blacknose dace, and white sucker. The Bureau of Fisheries (DEP) stocks Pendleton Hill Brook on an annual basis with more than 600 yearling (6-8") brook trout in the Town of North Stonington.

Impacts

This five (5) lot development is not expected to significantly increase water drainage into Pendleton Hill Brook. Consequently, the proposed York Estates Subdivision will have a minimal, if any, impact upon the aquatic resources of Pendleton Hill Brook. However, the small ponds on this property can be negatively impacted. The following impacts of development can be expected if proper mitigation measures are not undertaken:

1. Site construction soil erosion and sedimentation of ponds through increased surface runoff from unvegetated zones - erosion and sedimentation due to construction activities has been regarded as a major causative in the pond eutrophication or aging process. Accelerated pond fertilization brought on by development can seriously impact existent pond fisheries, recreational value, and water quality. In particular siltation would reduce water depth, encourage the growth of nuisance aquatic plants, reduce fish egg survival, reduce aquatic insect production, potentially precipitate dense algae blooms, and significantly contribute to the depletion of oxygen in waters overlying decaying sediments.

2. Percolation of septic effluent into ponds - a failure of proposed septic systems to operate properly would be potentially dangerous to pond environments. Nutrients and assorted household chemicals that residents may place in septic systems could enter pond waters in the event of a failure. The introduction of septic effluent could result in a major threat to fish, public health, and overall water quality conditions. In addition, septic effluent will stimulate the growth of nuisance aquatic vegetation and algae.

3. Transport of lawn fertilizers and chemicals to ponds - runoff and leaching of nutrients from fertilizers will stimulate nuisance aquatic weed growth. Introduction of lawn chemicals may result in "fish kills" and water quality degradation.

Recommendations

Impacts of residential development can be prevented. The following mitigative measures will insure maximum aquatic resource protection:

1. Install and maintain proper erosion and sedimentation controls during construction - this includes such mitigative measures as silt fences, hay bales, and catch basins. The developer should direct all runoff away from ponds and regularly maintain catch basins.

2. Provide a 100 foot open space buffer zone around pond edges - this protective strip will help filter-out sediment and slow down surface runoff. Buffer zones should be widened if silt deposition should continue to enter ponds.

3. Properly design, install, and locate individual septic systems ~~se~~ maintain septic systems on a regular basis to prevent failure.

4. Improvements to the small ponds will have to be made if the developer or subdivision residents would like to utilize ponds for fishing and other recreational purposes - ponds must be deepened to enhance warmwater fish survival; otherwise, "winterkill" may occur. Winterkill occurs when fish die under the pond's ice due to lack of oxygen. Deeper water not only protects fish from winterkill but also discourages excessive growth of aquatic vegetation. Additionally, to create a good, quality warmwater fishery, ponds should be restocked with a combination of largemouth bass and bluegill sunfish. Recommended stocking rates are 100 largemouth bass and 1,000 bluegill sunfish for each surface acre of pond. Technical assistance regarding these matters can be obtained from DEP professionals.

5. Limit liming and fertilization of lawns near all ponds - this restriction will abate the amount of additional nutrients entering ponds.

10. DRAINAGE ON ROUTE 49

If there is a drainage problem on Route 49 north of the Route 213 intersection, the Connecticut Department of Transportation does maintain its drainage facilities and where a short-term event occurs that may impede flow through a culvert the town should formally contact the DOT District II office relative to corrective action.

If the problem appears related to siltation due to land use changes, the person(s) responsible should be contacted to remedy the problem.

11. SUMMARY

NOTE: This is a brief summary of the major points, concerns and recommendations of the Team. You are strongly urged to read the entire report, and to refer back to specific sections in order to obtain all the information concerning a certain topic.

--Based on soil mapping data, deep test hole information and present septic system locations, the geology of the site should pose no major obstacles for the development of a five (5) lot subdivision.

--On Lot 6, because of the fast percolation rate, it is recommended that the well and septic system be separated by more than the prescribed 75 feet in order to protect the well from septic effluent.

--Consideration should be given to doubling the buffer between the septic systems and the wetlands.

--A detailed Erosion and Sediment Control Plan should be developed for driveway construction. Common driveways (serving 2 or more lots) should be constructed by the developer.

--It does not seem that on-site detention will be necessary because of the low-density proposed and the availability of natural detention areas.

--Since most of the 173 acre drainage area in which the study site lies is undeveloped future development in the watershed could have a significant impact on the potential for flooding and/or streambank erosion in the drainage area. Each developer will have to do his/her part to control runoff from their developments if necessary.

--Each developer should prepare pre-and post-development runoff calculations for the Town to review.

--It is felt that no significant impacts to wetlands or watercourses on or off the site will result from this proposed development provided due care is taken in implementing erosion controls, septic system design and installation, and driveway construction.

--This proposed subdivision is not expected to significantly increase water drainage into Pendleton Hill Brook so there should be minimal if any impact to aquatic resources of Pendleton Hill Brook.

--The small ponds could be negatively impacted if proper mitigation measures are not taken.

--If there is a drainage problem on Route 49 the Town should formally contact the Connecticut Department of Transportation District II Office relative to corrective action.

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.