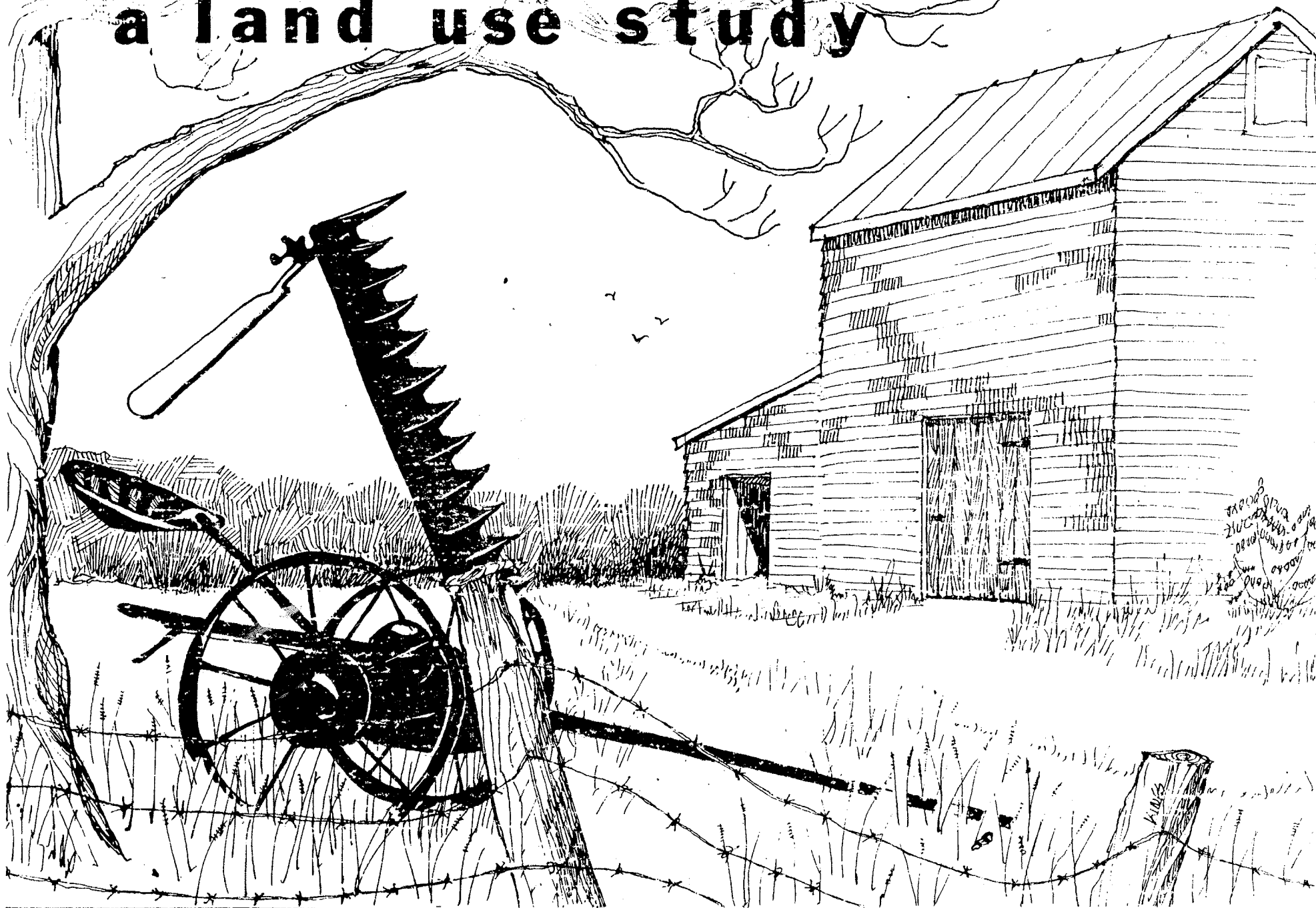


Green Springs

LOUISA COUNTY VIRGINIA

a land use study



MEADE PALMER

LANDSCAPE ARCHITECT

WARRENTON, VIRGINIA

22186

FELLOW AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

57 Culpeper Street

1 December 1973

Miss Elizabeth A. Nolting, President
Historic Green Springs, Incorporated
Gordonsville, Virginia 22942

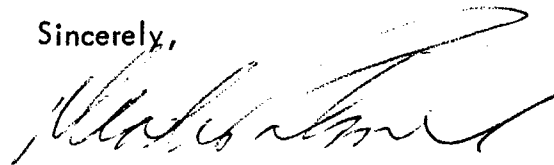
Dear Miss Nolting:

It is with a great deal of pleasure that I transmit, herewith, the Land Use Report for Green Springs.

It is my hope that, amid the claims and counter claims, the information here presented will give the residents and others who are interested a fuller appreciation and better understanding of this extraordinary area. That it is such an area is, I believe, proven beyond a doubt by the findings of this report.

Beyond its value to the residents of Green Springs I would hope that the methods and procedures of the report will be of assistance to others faced with similar problems.

Sincerely,



MEADE PALMER

MP:S

funding for this study was provided in part by the
NATIONAL ENDOWMENT FOR THE ARTS

PAUL SUMMERS DULANEY, 1913-1972

This report is dedicated to the memory of Paul S. Dulaney whose concern for the future of Green Springs and whose wisdom and wise counsel provided the impetus for the report. Throughout its preparation his presence has been missed both as a professional and as a friend and confidant.

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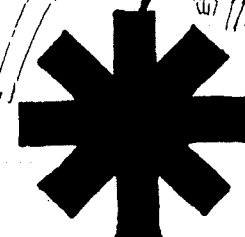
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purpose & findings



PURPOSES

conservation
and
enhancement

This land use study has been undertaken to determine how present and future land-use decisions in Green Springs can be directed to conserve or enhance the welfare, economy and amenities of Green Springs as well as that of Louisa County, in which Green Springs is located. How can the exceptional qualities of both the life and environment of Green Springs be sustained when faced with new and forceful pressures?

first rural
National
Historic
District

Green Springs, designated a Critical Environmental Area and an Historic District by the State of Virginia and the first rural National Historic District by the federal government, is on the brink of several critical decisions which could radically alter the character and quality of Green Springs. One of the decisions involves a major public facility, a state prison proposed in the heart of Green Springs' valley, and the other, a major private activity--vermiculite mining.

healthy
growth

The purpose of this study is to provide recommendations and policies for land uses in Green Springs which put the future and welfare of the region in such a perspective that immediate gains can be balanced against long-term future benefits as well as against long-term past assets. Such recommendations and policies can provide a basis for local, county, state and federal agencies and for the local residents in their decisions on both immediate and future land-use issues. Most importantly, the land-use recommendations show: how sound planning can encourage healthy growth and change without freezing the area and its residents in a museum. Such planning can indicate how to conserve the best of the past and to encourage the best for the future.

A land-use study for a unique environment, such as Green Springs, requires special attention to the physical, social, cultural, historical and environmental factors. Consequently, this report focuses on how the amenities of Green Springs developed and how they can be enhanced through a comprehensive planning program.

Such planning cannot be carried out in a vacuum as it is an integral part of a public planning and political process. The importance of the political process and the public agencies in

achieving the development and environmental goals for both Green Springs and Louisa County is, therefore, clearly recognized in this report.

It is hoped that other places in this country will be able to profit from the work and experience at Green Springs. Although Green Springs is an unusual area, many other places have their own sets of amenities and problems which require a sensitive planning program as is suggested in this report.

MAJOR STUDY FINDINGS

comprehensive
planning

Since the future of the rural way-of-life and many of the environmental qualities of Green Springs are at stake with the threats of the major decisions on the state prison and vermiculite mining, this is an appropriate time to launch a comprehensive planning program for Green Springs. Keyed to such a planning program are two elements: environmental planning and the political process. These two concerns are reflected in the following land-use action recommendations whose goals are to guide the growth and to conserve the environmental, historical and cultural qualities of Green Springs.

establish
historic zone

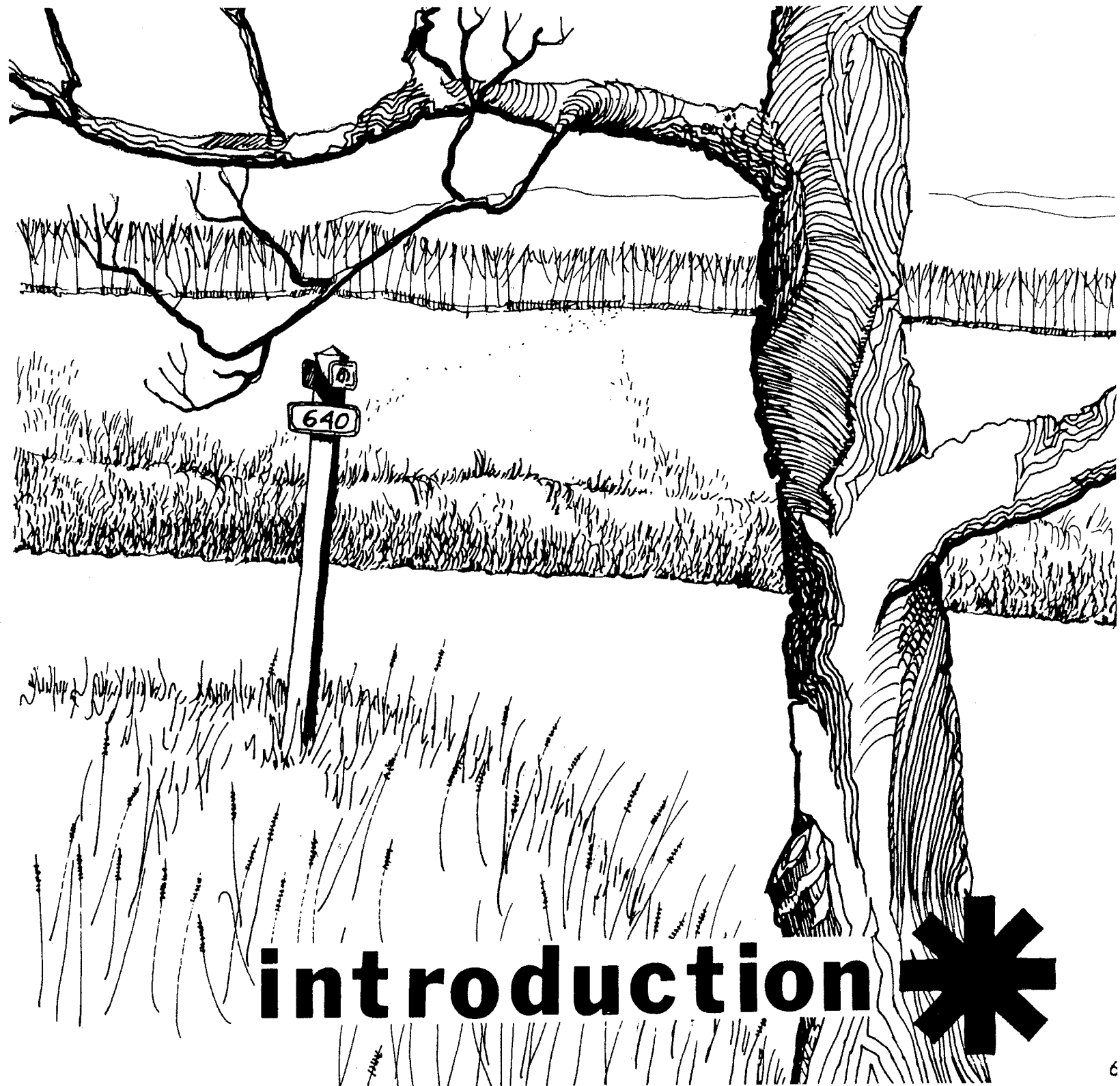
- An Historic District Zone should be established to assure that the best of the Green Springs' heritage is protected and that future development will complement and adapt to that heritage. An Historic District Zone for Green Springs should include varied land uses recognizing the functions of the history, culture and landscape, and regulations to protect the air and water quality, control signs and set site development requirements.

regulate uses

- No public facilities, including the state prison nor commercial or industrial activities including extractive industries, should be allowed unless they meet the policies, criteria and regulations of the Historic District Zone.

- | | |
|--------------------------|--|
| road
designation | <ul style="list-style-type: none"> ● The roads through Green Springs should be designated as scenic roads and byways and should be zoned accordingly, and regulated to protect their scenic qualities and prevent widening, paving or inappropriate signs and developments. |
| scenic
easements | <ul style="list-style-type: none"> ● The open fields and vistas, which form an important part of the visual character of Green Springs, especially those seen from the roads, should be protected by scenic easements and maintained as open areas. |
| watershed
protection | <ul style="list-style-type: none"> ● The South Anna River watershed, in which Green Springs is located and which extends into Albemarle County and beyond Gordonsville, should be protected from deleterious intrusions and should be established as a linear open space and recreation system with trails for public use. |
| visitation | <ul style="list-style-type: none"> ● Visitation can be an important economic activity for Green Springs and Louisa County if Green Springs' rural environment with its history and culture is protected and conserved. The potential of tourism, including the possible development of an interpretative center and a controlled transportation system, should be investigated. |
| planning | <ul style="list-style-type: none"> ● Instrumental to the implementation of these recommendations is the establishment of a county planning program which, working with regional and sub-county units, can prepare a plan with regulations setting forth county objectives and the means of achieving them. |
| cooperation
essential | <ul style="list-style-type: none"> ● Cooperation and coordination between citizen groups such as Historic Green Springs, Inc., and public officials is essential. The special skills and powers of each need to be recognized and utilized. Working committees on tourism |

and new protection techniques should be set up with representatives of both public officials and private groups, including Historic Green Springs, Inc. Green Springs and Louisa County are in the unusual position of having many options to demonstrate how preservation, planning and politics can make a rural area both viable and amenable.



THE GREEN SPRINGS STORY

location

Green Springs is an area of approximately 14,000 acres of gently rolling, low farmlands in Louisa County, Virginia. Named for its spring, famous for its medicinal cures in the 19th century, Green Springs has remained a productive farming area, with few disruptive intrusions despite its proximity to two growing urban centers--Richmond, 60 miles away and Charlottesville, 25 miles away--as well as to a new interstate highway connecting the two centers. Today, Green Springs can be seen as a living example of the evolution of a landscape and how events of natural history have ultimately determined how man would settle and make use of the land. (Area Location Map No. 1, Page 8 .)

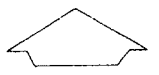
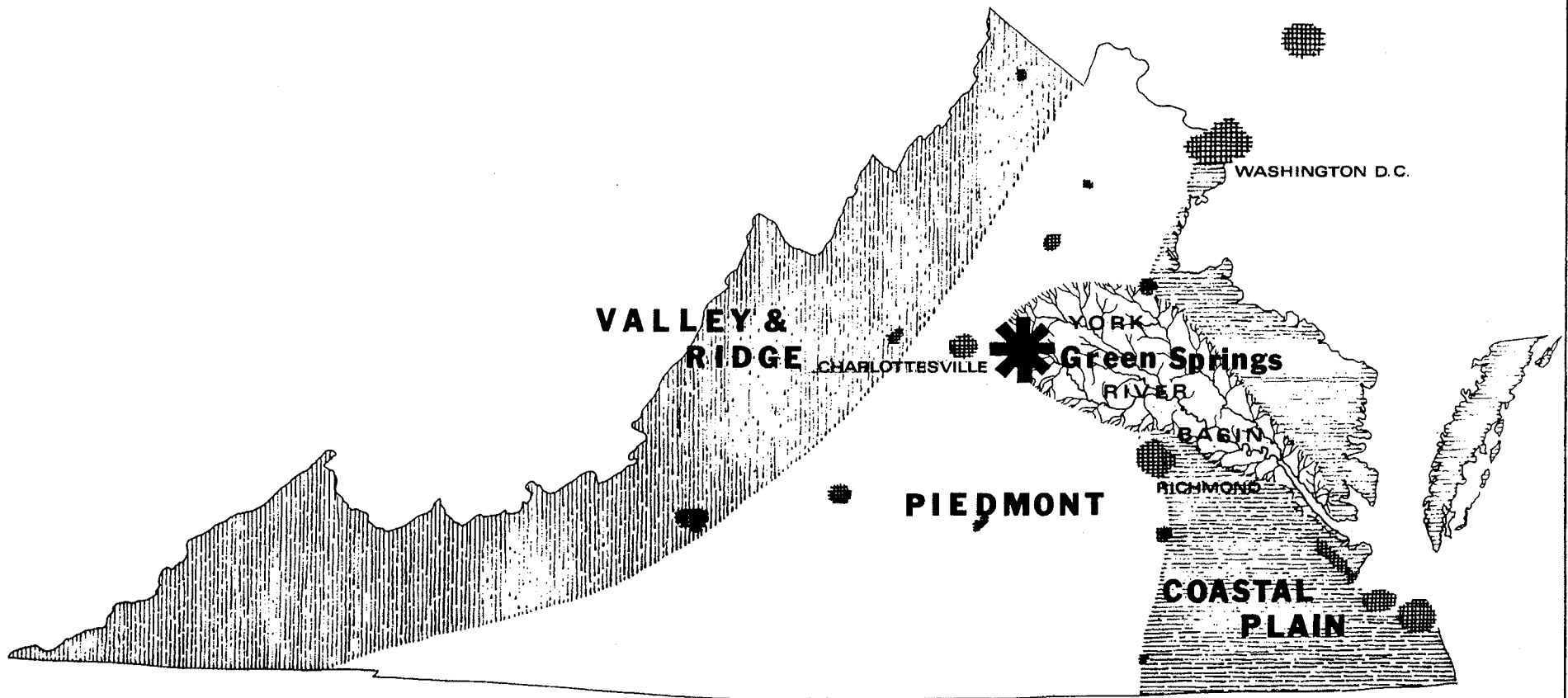
In many ways, Green Springs looks like many other agricultural areas in the Piedmont. Its topography and vegetation are not too different from other Virginia Piedmont agricultural areas. Its undulating lands are ringed by a small ridge, interspersed with occasional creeks and woods, dotted with grand and modest houses, a store, a tavern, churches, and lived in by a varied socio-economic mixture of people. This picture is not unusual in many rural areas.

distinct landscape

Green Springs, however, is distinctly different from most Piedmont agricultural sections. Its fertile soil has helped to produce a prosperous agricultural region which has been able to withstand the depressions and despoliations afflicting so many other agricultural areas. Thus, its unusual array of rural architecture, including 23 houses recorded in the Library of Congress Archives and 34 listed in the National Register of Historic Places, is still intact. The continuous prosperity of Green Springs, combined with the interesting inventory of well-maintained houses and buildings in harmonious settings, has resulted in Green Springs sustaining a scenic, social, architectural and agricultural integrity rarely found in this country today. Green Springs is a distinct cultural and historic landscape.

significant architecture

The array of rural architecture in Green Springs is unusual. The numerous farms have produced many architecturally significant buildings from the mid-eighteenth century to the late 1800s. Equally significant, as a part of the total landscape, are a Civil War period store, churches and the interesting houses of the small landowners. Prior to the designation



Green Springs
LOUISA COUNTY VIRGINIA
a land use study

AREA LOCATION

1

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of the entire area as a National Historic District, six of the 34 significant structures were nationally registered landmarks. Few rural areas in Virginia, or the nation, contain as great a concentration of such landmarks.

landmarks

"Hawkwood", Alexander Jackson Davis' best preserved Italian villa-style house, "Westend", a Roman Revival country house of the style fostered by Thomas Jefferson, "Green Springs House", a handsome frame house built in 1772 by Richard Morris, and "Boswell's Tavern", one of the best preserved ordinaries in Virginia, are only a few of the architectural gems found in this small area.

critical
environmental
area

Each of these buildings is significant by itself; each is a landmark. However, the outstanding feature of Green Springs is not just the individual historic buildings but, rather, the relationship of all the structures and settings to each other. The result is a harmonious rural community or district, blending two-and-a-half centuries of history and culture.

preservation

Preservation and enhancement of such districts are at the core of preservation planning today. "...The new preservation," according to the Special Commission on Historic Preservation report to Congress in 1966, "must look beyond the individual building and individual landmark and concern itself with the historic and architecturally valued areas and districts which contain a special meaning for the community." This has been done in city after city--in the Vieux Carre in New Orleans, in Beacon Hill in Boston, in Charleston, Savannah, New York, Washington and many other cities, with startling economic successes. Now rural areas, too, must see how the best of their past can be made a vital part of their present and future. Green Springs presents just such an opportunity.

geology

The uniqueness of Green Springs--the survival of its total ambience as a viable and pleasing rural area, as well as its architectural integrity--has been dependent upon its geologic history. Virtually all the attributes which make the area either unique or significantly different from the surrounding Virginia Piedmont owe their ultimate origin to the igneous rock body (an intrusion of 200 million years ago) which cut its way as a molten mass of iron-rich silicate rock up into the altered sandstones and shales making up the Virginia Piedmont. This rock, now exposed by weathering and erosion, has served as the parent material for the unusual assemblage of residual soils which cover the floor of the basin.

soils These soils, mostly heavy, plastic clays and quite different from their surrounding Piedmont counterparts, have given continuous economic vitality to the area.

interwinding relationships

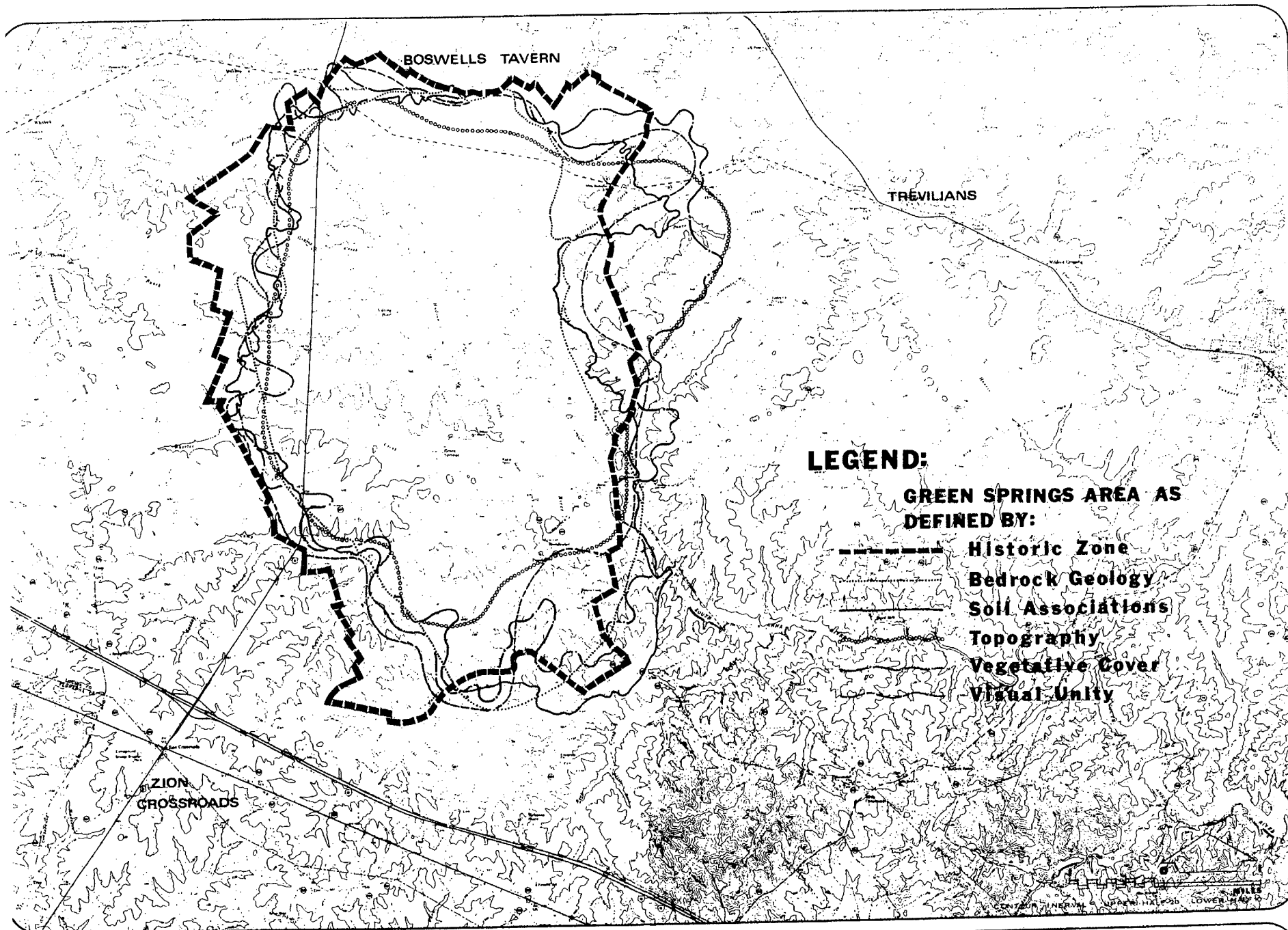
These two--bedrock and soils--have served to determine the topography, drainage characteristics and, ultimately to a large extent, the natural ecology and the historic patterns of human land use. Indeed, it would be difficult to find an area where the interwinding relationships of geology, soils, topography, drainage, natural ecology and land use are more clearly illustrated. (Area Definition Map No. 2, Page 11.)

The coincidence of the boundaries on the above map is an interesting finding tending to prove the importance of the area's geology in its historical evolution, as well as to indicate the general boundary of the area today. Although Green Springs is affected by and affects the towns, counties and regions around it and, thus, is a part of larger physical, political and social region, it is clear that Green Springs is a distinct region by itself.

distinct region

The fact that Green Springs is a distinct region which has maintained its viability as a prosperous agricultural area and its integrity as a pleasing rural district does not imply that Green Springs is a static place to be frozen in its history. Green Springs is a place where, for centuries, man has used the land to the benefit of both himself and the land--and where such a successful and dynamic relationship should be encouraged to continue in modern times.

As the Virginia Historic Landmarks Commission states, "it is possible, today, to witness in the Green Springs area the much too rare phenomenon of outstanding examples of architecture preserved in their original context--a gently civilized countryside where the land has been enhanced rather than despoiled by the presence of man." Green Springs has prospered under man's activities and cares. It has not been a battle of man against nature, machine against art nor preservation against use. The features which distinguish Green Springs from other agricultural areas in the Piedmont result from man's wise use of the area. "...transforming of the land," according to René Dubos, eminent ecologist, "when intelligently carried out, is not destructive but, instead, can be a creative art."



Green Springs
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a land use study

AREA DEFINITION

2

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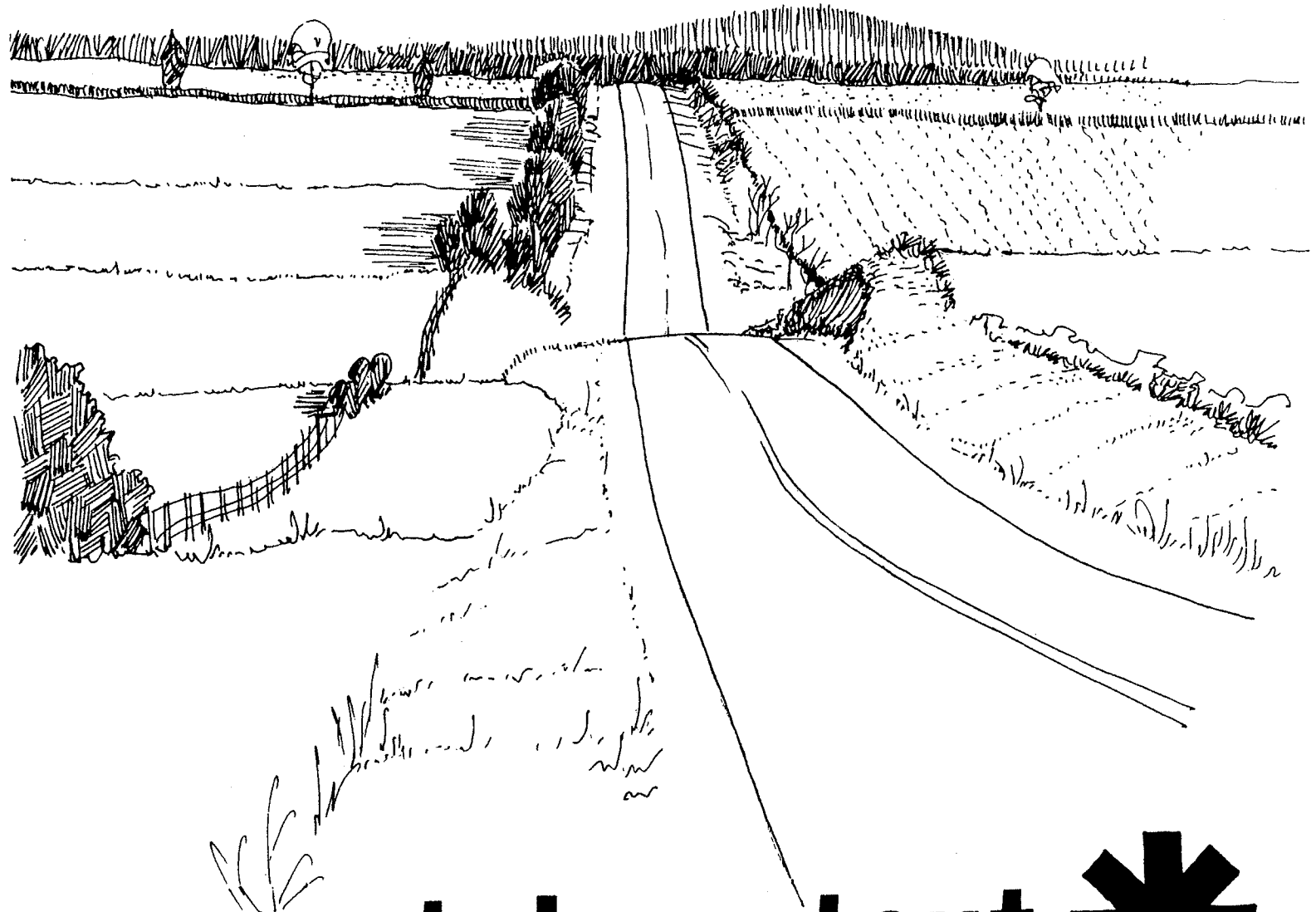
intelligent
transformation

The challenge today in Green Springs is to see how those intelligent "transformations" of the land which have occurred so gracefully and efficiently in the past can be carried out in the future. How can changes be made in Green Springs which will augment its existing vitality and uniqueness? How can the current and rare blend of amenities and economic health be sustained? How can Green Springs' land be best used for present and future generations? These are the questions which this land-use report addresses.

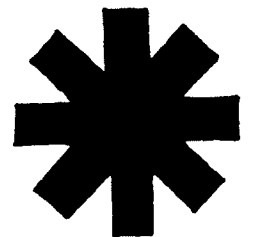
report
process

In this report, an environmental development planning process will be explained which will point to ways of meeting current and future land-use challenges in Green Springs. Integral to the environmental development process is an understanding of the physical, social, economic and cultural systems which have produced the existing land uses in Green Springs today. Examining what those systems are and how they have worked in the past provides a solid base from which to determine how future land uses can be directed and enhanced.

The report will begin with a discussion of the physical and environmental systems in Green Springs. It will then proceed to describe how those systems have been used by Green Springs' inhabitants over the years, and how they have affected Green Springs, its history, people, economic, social and political activities. A special section will analyse the visual character and amenities of Green Springs which have resulted from man's uses of the area's physical resources. Finally, existing planning, zoning and regulatory programs for Green Springs will be analysed and recommendations will be made to see how both public and private programs can best meet the present and future needs of Green Springs in light of its environmental, social and economic qualities.



environmental context



GEOGRAPHIC SETTING

Louisa
Piedmont
South Anna

Although Green Springs is an unusually well-defined region, it is by no means autonomous. It is affected by many outside influences. Politically, it lies within Louisa County, geographically, within the Piedmont region and hydrologically, within the South Anna watershed, which, in turn, is within the York River watershed. Decisions concerning land use must be made in the context of these large political and geographical units. (Upper South Anna Watershed Map No. 3, page 15.)

PHYSICAL DETERMINANTS

web

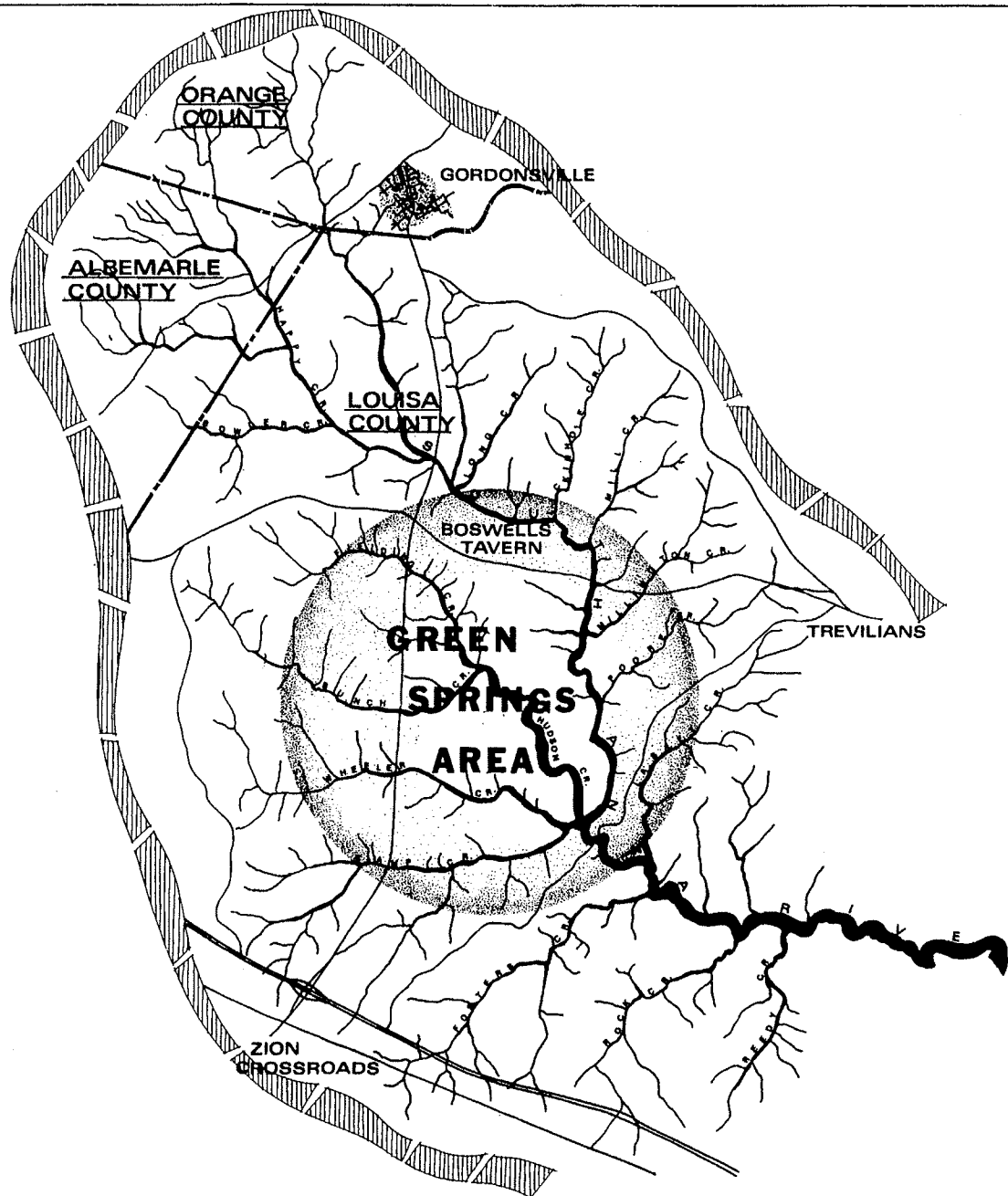
interactions

Certain physical factors such as geology, hydrology, topography, soils, vegetation and climate are important determinants to the types of activities that man can best carry on in a particular area. While each of these physical determinants is woven into a web of interacting ecosystems, each, also, can be described for its specific functioning and effects on the suitability of different types of land uses. What has occurred and what will occur in a given area is the interaction between these physical factors and the social and cultural backgrounds of the various users of the area. In Green Springs there is an unusually strong relationship between geology, topography, soils, drainage, natural ecology and the human use of the land. Thus, an understanding of the key physical determinants is fundamental in land-use planning.

Geology

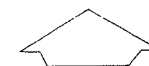
geologic
history

About 600 million years ago, at the time the Lynchburg Formation was first forming as a sediment, much of the eastern portion of the United States, including Virginia, was covered by a shallow sea. (Geologic Cross Section Map No. 4, Page 16.) The crust of the earth was slowly sinking, allowing the sea to cover the land and deposit layers



LEGEND:

-  Limits Of Watershed
-  County Boundary
-  Highways
-  River Or Creek

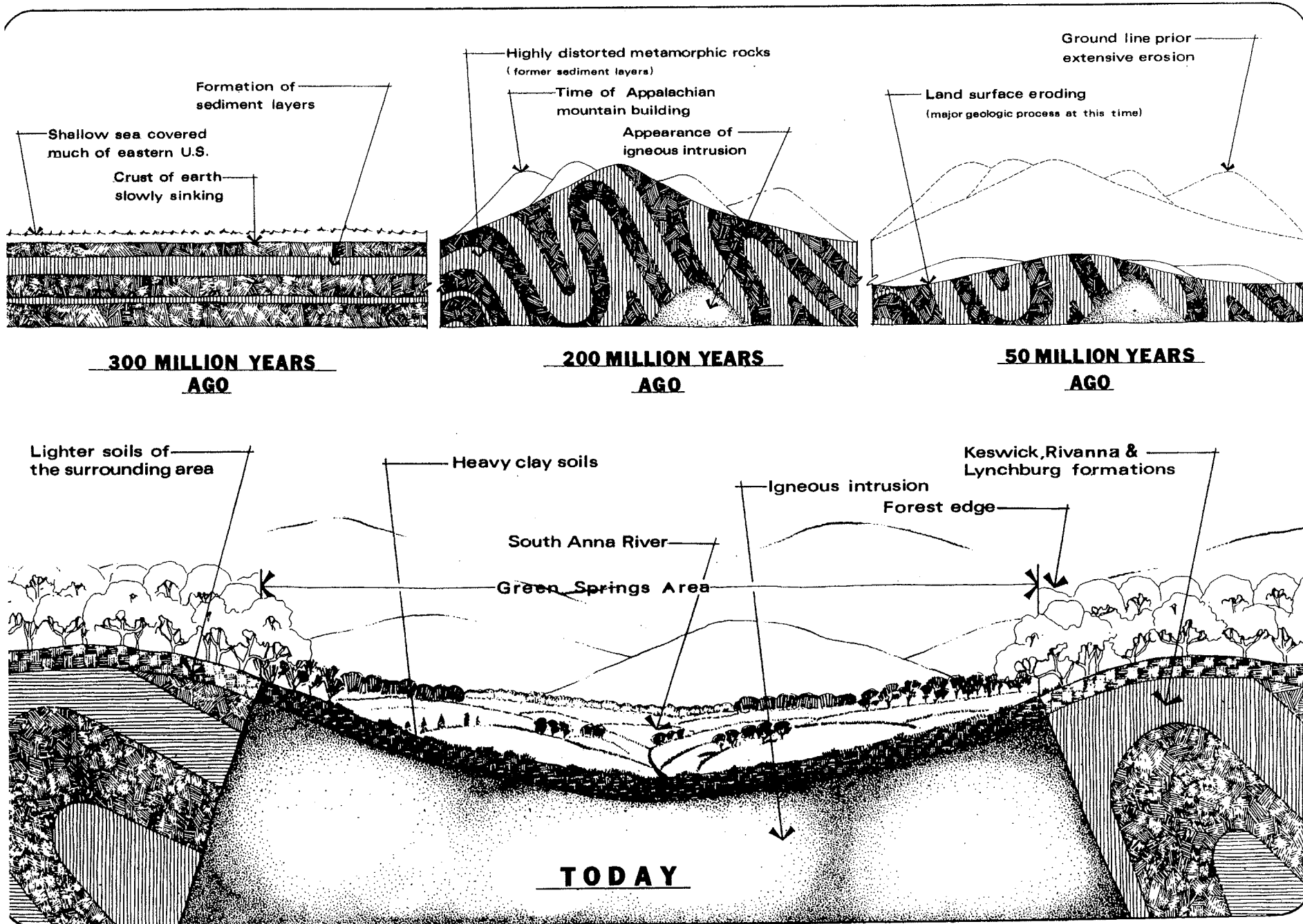


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UPPER SOUTH ANNA WATERSHED

3

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GEOLOGIC CROSS SECTION

4

of sediment. This down-warping of the earth's crust continued for some 400 million years allowing sedimentary deposits, several thousand feet in thickness, to accumulate. Some volcanic activity was interspersed with the slow accumulation of sand, clay and lime mud.

Appalachian mountain- building

This whole process pushed the sediments of the Lynchburg, Rivanna and Keswick formations deep down into the crust where heat and pressures were intense. Then, approximately 250 million years ago, during Permian Time, the great upheaval of Appalachian mountain-building took place. This cataclysmic event shoved the deeply buried sediments up into great folded mountains much higher in elevation than those evident in the East today. These pressures, along with those involved in deep burial, were sufficient to metamorphose the sedimentary layers into a series of phyllites, slates, schists, gneisses and other metasediments.

green springs intrusion

It was during this period of Appalachian mountain-building that the Green Springs intrusion is thought to have been formed. The great earth movements taking place probably allowed the molten rock to escape from lower levels of the earth and migrate up into the metamorphic rocks near the bottom of the sedimentary sequence.

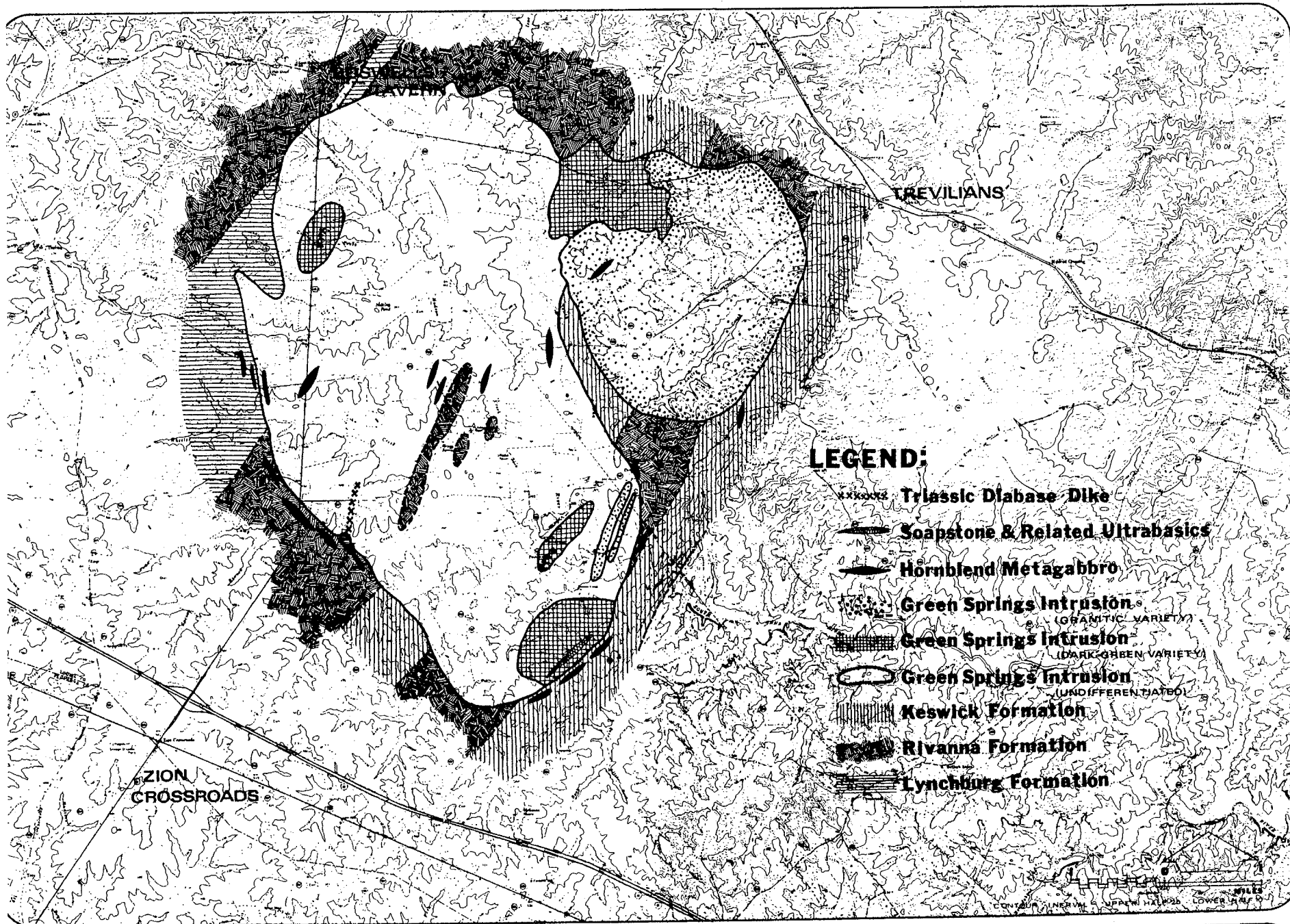
weathering and erosion

From approximately 500 million years ago to the present time, the principal geologic processes taking place in the Virginia Piedmont have been those of weathering and erosion. This has involved the gradual wearing down of the large mountain mass to the smaller features we see today as the Blue Ridge and Allegheny farther west. During this long period the soils and related natural ecology have evolved in response to the types of bedrock and the set of complex physical forces acting upon them.

bedrock geology

The geology of the Green Springs basin and surrounding area is shown on the Bedrock Geology Map No. 5, Page 18. This map was taken, with minor modifications, from the work of Hopkins (1960) titled the Geology of Western Louisa County, Virginia. It should be pointed out that a geologic map is a map of the bedrock as it would appear if all overlying soil were removed.

The intrusion now underlying Green Springs is surrounded by formations of older metamorphosed rocks. Of these formations the Green Springs intrusion is in contact



Green Springs
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a land use study

BEDROCK GEOLOGY

5

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formations prior
to intrusion

with only three--the Lynchburg, Rivanna and Keswick formations. Since these formations surround the Green Springs intrusion and are shown on Bedrock Geology Map No. 5, brief descriptions of the rocks are included below:

Lynchburg
formation

The Lynchburg Formation is made up of the oldest rock exposed in and around Green Springs. The formation is a mixture of mica schist and gneissic rocks. These are highly altered (metamorphosed) rocks which may have been sedimentary shale and sandstone before metamorphism. The schist shows quartz-feldspar-mica composition in thin mica-rich plates. The gneiss is more massive but is of similar composition.

Rivanna
formation

The Rivanna Formation is composed of a complex mixture of metamorphic rocks. These include phyllite (a greenish slate-like rock), coarse quartzite, laminated quartzite, laminated quartzite and silty phyllite (coarser than normal phyllite). The quartzites are quite important in the vicinity of Green Springs. These are not clean quartz-rich quartzites but contain a mixture of feldspar and other common silicate minerals. This type of quartzite is known by the term "greywacke" or "meta-greywacke" to denote their metamorphosed state.

Keswick
formation

The Keswick Formation, like the Rivanna, includes phyllite. The phyllites, particularly, are very fine grained mica-rich rocks believed to have originated from clay sediments. The phyllites grade locally into coarser grained mica-quartz schists. The Everona Limestone is also included in the Keswick formation. The Everona is composed of impure slaty to massive metamorphosed limestone. It comprises only a minor portion of the Keswick Formation in the vicinity of Green Springs.

igneous
intrusion

The rock ultimately responsible for the very existence and uniqueness of the Green Springs area is an igneous intrusion. It boiled up into the pre-existing metamorphic sequence, cooled and now underlies the present basin-like topographic feature. The intrusion is composed mainly of basic rocks. The term "basic" in geologic use denotes dark-colored rocks rich in iron, magnesium and calcium and cooling at a higher temperature than the acidic or silica-rich igneous rocks.

The mineral grains making up the intrusion range from fine (less than 1 mm) to coarse (up to 1 cm). Coarse to medium phases are the most common and point to deep, slow cooling of the originally molten magma mass.

Contrary to what might have been thought previously, recent work has shown that the Green Springs intrusion is not a simple igneous body but is quite a complex of different rock types.

six
rock
varieties

Hopkins recognized six varieties of rocks within the intrusion. He theorized that the original intrusion was predominately diorite (medium to basic, coarse-grained igneous rock) or gabbro (more basic than diorite). This body may have, in turn, been intruded by gabbro and granitic (silica-rich or acid rocks) during or after cooling of the original intrusion.

Although it is not necessary to describe all six rock varieties recognized by Hopkins, some description is necessary to understand the details of the Geologic Map No. 5, on page 18. First, the major portion of the intrusion is composed of even textured, medium-grained diorite. The rock contains almost no quartz. Locally, this rock becomes a coarse and darker green.

critical
division

By far, the most critical division in the intrusive mass from the standpoint of land use and related factors is the existence of the large granitic lobe making up the northeast side of the intrusion. This rock is fundamentally different from the rest of the intrusion in that it is lighter in color (more acidic) and contains significant amounts of quartz. Consequently, such fundamentally related phenomena as soils and natural plant ecology are also quite different and tend to resemble the surrounding metamorphics rather than the rest of the intrusion. With this in mind, it is recommended that this portion of the intrusion be omitted in defining the limits of the Green Springs area.

Finally, small elliptical shaped bodies of hornblende metagabbro and soapstone-type ultrabasic rocks have been mapped in and around the intrusion but have no real importance in the present study.

Mineral Resources

The only mineral resources of consequence which have been discovered in the Green Springs area are fairly sizable deposits of the mineral, vermiculite.

vermiculite
formation

The geologic origin of vermiculite is not clear. One theory favors the alteration of dark micas in the rock by hot solutions, which could remove the alkali elements and substitute water in the structure. Another theory starts with the mineral, hornblende. This mineral is altered by hot solutions to biotite (a dark mica) and biotite, in turn, is altered to vermiculite by groundwater.

In any event, vermiculite has water in the layered silicate structure which will flash to steam on heating, causing the mineral to expand greatly in an accordion-like manner. This expanded vermiculite is then used for insulation, packing and lightweight aggregates and fillers of various kinds.

mining

Mining of vermiculite is by open-pit methods. The rock is usually drilled, blasted down and hauled to a crushing and screening mill. The size of the screened material is dependent upon the quality of the mineral being mined. The Green Springs mineral is fairly fine in size, which may lower its desirability for some uses. The ore is then air-dried in a rotary kiln to eliminate surface water and put through a series of screens and separators to accomplish benefaction. Exfoliation (expansion) takes place in the last step at between 1,400° and 2,000° F.

All of the production in the United States, in the past, has been from Montana and South Carolina. Some of the former uses of vermiculite have been taken in recent years by synthetics. Continued inroads by synthetics seems likely, and makes future use predictions of vermiculite open to question.

Soils

soil
association

The soils underlying Green Springs are different from those surrounding the area. This group of soils, having similar origins and properties, make up what is known in soil science as an association. The association prevalent in Green Springs is referred to as the Zion-Bremo-Iredell-Lloyd Association by soil scientists working in Louisa County. The major portion of the Green Springs basin is underlain by the heavy clay soils of the Iredell, Zion and Elbert. Interspersed within these are significant areas of semi-plastic Mecklenburg which is commonly associated with soils of the Iredell type and Bremo, the thin dry cover of the ridges. This distribution pattern is particularly well developed throughout most of the central portion of the basin.

surrounding
area

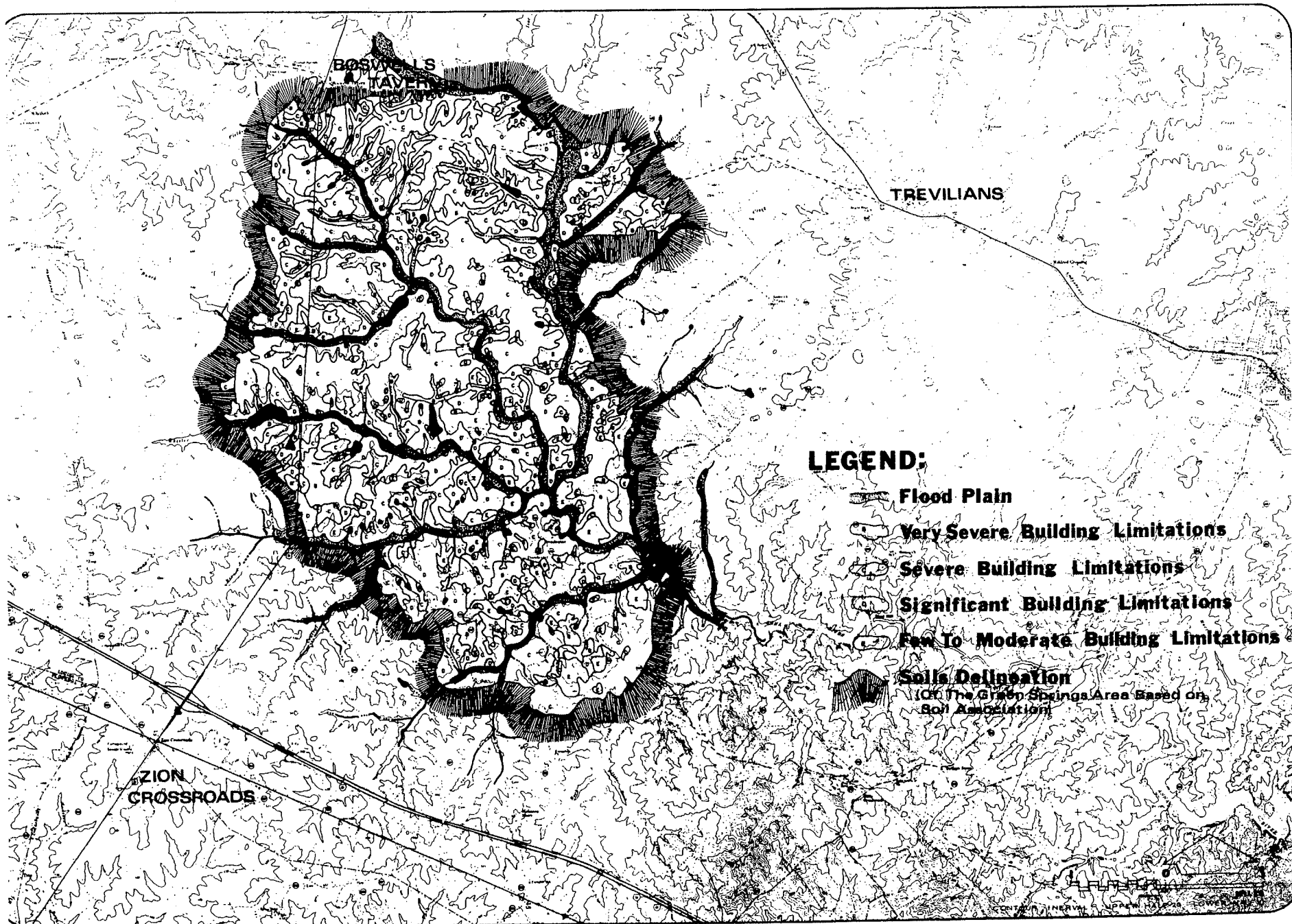
Near the outer boundary of the area the pattern changes somewhat with the heavy clay soils giving way to a more intermediate group of soils composed principally of Bremo, Mecklenburg, Fluvanna and Lloyd. Here small patches of Tatum may also be present. Some of these soils are complex mixtures of parent material from the intrusion and the surrounding metamorphics. Once out of the basin, soils of the Tatum-Nason type predominate.

Soil characteristics must be recognized for their inherent limitations for different types of uses, especially engineering and development uses. Five Green Springs soil groups, (Soil Limitations Map No. 6, Page 23.) based on their degree and type of soil limitations, are discussed below:

Group 1. Very Severe Limitations:

zero
percolation

One major soil type--the Elbert is assigned to this group. Elbert soil is very poor to unsuitable for virtually all engineering uses. The thick, plastic clay pan characteristic of this soil inhibits permeability to a point where percolation required for septic tanks is virtually zero. This layer also inhibits surface drainage and contributes to the high water table



Green Springs
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SOIL LIMITATIONS

6

disrupt
foundations

which causes the surface to remain soft and wet much of the year producing wet basements or other underground structures.

The heavy clay soils of the Elbert-Iredell, Zion type are hard and extremely tough when dry and a virtual "soup" when wet and disturbed. Finally, the shrink--swell properties of the Elbert and related soils may reach 5% volume change from dry to wet and may disrupt shallow foundations.

The placing of houses or other structures on these soils is not recommended.

Due to its high water table, best agricultural use of Elbert soil is pasture planted with fescue or other water resistant grass.

Group 2. Severe Limitations:

The Mecklenburg, Iredell and Zion soils underlie major portions of Green Springs and are classified as having severe limitations. The Iredell and Zion soils possess heavy plastic clay layers similar to the Elbert.

road
deterioration

An example of the problems and expense these soils may cause is illustrated by the case of State Route 22 which transverses the north edge of Green Springs. For several years, following each winter, the Virginia Department of Highways was required to spend large sums for repairs for the badly deteriorated road. Finally, approximately fifteen years ago, the decision was made to tear up the pavement, completely remove the offending plastic clay, truck in other soil as replacement and rebuild the pavement. In recent years the road has held up well, even with increasing traffic loads.

wet, sticky
soil

In addition to engineering limitations, the heavy clay soils present significant problems to recreational uses, such as parks, campgrounds, school yards and playing fields. The wet, sticky nature of the soil during much of the year is not compatible with the surface requirements of these activities.

From the agricultural standpoint, these soils, especially Zion, are well suited for hay pastures and small grain crops.

Group 3. Significant Limitations:

A number of Green Springs soils are entered under this classification but the degree and type of limitations vary widely.

poor for
septic fields

Of the soils in this group only the Bremo underlies significant areas in Green Springs. These areas might be considered fair for housing and road construction but poor for basements, deep foundations and septic fields. Recreational potential ranges from fair to good. Altavista and Fluvanna are excellent agricultural soils while Bremo is agriculturally limited by its tendency to lack moisture during dry seasons.

Group 4. Few to Moderate Limitations:

Soils along the border of the Green Springs intrusion may be a mixture of parent material from the basic igneous intrusion and the mica-rich metamorphic rocks surrounding the basin. These are generally good soils with few use limitations. The Lloyd soil falls in this category.

good for
engineering uses

These soils range from good to excellent for most engineering, development and recreational uses. They tend to have low fertility and high acidity but these can be overcome by use of proper fertilizers and lime to create highly productive agricultural soils.

Group 5. Flood Plain Soils

farming and
recreation
best use

Typical wet, sandy deposits underlie the flood plains along the major streams in the area. Because of the danger of flooding, housing and other structures are not recommended for these areas. Locally, farming and recreational uses may be well suited.

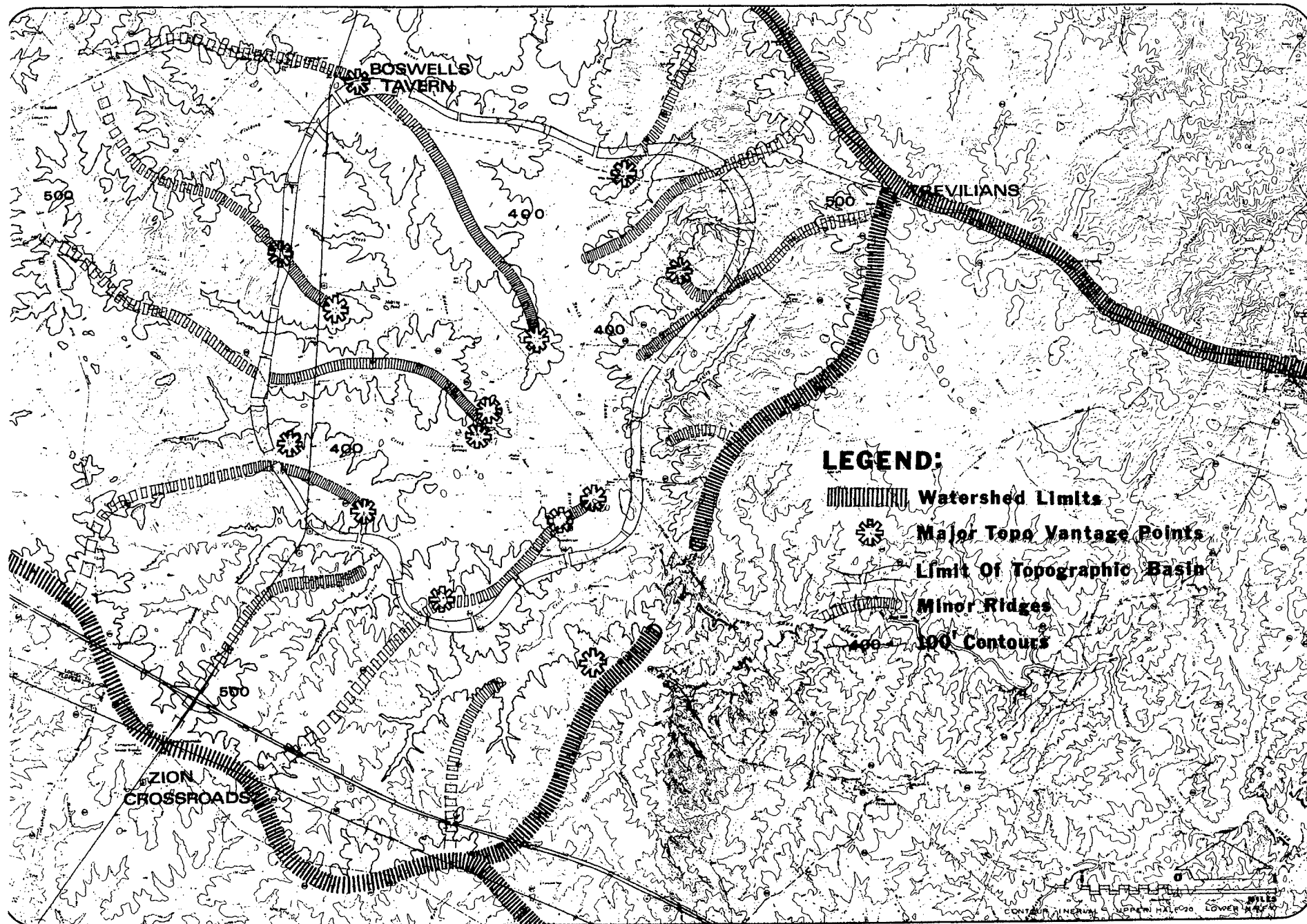
Topography

Topographically, Green Springs is a clearly defined basin or irregular dish-shaped feature four to six miles wide. This often caused the area to be referred to, in the past, as "Green Springs Valley". (Topographic Analysis May No. 7, Page 27.)

basin
structure

The floor of the depression is relatively flat to gently rolling, with a mean elevation of 400 feet. Slopes generally range from two to seven percent, although, near stream valleys, they may rise to seven to fifteen percent. The rim of the basin, about 100 feet higher than the base, is clearly defined topographically, and is further accentuated by the basin being generally cleared land and the rim being generally wooded.

Topography is an important factor in one's visual experience of Green Springs. The basin shape of the area allows views from most vantage points and, from the higher elevations along the rim, there are broad vistas of the surrounding region and of the Blue Ridge Mountains to the west. Within the valley, local roads and highways flow along with the topography, providing an unusual feel for the surrounding landscape. Travelling along Routes 22 and 613, two rims of the basin, views of the area and countryside beyond are



Green Springs
LOUISIANA COUNTY VIRGINIA
a land use study

TOPOGRAPHIC ANALYSIS

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possible. In contrast, a drive along Route 15, which traverses the basin, exposes Green Springs' wide-open farmlands and undulating topography.

Local topography, to a lesser extent than regional topography, affects climate. For example: land forms can act as barriers to wind or as channels which increase wind velocity. Likewise, forms can create hollows which are less affected by air currents and, hence, have fewer variations of temperature and moisture. These topographic features, considered with other factors, such as vegetation and large bodies of water, can produce microclimates throughout an area.

slope

One of the more important factors of topography is excessive slope limitations. While this is not a prohibitive building factor in Green Springs such areas cannot be considered suitable building areas without special site planning and design consideration. (Slope Limitations Map No. 8, Page 29.)

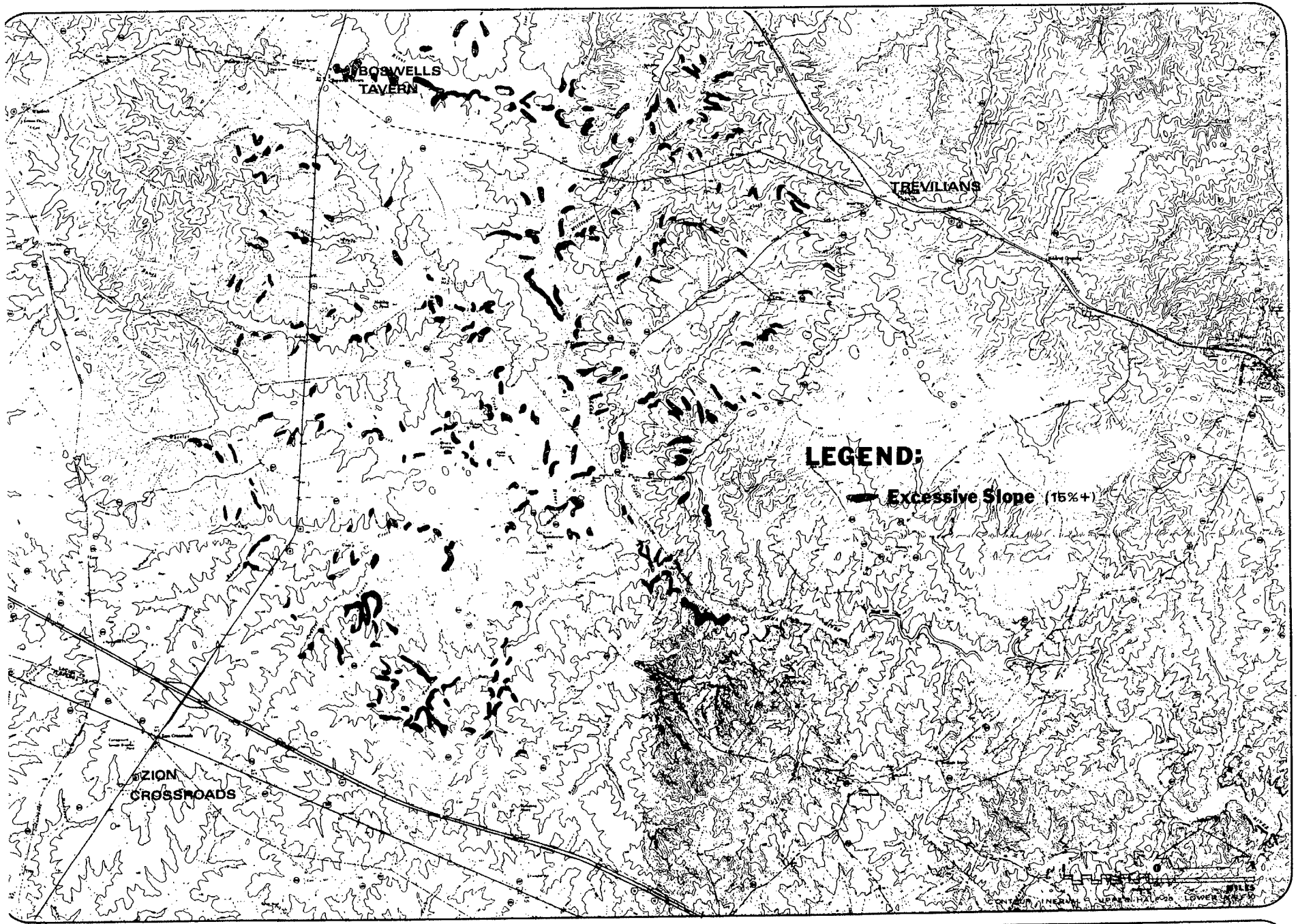
In Green Springs, careful considerations should be made to assure that land-use decisions respect the topography, which so significantly sets the stage for the harmonious farm activities which now take place in this basin-shaped valley.

Hydrology

Surface Water:

upper
South Anna
watershed

The Green Springs basin is situated wholly within the watershed of the South Anna River. (Hydrology Map No. 9, Page 30.) The main stream of the South Anna enters Green Springs from the north, flows along the eastern boundary and continues southeastward out of the basin to its ultimate destination--the York River. Other than the South Anna, the principal drainage features are a series of small streams which form a roughly radial pattern by rising outside of the basin, then flowing into and across the basin to drain into the South Anna.

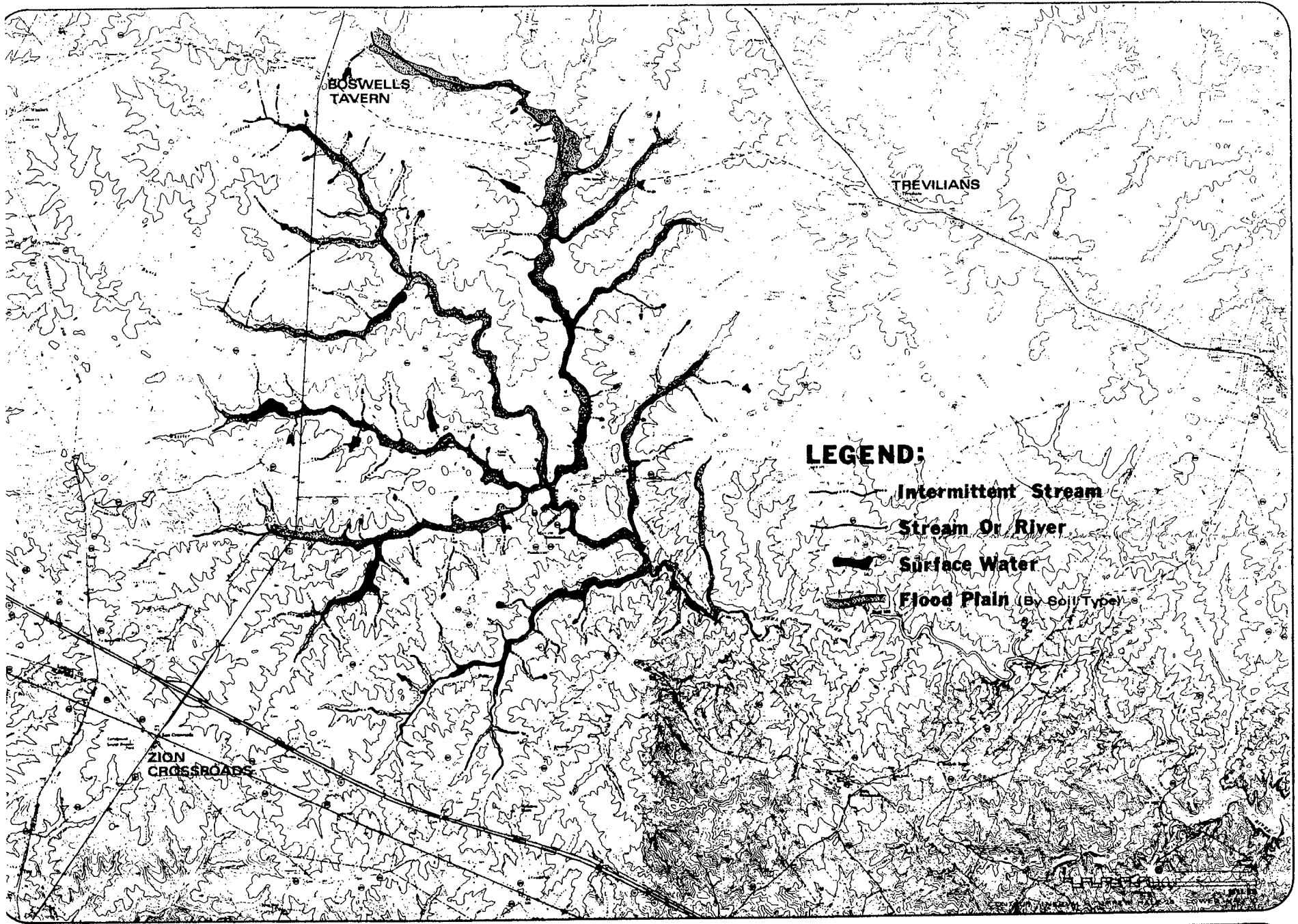


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a land use study

SLOPE LIMITATIONS

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HYDROLOGY

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stream flow
data

Several of these streams are large enough to have names. Flowing roughly north to south are Millington Creek, Mill Creek and Lickinghole Creek; flowing roughly east-west are Fielding Creek, Givies Creek, Hudson Creek, Bunch Creek, Wheeler Creek and Camp Creek; flowing roughly south to north are Central Branch and Foster's Creek. Several of these streams merge with the South Anna, just north of Poindexter, forming the center of the radial pattern.

Unfortunately, very little streamflow data from the Green Springs area has been published. The notable exception is data from the Virginia Division of Water Resources station on Bunch Creek. Volume III of the York River Basin Report (1970) contains a wealth of information on Bunch Creek.

Bunch Creek drains 4.1 sq. mi. above the monitoring station located in Green Springs at the point where the creek flows under U.S. Route 15. Low flow, flow duration and flood flow analyses are included in Volume III. Records dating from the late 1940s show a low flow of .15 cfs (cubic feet per second) and a maximum flow of 680 cfs. This maximum flood occurred on June 10, 1951. Due to the small area drained by Bunch Creek it is difficult to establish the relation of flood frequencies to drainage area. However, Volume III does show the maximum runoff frequency curve of Bunch Creek for 1-day, 30-days, 90-days and 1-year periods. This would indicate that for a 1-day period the 40-year flood will average approximately 300 cfs or some six times the 1.1-year flood of 50 cfs.

fluctuation

This degree of fluctuation may seem severe but, in actuality, is relatively mild compared to streams in arid areas where extremes in flow are much more severe. It can also be pointed out that this six-fold increase is approximately the same as that for the main branch of the York River many miles downstream.

flooding

Historically, even though fairly high flows have occurred periodically, flooding has not been a serious problem in the Green Springs area. This can be attributed to a number of factors: First, the surrounding areas are largely wooded so runoff is moderated. Secondly, most of the Green Springs area is in pasture and hay crops therefore large areas are not exposed by plowing and cultivation. Finally, the homes and farm buildings in Green Springs have been located off the flood plains and are not susceptible to what high water does occur.

erosion

It should be pointed out that the conditions cited above are fortunate because of the nature of the Green Springs' soils. This is mentioned because the exposure and erosion of significant areas of Green Springs could present several difficult-to-solve problems. First, while the soils themselves are not the most erosive, the heavy clay layer prohibits the infiltration of precipitation so that runoff can be very high. Even moderately erosive soils will be moved by high volume and high energy flow. This is particularly true for areas disturbed by construction activities where losses to erosion at a rate as high as 100,000 tons per sq.mi. per year have been measured.

colloids

A second problem, unique to the heavy clay soils of the Iredell-Zion-Elbert type, is the extremely fine grain-size of the soil particles. These verge on being true colloids which, once waterborne, are very difficult to remove or settle out. Most conventional means, such as straw bales, silt traps, etc., will not remove very fine colloidal-size clay particles. This could cause serious downstream sediment pollution problems.

Water Quality:

Table A, Water Quality Data, Page 33, contains a series of data taken from Water Resources Data for Virginia (1968) concerning the water quality of streams in the Green Springs area.

Table A - Water Quality Data in Milligrams per Liter

Stream and Locality	Flow cfs	Date	Silica SO ₂	Iron Fe	Calcium ca	Magnesium mg	Sodium Na	Potassium K	Bicarbonate HCO ₃	Sulfate SO ₄	Chloride cl	Nitrate NO ₃	Phosphate PO ₄	Dissolved Solids	Hardness (ca,mg)	Conductance Micro MHos	Color
1. South Anna River, near Poindexter	4.2	8/15/68	12	.51	9.2	2.9	12	2.0	55	9.6	3.4	1.4	.30	97	35	148	40
	.5	9/24/68	11	.76	13	3.5	23	3.5	84	15	7.6	1.6	.46	136	46	213	40
2. Bunch Creek near Boswell's Tavern	--	7/16/68	15	.39	5.4	2.7	3.4	1.2	36	1.4	2.1	.7	.09	70	24	64	50
3. Camp Creek at Poindexter	1.7	8/15/68	14	.51	9.8	4.9	3.9	2.3	50	10	4.2	.8	.14	91	44	118	35
	.1	9/24/68	10	.19	16	6.3	5.0	4.7	70	15	5.3	.7	.14	112	65	171	20
4. North Anna near Doswell	--	7/15/68	12	.29	6.8	2.8	3.7	1.2	32	7.4	3.6	.4	.04	67	28	84	35

uncontaminated
water

waste from
Gordonsville

effect of rocks
and soils

The North Anna has been added to the table for comparison. Examination of this data yields some interesting insights into the mechanisms that regulate surface water quality. First, there is a striking similarity between Bunch Creek and the North Anna. This can be attributed to the fact that both traverse mainly metamorphic rocks and are largely free of human and agricultural wastes. Therefore, these can be thought of as uncontaminated, typical Piedmont waters. The major deviation from the norm in the South Anna appears to be from an upstream load of human wastes from the Gordonsville area. This would be expected by the high values for sodium, potassium, sulfate, chloride, nitrate and phosphate. These are all constituents concentrated in normal sewerage.

This leaves only Camp Creek to give some indication of the effect of Green Springs' rocks and soils on natural waters. Even here, however, Camp Creek rises and gains much of its water from outside Green Springs. However, it has flowed far enough across the Green Springs basin to allow some observations. Calcium and magnesium are high and appear to result from the chemistry of the intrusion and related overlying soils. Relatively high values for potassium, bicarbonate, sulfate, dissolved solids, hardness and conductance are probably caused by a combination of the rock-soil chemistry and farming or other human activity in the area. High nitrate and phosphate would likely be caused by farm drainage.

Overall, the streams which drain Green Springs appear to be significantly higher in dissolved ions than normal Piedmont waters. This is interpreted as due to a combination of the chemistry and relative solubility of the bedrock and soils and to human activities--mainly fertilization and animal wastes from farming. It should be pointed out, however, that the water quality of Green Springs' surface waters are not seriously affected at present ion levels.

Groundwater:

strongest flows

Rocks of the type found in and around the Green Springs basin are relatively impermeable to the flow of water. Recent measurements by the Virginia Highway Research Council (Haung, McGhee and Sherwood) indicate that normal water flow through these rocks must be measured in fractions of millidarcys, which means that flow rates may be in the neighborhood of a few inches per year. So, useable amounts of water usually occur in the soil and weathered rock just above fresh bedrock or in the joints and fractures of the bedrock. Intersecting these fractures by a well is largely a matter of luck, unless careful geologic studies are made to determine the existence of (1) fracture zones reflected in some way at the surface or (2) contacts where two different rocks meet. These zones usually produce the strongest water flows.

Well-yields in the Green Springs area would be expected to yield less than 20 gallons per minute. Larger yields would be expected only in major shear zones or along formational contacts.

drawdown of
water table

The quality of the groundwater at Green Springs should be generally good, although, the dissolved ion content should be higher than that from surrounding areas. Drawdown of the water-table by one well affecting the other should be minimal in Green Springs unless very large withdrawals are contemplated. In this case, pumping tests and monitoring of nearby wells would be recommended.

Groundwater fluctuations and high groundwater levels and their effects on engineering foundations has been discussed earlier under the topic of soil limitations.

resort
health spa

high ion
content

The Green Spring:

The name of the Green Springs area appears to have been taken from a famous spring located near the center of the basin southwest of St. John's Chapel. This spring, at one period, during the 18th and 19th centuries, was a resort and health spa with several inns and clientele which came to drink the waters. Today, while the inns and vacationers have disappeared, the spring still exists and produces a strong flow during all seasons. The water has a distinct sulfide odor and is said to be a chalybeate spring, which would indicate the presence of dissolved iron. Apparently, many ions are present in the spring waters in high concentrations. Geochemistry students under Dr. W. Cullen Sherwood of Madison College analysed the spring water for sodium silica and potassium and found the following:

<u>Element</u>	<u>Parts per Million</u>
Silica (SiO ₂)	44
Sodium (Na)	182
Potassium (K)	19

In comparing these concentrations with those of Table A it can be seen that the Green Spring is unique in the area.

So far as can be determined, a geology study of the Green Spring has not been attempted or at least has not been published. It would probably be safe to say, however, that based on the strong flow and high ion concentrations the water emanates from a deep aquifer where residence time of the water in the bedrock would be long.

Climate

The climate of the Green Springs area is characterized by warm summers, mild winters and moderate precipitation. Forces influencing this climate include latitude, topography, prevailing winds and proximity to the Atlantic Ocean.

Green Springs lies within the temperate climate zone. Regional topographic conditions affect this area by placing it in the rain shadow of the Blue Ridge Mountains. The prevailing summer winds bring moist air from the Atlantic but this influence is reduced by its relatively long distance away.

winds

Prevailing summer and winter winds are from the south and north respectively, with an average velocity of 10 miles per hour. Warm moist winds from the south are characteristic of the summer and cold, dry winds from the north characterize winter. Changes in wind currents account for sharp changes in daily weather. Thunderstorms, hurricanes, cold-fronts and tornadoes produce variations which may result in wind speeds exceeding 80 miles per hour.

moisture

Lying within the influence of the moist air from the Atlantic Ocean, the Green Springs area receives adequate, well-distributed precipitation. The average rainfall is 39 inches per year. Although the area is subject to both dry and wet spells the frequency of prolonged drought is rare. Precipitation usually comes in the form of rain which is heaviest in the months of July and August and lightest in the month of February. The sources and duration of heavy rainfall is as follows:

Extra tropical storms (lows)	-	1	-	7 days
Tropical storms	-	12	-	48 hours
Thunder storms	-	1	-	6 hours

Several snow storms usually occur each winter amounting to an average of 14 inches per year.

humidity

Relative humidity is less here than in areas to the east due to reduced Atlantic influence but is still moderately high. Temperature inversely affects humidity resulting in higher morning readings (70%[±]) becoming lower in the afternoon (50%[±]). Evaporation averages below 38 inches per year.

temperature

The mean annual temperature of this region is 56°. Readings below 15° or above 95° are infrequent and readings below 0° or above 100° are rare. Seasonal temperature impact is lessened by dry, cool summer spells and warm winter spells.

Last and first killing frosts generally occur in late April and late October, respectively, giving the Green Springs area a 167-plus day growing season. Warm September temperatures often extend into October and November.

cloud cover

Cloud cover amounts to an average of 0.6 of the sky during the daylight hours. Relatively clear skies characterize the fall with the heaviest cover occurring in winter. The presence of cumulus clouds in the summer often result in partly cloudy conditions.

storm
hazards

Wind damage occurring in the area usually results from thunderstorm activity. Green Springs also lies in the tropical storm track from the southeast. Although winds are usually greatly diminished before the tropical storms arrive some damage is caused by torrential rains. Floods may occur any month but are most frequent in the fall during these storms. To a lesser extent, flooding may occur in late winter due to rapidly melting snow. Tornadoes, hail storms, lightning and heavy snows may also cause local damage.

ECOLOGIC SETTING

Ecology is a pervasive and basic ingredient of any land-use study as it involves the relationships of organisms to their environment--of man to nature. Every phase of land use includes and reflects ecological relationships.

man
dominated

Ecologically, Green Springs has been a man-dominated environment. For over 200 years, Green Springs' lands have been cleared for agriculture, for domesticated animals and cultivated plants and, hence, its ecosystems have been modified to adapt to the agricultural uses in Green Springs. The result has been a harmonious union.

indicators

Although an extensive ecological survey has not been undertaken in this study, several ecological relationships have been analysed for their value as indicators of ecological functioning in Green Springs. The several indicators which have been studied are: area vegetation, animal life and aquatic plants and animals.

Area Vegetation

Most of Green Springs is in open, broad fields edged by cedars and second-growth pine, with some hardwood forests penetrating into the center. (Vegetative Cover Map No. 10, Page 40.) The major portion of the land in Green Springs has been cleared of forest cover and is used for crop production and pasture.

A permanent pastureland is generally seeded in alfalfa, red clover or orchard grass. Cropland, on the other hand, is usually planted in a three-year rotation of corn to barley to pasture, with the corn and barley being used to support livestock during the winter.

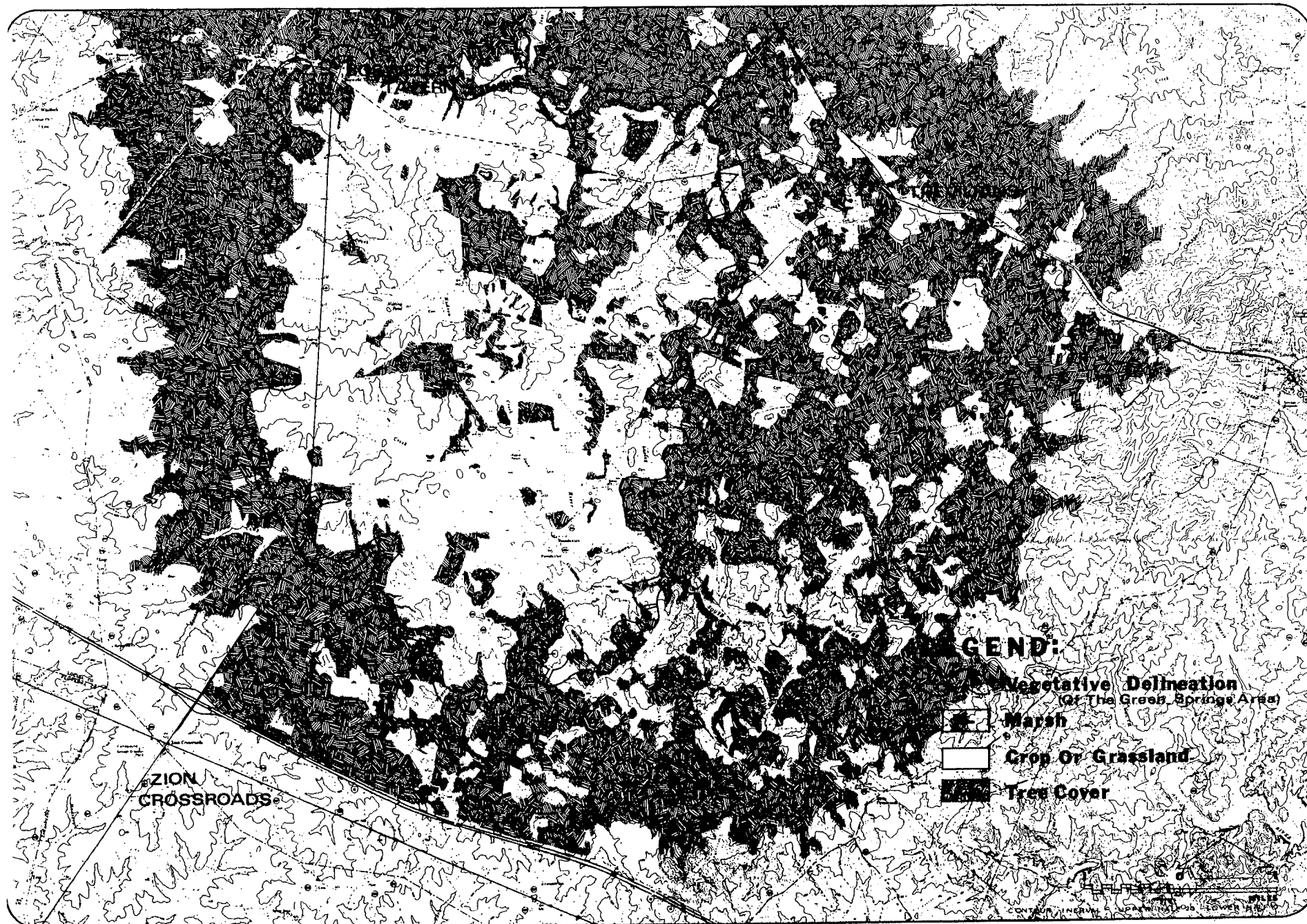
selective
cutting

The non-cultivated species, trees in this case, include scrub oak, red cedar, maple, hickory, pine and beech. Much of the forested area in Green Springs has been cut over in a method which selectively cuts trees in order of desirability and ultimately leaves only the undesirable species. This has resulted in reducing the quality of the stands, as well as impairing regeneration of desirable species.

Vegetation plays a far more important role in an area than is suspected at first and produces more than short-term economic gains. Plants, in their photosynthetic process, assimilate carbon dioxide, produce oxygen and, hence, purify the atmosphere.

hidden
benefits

Forests, on the other hand, can serve to control local climate by regulating temperature, wind and humidity, and sometimes to reduce pollution by serving as a physical screen. Trees also serve as watersheds--accumulating, clearing, regulating and distributing water resources which, in turn, prevent erosion which results in silting of streams and lakes. Equally important is the role of trees in producing food and habitat for animals and in aiding soil formation.



Green Springs
LOUISA COUNTY VIRGINIA
a land use study

VEGETATIVE COVER

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deforestation
devastating

For direct human benefit, trees provide opportunities for recreation, shelter belts, noise reduction and timber production.

The forested areas in Green Springs are subject to timber production. Timbering practices and land-use policies must be closely coordinated as the rate and manner in which timbering is undertaken is of vital importance to the future of Green Springs.

- Sound forestry practices must be observed so that deforestation, a potentially devastating land use, can be avoided.

open land
forest
relationship

The relationship of open land to forest is one of the outstanding characteristics of Green Springs' landscape. The same relationship of forest to cleared land has existed for at least 113 years, as verified by the Civil War Engineers' Topographic Map of 1860. Any drastic change in forest or cleared land would significantly alter the visual character, in and around Green Springs, which is now so pleasant. The early settlers cleared the land for tobacco or wheat. Those areas too steep or poorly drained for cultivation were left forested. The area surrounding Green Springs was soon depleted, eroded and left to natural reforestation. The lasting productivity of the Green Springs soils resulted in its continued agricultural use and, consequently, the present relationship of forest to open land was established.

There are some areas that have been allowed to revert to forest which, from a visual point of view, could be cleared and vice-versa, but it would be a serious mistake to permit any extensive reforestation or deforestation.

Animal Life

Man's activities in Green Springs have directed and controlled the types and patterns of animal life in Green Springs. Of those activities, agriculture--as the dominant economic

enterprise--has been the major influence on the valley use and users, including animal life.

domestic

Domesticated farm animals have been the most numerous animal type in the area. Grazing animals, especially beef cattle and horses, are abundant, with other farm animals such as hogs and barnyard fowl present in smaller numbers.

wild

The large amount of farmland in Green Springs forces many wild animals like deer, raccoon, rabbits, squirrels, game and song birds and many others to live in close association with cultivation. Deer, for example, browse on the edge of common grazing land with cattle, while rabbits and squirrels use the croplands. Most of these animals are dependent on the maintenance of wooded areas as their lives are an in-and-out of the forest existence.

Birds living in Green Springs include several varieties of hawk, wood ducks, song birds, turkeys, game birds, etc. The many varieties and unusually vast numbers of migratory waterfowl stopping here has given the area a reputation as a haven for these periodic visitors. No rare or presently endangered species are believed to inhabit Green Springs. However, some animals, such as wild turkeys, are considered to have a delicate relationship with man and, hence, subject to the threat of man's intrusion into their habitat.

habitat
threat

Clearly, the most threatening pressures on wild animals are destruction of their habitats by land development and timbering. To a lesser extent, over-hunting is always a potential threat, although control by private landowners in Green Springs has restrained this problem. As wild animals and birds benefit man and are a vital part of the total ecology and environment of the Green Springs area, pressures threatening them should be kept to a minimum.

wild-life
management
plan

- Historic Green Springs, Inc., should form a committee of interested members who would, with the cooperation of the Commission of Game and Inland Fisheries, inventory and develop a wild-life management plan for the Green Springs area.

The animal life--the types, habits, patterns and activities--are not only of value ecologically, economically and socially, in and of themselves, but act as indicators of the ecosystems which, in turn, reflect the social and economic systems of the region.

Aquatic Plants and Animals

Although most of Green Springs is in open fields or woods, the area is laced with creeks and streams, as well as with the meandering South Anna River, all of whose aquatic ecosystems play as important a role in the environment of Green Springs as the terrestrial ecosystems.

Algae and other aquatic plants provide food for the aquatic animal populations of fish, crustaceans and insects. The food chains of the aquatic ecosystem do not operate autonomously. They are intricately woven in with terrestrial ecosystems as birds eat fish and fish eat insects, etc.

pollution

The aquatic ecosystem is very sensitive to many forms of pollution resulting from misuse of land. The most common form of pollution to disrupt Green Springs' aquatic system is chemical pollution. Toxic leaching from mining operations, if allowed in Green Springs, would be one type of chemical pollution, while chemical concentrations from timbering debris, if allowed to collect in streams and lakes, would be another.

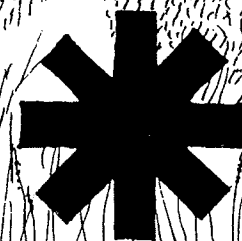
Chemical pollutants, sedimentation, sewage and stream channelization, all associated with land development and management, can pose serious problems to the viability of the current aquatic environment. Thus, to maintain that viability, land-use practices must be closely regulated to maintain the viability of Green Springs' aquatic ecosystem. Locally, zoning, soil erosion and other regulations can be adopted to ensure water quality. At the state level, the State Water Control Board can be of assistance in maintaining or upgrading water quality.

landowners'
obligation

Many of the streams that feed into the South Anna River have their point of origin in Green Springs. The landowners of Green Springs have a moral obligation to ensure that the water that arises on their land leaves it in as pure a state as when it rose from the ground. If every landowner assumed this responsibility some of the problems of our major rivers could be easily solved.



man's use of the land



INTRODUCTION

symbiosis

The development of any area is a continuous interaction, or symbiosis, between man and the physical resources. Although the physical resources are given, they can be utilized in many different ways, depending upon the character, drive, motivations and interests of the settlers and inhabitants in an area.

In Green Springs, it is interesting to see who settled there, what they did, and how they used the physical resources of the "valley". A background of the history of Green Springs, as well as how the landscape and architecture of the area have evolved, is an important base for understanding the land-use planning issues of today and tomorrow.

old roots

This heritage of Green Springs has made it not only unique, but economically and socially viable. The future changes and actions in Green Springs must be built on that firm heritage. As T.S. Eliot said of regionalism, "...any local cultural revival which left the political and economic framework unaffected, would hardly be more than an artificially sustained antiquarianism: what is wanted is not to restore a vanished or revive a vanishing culture under modern conditions which make it impossible, but to grow a contemporary culture from the old roots."

HISTORY

inhabitants

From its earliest settlement to the present time, Green Springs has been known for its fertility, prosperity, pleasing and civilized appearance. The continuity of successful agricultural activity by a homogeneous mix of small and large landowners has enabled the undulating fields and woods to remain in production while, at the same time, enhancing the pastoral beauty of its almost English landscape.

By 1700, most of the Indians in the area had moved farther west, and only a few trappers and frontier families were still living in the area now known as Louisa County.

early
settlers

It was in the period from 1720 to 1740 that considerable growth occurred after a large number of grants were taken. Most of the immigration in that period was made up of planters coming from the eastern counties of Hanover, Spotsylvania and New Kent. They came along the rivers and streams which not only provided access but also sites for potential grist mills. For the most part, they were seeking land to grow tobacco, the major crop of that time.

Louisa County, named for Louisa, King George II's daughter, did not become a separate county until 1742, after petitioning to separate from Hanover County. By 1790, the first population figures indicate a population of 8,467.

Among the early residents of Louisa County were Thomas Jefferson, whose birthplace, Shadwell, was then (1743) a part of the county, and Patrick Henry, who represented Louisa in the House of Burgesses from 1765 to 1768.

wars

Both the Revolutionary War and the Civil War touched Louisa County, and Green Springs specifically. During the Revolutionary War, American and British forces passed through the area. Lafayette and his troops camped at "Boswell's Tavern" on his march to prevent the British from capturing Charlottesville, where Governor Jefferson and the Virginia Assembly had fled from Richmond.

During the Civil War, Louisa County again saw opposing armies. One of the sharpest cavalry engagements of the war was fought at "Trevilians". The Confederate forces, camped at Green Springs and Louisa Courthouse, met Federal troops under General Sheridan in the area near what is now Route 22. General Wade Hampton, in his official report on the battle of June 10, 1864, stated: "Men and mounts suffered, but they staggered on until nightfall of the 10th found Hampton's position in Green Springs valley. In the thick grass of wide pastures, the soldiers stretched themselves. The horses feasted. In a setting less Elysian, Fitz Lee went into camp at Louisa Courthouse about eight miles to the eastward."

Throughout its history, probably the two physical factors which most affected Green Springs' development were its spring and its soil.

The spring, for which the area was named, had its hey-day as a spa in the late 18th century. Its water--said by Jefferson to be "...of some medicinal virtue"--was high in sulfur and magnesium and unpleasant to taste. "This water," according to Joseph Martin's 1835 The Gazetteer of Virginia, "was once in high vogue and much resorted to by invalids and people of fashion. But the accommodations for company have now, for 25 to 30 years, been discontinued. Since the death of the former proprietor (Colonel Morris) the place has gone to decay. There were several spacious buildings for the reception of visitors, but some have been consumed by fire, some have fallen down, and only a few houses in a state of rapid decay remain." Whether springs farther west successfully competed with Green Springs is not certain. However, it is clear that Green Springs did not remain a health spa.

fertile
soil

Since its earliest settlements, Green Springs' fertile soil contrasted favorably with surrounding areas' thin soil which had been exhausted by tobacco cultivation. Martin's Gazetteer of Virginia, in 1835, comments on Green Springs' soil known for both "native fertility and ...susceptibility of improvement." It avoided, according to Martin, "two great characteristic defects of Louisa land--too large an intermixture of sand and too porous and gritty foundation. It is particularly suited to wheat." And so, this soil was put into wheat production. By 1810, Thomas R. Joynes, in his Memoranda, found "the lands of Hanover and part of Louisa were very poor, but in the upper part of the county there was the finest tract of wheat land I ever saw. On every side large verdant wheat fields met and cheered the eye of the traveller."

Cyrus
McCormick

Cyrus McCormick, in a letter to Walter Holladay, dated 30 December 1842, wrote of the excellence of the Green Springs neighborhood in relationship to wheat production: "...I would only say this: that I am fully apprised of the excellence of the Green Springs neighborhood for the operation of my machines and consequent importance to me that the machines used in that next harvest should perform well..."

Wheat continued as a thriving crop. In the ante-bellum era with the railroad and canal-building boom, shipping costs dropped and the wheat market expanded. Green Springs, during the 1840s and 1850s, became a supplier of wheat to the world.

The history of Green Springs during the Reconstruction and on into the 20th century is an uneventful one. The agriculture of the area gradually evolved from crops to cattle grazing, which today takes up a large percentage of the productive land.

LANDSCAPE CHARACTER

The uniqueness of Green Springs is evident in its landscape today, for here we can quickly feel a sense of place which differentiates Green Springs from its Piedmont neighbors. In a world which is becoming more anonymous and the same every day, the existence of distinct places with visible and viable characters will become increasingly important. Such places can "provide us with landmarks," according to J.B. Jackson, "to reassure us that we are not rootless individuals without identity or place, but are part of a larger scheme. The landscape can do much to reinforce our identity as political beings."

visual
contrasts

In Green Springs, the first impression one gets of the area is one of contrast. This is particularly apparent as it is approached by driving south on Route 15. Miles of second-growth Virginia pine suddenly cease and the visitor is treated to an open vista across almost one-and-a-half miles of lush, rolling pastureland.

The transition from dense pine to open pastureland is even more evident when seen on a map or aerial photograph. There are few scenic areas in Virginia where boundaries are so well defined.

sense of
identity

country
roads

Part of the uniqueness of Green Springs is this sense of identity. From any direction, one does not have to be told one is in Green Springs. An essential element in the Green Springs landscape is the narrow, winding, unpaved country roads. These roads, following trails two centuries old, ride the crest of the high ground or meander along a stream. Their casual turns and unplanned grades, as they follow the natural rise and fall of the land, impart a sense of history. Driving along them, one has little difficulty visualizing a two-horse station wagon, loaded with vacationers and their baggage, headed for the inn at Green Springs. The character of the roads and the countryside has changed so little.

As the roads weave in and out of pine and hardwood groves, unexpected and picturesque views of the local landscape and expansive views of the Blue Ridge are revealed in a pleasant succession.

visual
access

In his book The Last Landscape, William H. Whyte discusses the lack of "visual access" in much of our countryside. One of the most significant aspects of Green Springs is the many and varied vistas offered the motorist. There is no lack of visual access here. A weathered barn by the road, cedar hedgerows, an aging barbed wire fence or unfenced croplands, a distant view of spacious barns and silos--all combine to give one the impression of quiet rural charm where man and nature exist in harmony.

200 years
stewardship

Reflecting the productivity of the land and man's wise stewardship of it are many fine structures within the area. The houses, barns, churches and miscellaneous buildings, spanning a period of more than two hundred years, represent outstanding examples of the various architectural styles popular during that period. Few, if any, rural areas in Virginia contain as many architecturally significant and/or historic places within so relatively small an area.

One of the delights of the area are fine places which are visible from the road, set in a grove of trees and surrounded by out-buildings--the popular image of the Virginia plantation.

The charm of the area is not just in fine homes, but is equally found in locations such as the "village" of Poindexter. Here, the road intersection, store, storekeeper's home, an abandoned shed and board fences impart a sense of place as strongly as the finest home and its surroundings. One is impelled to stop, visit the store and to share for a moment, however vicariously, the feeling of being a part of the community. Standing on the porch of the store, it is not difficult to imagine one hears the creak of the oxen yoke as a team passes down the Mountain Road on the way to Richmond with a hogshead of tobacco.

To see all of Green Springs, it is necessary to wander through its winding dirt and gravel roads for some of the finest places, with magnificent views, are hidden unsuspectingly down

unpretentious lanes which appear to lead nowhere. Here, as elsewhere in Green Springs, one has the feeling that man and nature have worked together well. (Visual Analysis Map No. 11, Page 52.)

ARCHITECTURE

Although the overriding impression an outsider has of Green Springs is one of a serene, rural district, some of the individual buildings should be discussed in their architectural and cultural significance. Some are grand and distinguished, others are plain and nondescript. They are all an important part of the total historic and cultural landscape of Green Springs.

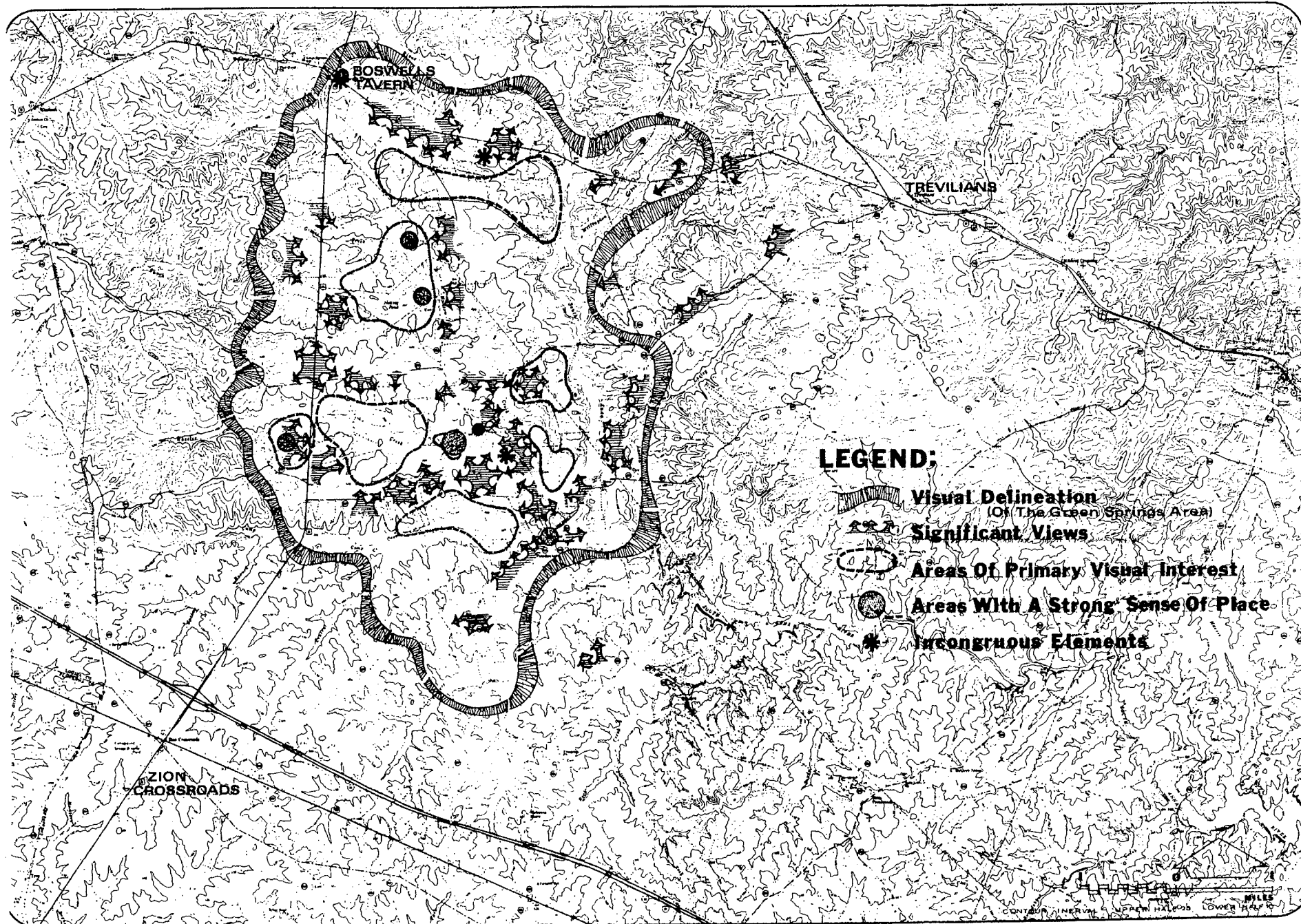
unique
assemblage

"The assemblage of rural architecture," states the Virginia Historic Landmarks Commission, "... is unique in Virginia... (a) much too rare phenomenon of outstanding examples of architecture preserved in their original context." Indeed, it would be difficult to find a place where the undisturbed landscape, rural way-of-life, and significant buildings have been so well blended--where the integrity of rural life has been preserved naturally. Moreover, it is even more unusual to find an area where the buildings have always been well maintained, never requiring excessive restoration or reconstruction work. This is living history. This is not a reconstruction or construction.

record of
rural life

The buildings in Green Springs represent every phase of development of Virginia architecture up to the period following the Civil War. Since then, there have been few new buildings in Green Springs. Thus, Green Springs provides a continuous record of rural life and architecture in Virginia. The buildings range from colonial to romantic villa style, from simple farmhouses to elegant plantation houses of unusual significance. They include a colonial ordinary, "Boswell's Tavern"; a country store, "Maddox's Country Store"; two churches, St. John's--carpenter Gothic, and Berea Baptist--a transition from classical revival to Gothic style architecture; and some "stick-style" houses--one named "Hard Bargain". Thirty-four are considered significant by the Virginia Historic Landmarks Commission and are listed on the National Register of Historic Places; six are registered landmarks on the National Register.

architectural
landmarks



Green Springs
 LOUISA COUNTY VIRGINIA
 a land use study

VISUAL ANALYSIS

11

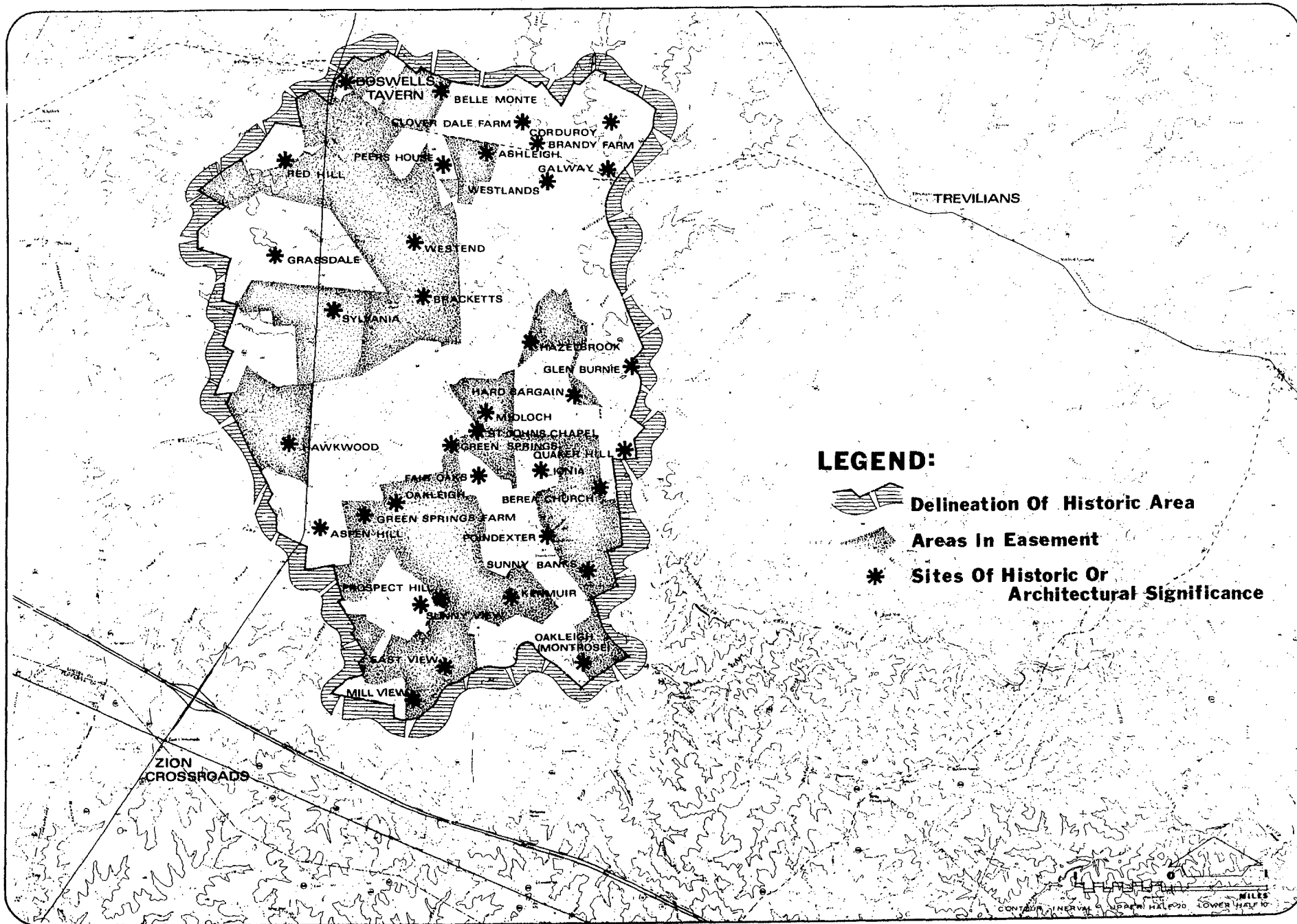
MEADE PALMER FASLA - LANDSCAPE ARCHITECT - WARRENTON, VIRGINIA

To find so many registered landmarks representing exceptional architecture in such a small rural area is unusual--especially with such different architectural styles. Just the landmarks, alone, include a wide range of buildings and styles: "West End", a Roman Revival style plantation, promoted in the area by Thomas Jefferson, as well as an archetype ante-bellum plantation; "Green Springs", a Federal-style plantation; "Ionia", a classic one-and-a-half story colonial farmhouse; "Boswell's Tavern", a "colonial hostelry", and "Hawkwood", the finest and best preserved Tuscan villa by the nationally known architect, Alexander J. Davis, and also one of the most important romantic country houses in America.

The other significant houses represent Federal style, Italianate country houses, Virginia homesteads, as well as plain clapboard country houses. Their names, alone, catch one's attention: "Sunny Banks", "Peers House", "Corduoy", "Belle Monte", "Galway", "Hard Bargain" and "Mill View". Surviving, also, are many outbuildings--smokehouses, kitchens, icehouses, barns, slave quarters, plantation school, carriage and spinning houses--which, along with the churches and country crossroads, build up the picture of an agrarian community.

It is the overall feeling of a rural community that continually emerges in any discussion of Green Springs. "The rolling farmlands," according to the National Register of Historic Places, "...have been continuously cultivated and kept up, preserving a neat, pastoral setting for the buildings. The neighborhood thus survives as an uniquely distinct rural district containing outstanding examples of architecture preserved in their original context." (Historic Designation Map No. 12, Page 54.)

Thus the collection of architectural gems is added to those unique features of Green Springs previously discussed.





**planning &
controlling land use***

PRESENT PLANNING PICTURE

"No farmer in Louisa County," noted a Virginia planner, "has as little planning on his farm as the County has for its land area."

no planning
program

Louisa County has no master plan or planning program which can set forth county goals and policies, and establish priorities for land use and public facility decisions. Louisa County is not a participant of the newly organized Thomas Jefferson Regional Planning District, though it is within the District's jurisdiction. However, a land-use master plan has been prepared for the land around the new North Anna reservoir in northeastern Louisa County by a tri-county planning commission, formed to guide land development around the lake. The commission has no legal authority, but, rather, is to be a liaison with three counties, including Louisa County, coordinating plans and zoning regulations for the lake area.

ordinances

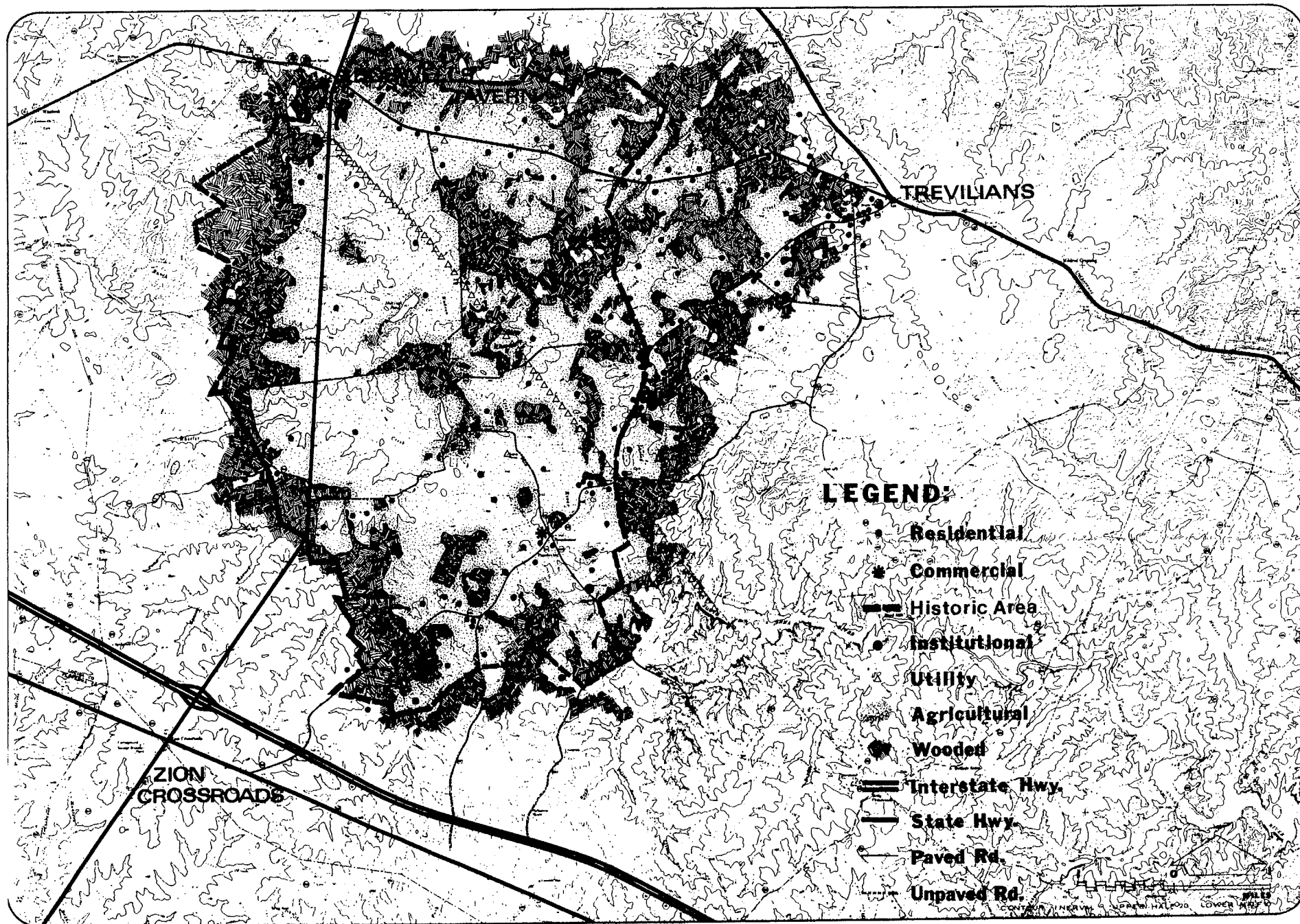
Louisa County does have a subdivision ordinance, adopted in 1966, and a zoning ordinance, adopted in 1969. Both these ordinances are meant to reflect the county land-use policies as spelled out in the county plans. Until there is a county plan for these ordinances to implement, such isolated ordinances can be interpreted as being arbitrary.

population

Planning in a rural county like Louisa County may not have seemed an important county task in the past. The total county population in 1970 was 14,000 people. The largest incorporated settlement in the county is Louisa Courthouse, the county seat, with a 1970 population of 576. With a land area of 517 square miles and a population of 15,000, the gross residential density is .04 dwelling units per acre--a definitely rural distribution of population. (Existing Land Use Map No. 13, Page 57.)

I-64

Louisa County, however, is located in a hub of a state transportation network which would make Louisa County more easily commutable than it has been in the past and, hence, vulnerable to new development pressures. Interstate 64, a major east-west highway through central Virginia, is almost adjacent to Louisa County. This means that Richmond



Green Springs
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a land use study

EXISTING LAND USE

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critical
issues

people per dwelling unit were scattered on half-acre lots. They would use up considerably more if scattered on 5-15 acre "farmettes". This is the type of policy issue which the county needs to face in its comprehensive plan. The pace, location, type and size of development can be controlled by the county.

In the absence of an overall county plan, Green Springs has recognized that the critical issues before it--the prison and mining--can considerably alter its land-use patterns and way-of-life. In order to intelligently assess the impacts of these issues in light of overall area, county, state and national policies, and to try to evolve a policy framework for land-use decisions, Historic Green Springs, Inc., has sponsored this land-use study. The goal of the study is the preparation of a preliminary land-use program for the Green Springs area, with policy and regulatory recommendations.

PROPOSED LAND-USE PROGRAM

Area Definition

As discussed earlier, Green Springs is remarkably well defined by geology, soils, topography, vegetation, visual identity, etc., which is the result of an event of natural history occurring approximately 200 million years ago. The historic zone, as defined by the Virginia Historic Landmarks Commission will be adopted by this study as the definition of Green Springs because it encompasses that area in which adverse changes in land use would have an immediate effect on this innately defined area. (Area Definition Map No. 2, Page 11.)

Need for Planning

Changes and development are going to occur in Green Springs and Louisa County. The possibility of seeing that those changes blend in with the goals, hopes, attitudes and needs

of the county is something everyone in Louisa County wants. The way to do this is through a sound planning program. Thus, it would seem that this is an excellent time for Louisa County and Green Springs to launch an aggressive planning program to direct the types, timing and location of the changes and development before the problems of change and development have crescendoed out of control.

federal
assistance

Aside from the benefits of adopting sound development policies, Louisa County will find that a planning program and a county comprehensive plan will make it easier to obtain federal assistance for all types of programs--from water and sewers to schools and highways. Also, in view of fast-moving state programs to develop statewide criteria and procedures for designated Critical Environmental Areas, as well as to develop state land-use policies, development controls and other policies affecting economic growth and population, Louisa County would do well to prepare its own planning goals and programs before these goals and programs are prepared for the county by the state. By having a planning program and plan of its own, the county would be in a good position to utilize the planning resources which will probably be available through the state's program in Critical Environmental Areas, as well as land-use planning.

In preparing its own comprehensive county plan, Louisa County could profit by coordinating with the interested state planning agencies, as well as with the Thomas Jefferson Regional Planning District Commission to assure maximum benefits from both regional, state and federal programs and minimum problems from overlapping.

two parts
completed

Prior to completion of a county comprehensive plan, Louisa County will have two parts of a plan, North Anna and Green Springs which could be adopted as facts of this plan. According to Virginia State Code, Title 15.1, Article 452, parts of a comprehensive plan can be adopted at different times prior to completing the overall plan.

protective
zone

In Virginia, a Critical Environmental Area, designated by the State Division of Planning and Community Affairs, is a protective zone in which local and/or state standards will be implemented and development restricted. An Historic Landmarks District in Virginia, declared by the Virginia State Historic Landmarks Commission, permits a locality to adopt a zoning ordinance amendment establishing historic district protective procedures, including an architectural review board.

federal
funds

When the National Park Service specifies an area "an Historic District"--after having been nominated by the state--such a district is eligible for funds from the Historic Preservation Act of 1966, and must have a review procedure prior to allocation of any federal funds for any use within the district.

impact
statement
required

Both state and federal recognition of an area such as Green Springs as a special environmental and historic district means an environmental impact statement must be prepared for any federally funded project which might have a significant environmental impact in Green Springs. Such an impact statement must show what alternative plans have been considered for a project, as well as an analysis of the impact itself.

While these designations are significant as reflections of federal and state concern for the maintenance of the environmental and historic quality of Green Springs, they do not carry any positive or legally binding protective programs. They establish necessary review procedures and aim to prevent deleterious intrusions. However, if an area is to be protected and enhanced, more than review procedures are required. An active and positive program is needed to protect those qualities and features considered so important by state and federal agencies.

protective
program

- Therefore, if Green Springs' unique environmental and historic qualities are to be protected, Louisa County and Green Springs must institute a positive, multipronged, legally binding, protective program to ensure those qualities recognized to be important.

The first step in a protective program is the establishment of an Historic District to cover the Green Springs area.

This would be done by Louisa County adopting an amendment to the zoning ordinance, declaring Green Springs an Historic District whose building activities would be subject to review, possibly by an architectural review board made up of qualified citizens. Within such a district, the Board of Supervisors may acquire and preserve any historic landmark which requires such action.

Secondly, priority environmental, historic and cultural qualities within Green Springs should be defined so that appropriate protective actions can be taken.

The scenic vistas from the roads are a major public asset deserving public protection.

- Routes 15 and 22 should be designated scenic highways to maintain their existing rural character and prevent incompatible uses and major traffic routing.

The 1970 Virginia State Outdoors Plan gave Route 15 as an example of the type of road appropriate for scenic road classification. Route 15 is now being widened from Gordonsville to Orange so it would seem the steps should be taken quickly to designate it in Green Springs as a scenic highway.

preservation
of landscape
character

To maintain the serene rural landscape character of these scenic highways, more than classification of the roads as scenic highways is needed. As important as preventing negative uses of the roadside is the encouragement of positive uses. If the sides of Route 15, for example, grew up in woods and became a tunnel the entire landscape quality of the serene, open, rolling countryside would be lost. It is, therefore, important to assure the maintenance of the vistas of open countryside from the scenic highways. Views should be kept open and the land should be mowed. With cooperation from the highway and agriculture departments--state, federal and county--arrangements might be made to subsidize the maintenance of these essential open vistas.

Also important to the scenic quality of Green Springs are the approaches to the area. Much of this quality will be lost if these approaches are not protected. Most major entrances lie within the historic zone and would be fairly well protected under the designations discussed above. The primary exception and most significant entrance is the southern approach on Route 15 which will need additional protection.

approach
protection

- Scenic easement for a 300'-500' strip of land on both sides of Route 15, extending from the historic zone for at least .5 miles to Camp Creek will be needed to insure the protection of this approach.
- Further protection for the eastern entrance on Route 22, extending approximately two miles eastward, would be desirable since incongruous elements along this corridor would disrupt some of the early and more dynamic views when arriving from this direction.
- Additional approach improvements can be made by organizing and cleaning up the intersection of Routes 22 and 15 at "Boswell's Tavern".

In some areas within Green Springs acquisition of the full rights of land will be necessary to obtain the maximum benefit to the public while, in other cases, only partial rights to the land will be needed. Acquisition of full rights or outright purchase can be made by public or private agencies. Such purchase could be land, a house, or the spring area which would essentially be a park. On the other hand, easements of acquisition of specific rights to land, like the development rights or access rights, is a means of protecting more land with less money than full rights purchase. In Green Springs, private land-owners have already put more than 7,000 acres of their land in scenic easements. (Historic Designation Map No. 12, Page 54.)

homogeneous
rural area

One of the most unusual features of Green Springs is the blending of small and large land-owners, store, and churches into a homogeneous rural area. If just the outstanding buildings and their grounds were protected, Green Springs would not be the distinctive rural area it has been since pre-Revolutionary time. It is the composite of all types of buildings--large and small, farm and commercial, church and school--and all types of land--open fields, ponds, streams and woods--that make Green Springs a distinct rural area.

protection as
a district

To enhance this rural atmosphere, this "compact representation of the evolution of rural life from pre-Revolutionary days to the present," according to the Virginia Historic Landmarks Commission, efforts must be made to see that the diverse buildings, people and lands now in Green Springs can be protected. So often, historic protection brings to mind an image of preserved plantation houses and isolated museums. Green Springs calls for an imaginative program in "new preservation"; keeping alive a distinct district where different types of people live and work in the 20th century, yet where some unique qualities from other eras have survived. How to protect those unique qualities and maintain realistic, economic and social policies is the challenge today in preservation planning.

Protection of its country store, of Poindexter and of its small landowners is critical to the success of preservation planning in Green Springs.

This is a real place. It is not a museum. Its architecture is not outstanding and no dramatic events have taken place here. However, Poindexter plays a key role in the life of Green Springs and, hence, its survival as a live, functioning place is important to the success of preservation planning in the area. Throughout this country, innumerable country stores have been "prettied up" to cater to the urban visitor.

- Poindexter should remain a functioning place. Its buildings should be protected by easements or restrictive covenants; its road frontages should not be altered by highway widening and its economic viability should be encouraged by preventing property costs to soar, by encouraging Green Springs' agricultural activity, and by preventing competitive commercial establishments nearby.

Guided Growth

The vitality of the economic and social activities in Green Springs contribute as much to the distinctiveness of the Historic District as the individual landmarks. The fact that Green

change and
growth

Springs has survived as a successful agricultural region throughout the history of this country attests to a healthy economic and social base. The health of this economic and social base should no more be frozen in 1973 than should the historic and cultural features have been embalmed in 1873. To keep Green Springs alive and healthy, change and growth will have to be accommodated within the policies and directions of the district.

- Change and growth will have to be guided, not restricted.

The preceding identification of the character, quality, natural system requirements, landmarks and activities of Green Springs establishes some of the elements requiring special attention. What growth and change is allowed should depend on how it can blend in with these aesthetic, social and economic elements and their functioning in the agricultural district. The critical questions are not growth or no growth, or change or no change, but what growth and change can occur and where and how.

residential
use

- New residential units, under careful site design and density guidelines, can occur in selected wooded areas of the Green Springs district without altering the character and functions of the area.

Development Inducers:

The selection of additional residential units as the best potential development type for Green Springs was based, partly, on the low level of further development inducement resulting from this type of land use. A single plant or single shopping area can induce far more additional development than a residential area. A plant brings in workers, highways, railroads, shops, more plants

limiting
factors

and more roads, more people, more shops, etc. Residential units do not have such a geometric inducement rate. Schools, limited roads, mail service and shops will be needed, but on a small scale.

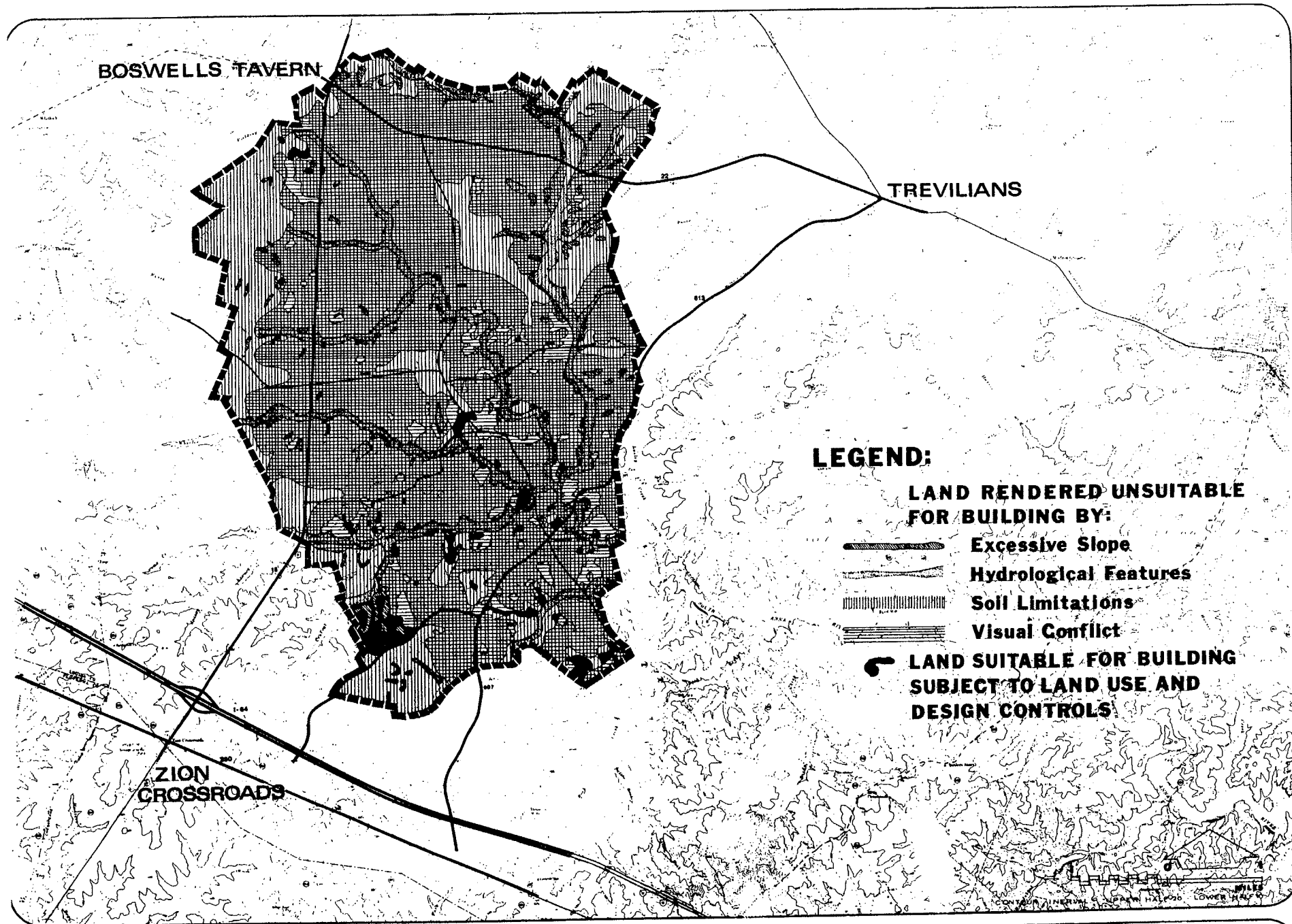
Land Suitability:

The suitability of the land for specific use is an inhibiting factor for development. Green Springs' heavy, impermeable clay soil, hydrological features, slopes and visual considerations are factors with which to be reckoned in determining where new units should be sited. The soil's impermeability with its concomitant tendency toward erosion makes it unsuitable for most development. As the following map shows, much of Green Springs is not suited for development, according to the above factors. (Land Suitability Map No. 14, page 67.)

Respect for land suitability is not a new environmental twist, but, rather, an old engineering, agricultural and planning "tried-and-true" axiom. The costs of erosion, percolative problems, shrinking and swelling can often far outweigh the benefits from developing unsuitable soil areas, as so many suburban areas (such as "Arlandria") in Northern Virginia have discovered. The types of soils and their slopes can help to guide both the type of development and its density.

It is interesting to note that most of the significant buildings in Green Springs have been built on small pockets of suitable soils within larger unsuitable areas.

The Land Suitability Map for Green Springs provides compelling reasons for continuing the profitable agricultural uses in the basin



Green Springs
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a land use study

LAND SUITABILITY

14

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continue
agricultural
use

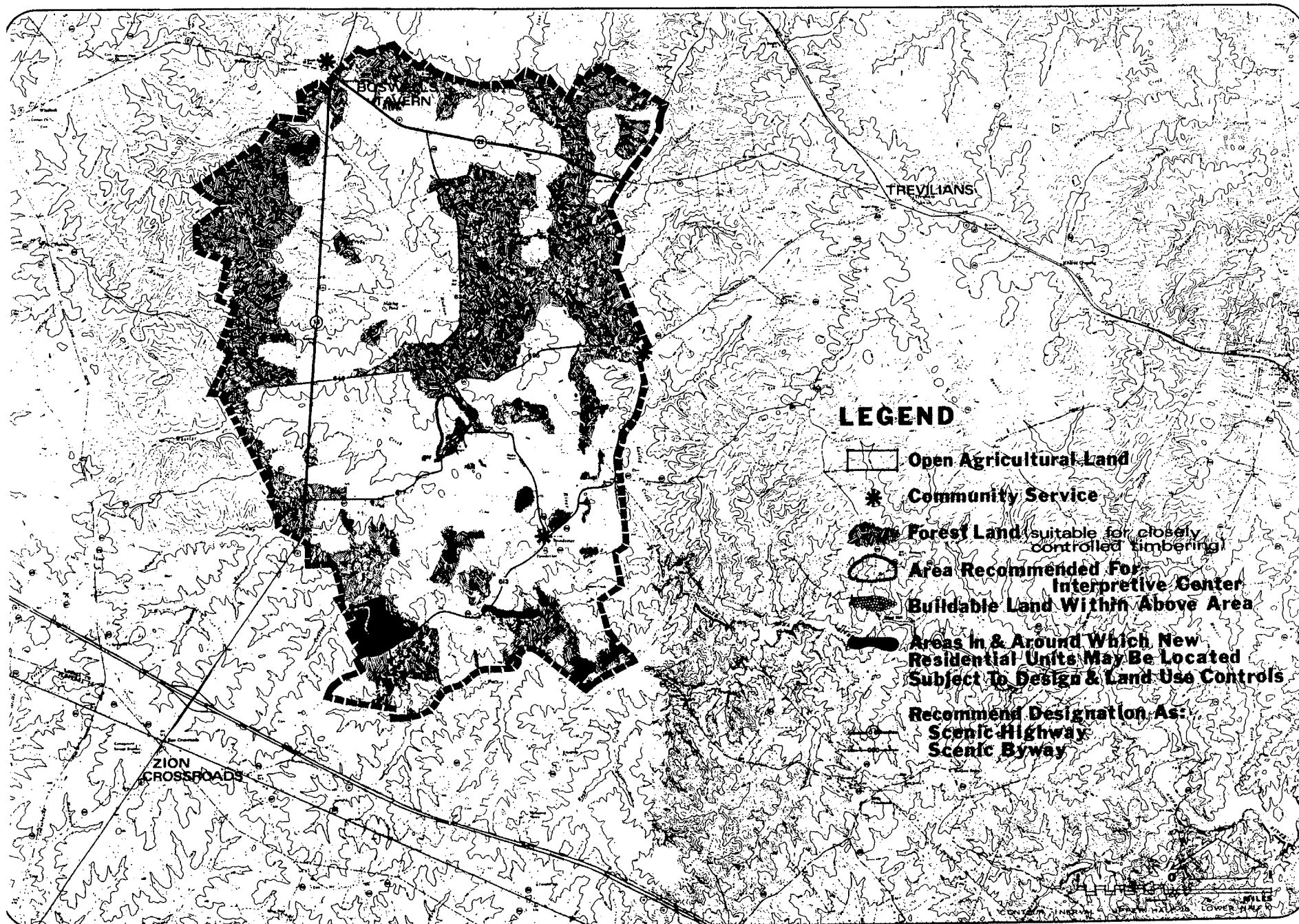
of the valley and allowing carefully sited residential units in the ridge areas. The long history of Green Springs' successful use of its land has been based on solid reasons--good soil for agriculture and poor soil for development. It would seem strange to suddenly reverse this proven success in man/land relations.

Commercial Land Uses:

low-ranking
land use

Commercial activities traditionally have been limited in Green Springs. (Land Use Plan No. 15, Page 69.) Cross-roads service activities--stores like Maddox's--appear the essential commercial land uses in the valley. As agriculture has remained the major economic activity, its related commercial functions have been limited to the farms and the distant markets. Today, commerce is a low-ranking land use in Green Springs. However, it should be noted that in Green Springs' era as a health spa in the late 18th century, commerce clearly played a more important function than at any other time. The waters made Green Springs "a resort" with inns and accommodations in farm houses for the visiting tourists. This was commerce based on an environmental attraction.

For Green Springs' future commercial activities, aside from, perhaps, minor commercial development at "Boswell's Tavern's" corner, the attraction of the valley's character and ambience in a distinct rural district may make tourism a major economic activity if Green Springs' qualities and functions are enhanced. Treatment of this potential is to be discussed in the next section and deserves close attention.



Green Springs
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a land use study

LAND USE PLAN

15

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Industrial Land Uses

For the first time in Green Springs' history, there is the prospect of a major industrial activity--vermiculite mining.

Vermiculite has been discovered in Green Springs and is suspected to stretch through much of the valley.

Mining of vermiculite is by open-pit method. The rock is drilled, blasted down and hauled to a crushing and screening mill. The Green Springs' mineral is fairly fine in size, which may lower its desirability for some uses. The ore is air-dried in a rotary kiln to eliminate surface water and then put through a series of screens and separators.

threats Green Springs property has been purchased by the W.R.Grace Company on the perimeter of the area, presumably for the purpose of mining and milling vermiculite. This poses a threat of visual, air and stream pollution, and possible effects from blasting.

agricultural
zone The site for the proposed vermiculite mining is zoned agricultural and mining is not a permitted use. As nearly as can be determined, mining is not mentioned in the county zoning ordinance. However, the ordinance, under "Use Regulations for Industrial Districts", permits "Any other purpose which will create or is likely to create conditions of smoke, fumes, noise, odors, dust or water pollution, detrimental to the health, safety or general welfare of the community." Before such use can be established a Conditional Use Permit must be obtained and approved by the Health Department.

state law State law (Chap. 734, Act of Assembly, 1968) provides for the securing of a permit prior to engaging in such operations. The law requires the submission of a plan which must contain, among other things, an agreement by the applicant to provide for the following: removal of debris, regrading and planting of trees, shrubs and grass. The law also provides for the creation of lakes for wildlife, recreational or water supply purposes.

mining
pollution

While the existing state law would appear to provide adequate environmental protection, unrealistically low bond requirements and lack of sufficient funds for administration and enforcement result in very little supervision or control over most operations in the state.

Local governments are empowered to adopt their own strip mining laws and in cases where these are more restrictive than the state law, the state abdicates its responsibility to the local governing body.

Once mined, the vermiculite--a porous substance used for some industrial purposes--is removed by special trucks. The service needs for mining include exceptionally well-built roads, available transportation such as trains, processing and storage facilities, housing and office facilities. These service needs involve considerable land and public support in terms of roads and sewers. More than open-pit mines are required for a vermiculite mining operation.

The great cost of vermiculite mining is environmental. Mining pollutes with erosion, odors, noise, dust and chemicals. It pollutes water by siltation from erosion, seepage into streams and rivers and even the ground water. Measures can be taken to considerably reduce the pollution from mining, but its disruptions to the soil, air and water system can never be totally avoided. These are not abstract or local environmental pollutions, but pollutions which affect the health and welfare of residents of Green Springs and Louisa County, as well as residents of adjoining counties. The air people and plants breathe is vitally affected. If vermiculite mining is allowed in Green Springs, a potentially serious problem may exist for the Town of Ashland and other users of water taken from the South Anna after passing through Green Springs.

Vermiculite mining in Green Springs can become the most significant determinant of the quality of life of the area. The noise of the mining, itself, and of the heavy trucks, the lights, the dust and the odors all accumulate to a massive intrusion into the quiet rural area known for its productive agriculture, homogeneous people and pastoral graces.

- Because of the potential hazards of vermiculite mining, which could destroy many of the unique qualities of this Critical

Environmental Area, it appears imperative that vermiculite or any other type of mining be prohibited from Green Springs. Such an industrial activity is incompatible with the purpose and functions of the historic zone for Green Springs and should not be allowed therein.

industrial parks

Other industrial activities for Green Springs seem an unlikely planning possibility as both Orange and Gordonsville, north on Route 15, have industrial parks which are mostly vacant. I-64, especially its interchanges, offers good locations for industry and, in Green Springs' case, the I-64 interchange is sufficiently distant to prevent any land-use conflict.

Basically, the highest and best use of Green Springs' land is not industrial. Louisa County has adequate land outside Green Springs to accommodate such uses, and its planning process can and should protect Green Springs by directing development pressures to more appropriate locations.

Public Facility Land Uses

impact review

Public programs can often be as immune to the environmental and land-use implications of their actions as private companies. To correct such oversights in public programs, the National Environmental Policy Act of 1969 was passed. The bill set forth a national policy to encourage "productive and enjoyable harmony between man and his environment" and to "preserve important historical, cultural and natural aspects of our national heritage...", and a procedure to review the potential significant impacts of federally funded projects, and to see what alternatives have been analysed.

The impact review process has become so popular that some states, including Virginia, are adopting it and various federal programs are considering using it. It provides a means of internally checking the decision-making process for a given project, and seeing that all options have been properly considered, and that the location, design, construction process

and operation of such a project is the best possible for the welfare of the people of the area. Where parks, landmarks, refuges, marshes, wetlands and fragile areas exist, especially when they have been so designated by state and federal agencies, careful attention is paid to the environmental impact statement process to assure protection of the features for which the state and federal agencies established an area.

Critical
Environmental
Area

Green Springs is such an area. The State of Virginia has declared it a Critical Environmental Area which "is any portion of land, regardless of size, which because of location, physical features, historical character, natural productive capability, scenic significance or unique flora or fauna, contributes to the economic, aesthetic or cultural well-being of individuals or society", according to a 1972 report on Critical Environmental Areas, prepared by Virginia's Division of State Planning and Community Affairs.

As pointed out by this report, such areas deserve safeguarding, including protective zones around them and special standards for use and development of land within them.

no binding
legal powers

Declared a state Critical Environmental Area, as well as a state and federally registered Historic District, Green Springs might be considered well safeguarded from negative environmental impacts from public projects. That is not the case. Each designation, though significant for its declaration of public purpose, carries no binding legal powers. There is an assumption that such designations will be respected in public and private decision making, and their values will be capitalized upon by the local and state jurisdictions.

- In protecting the values and functions of areas designated as Critical Environmental Areas and/or Historic Districts, such as Green Springs, every effort should be made to see that local, state and federal programs enhance those areas and avoid any unnecessary intrusions.

In Green Springs' case, the location of state penal institutions in the heart of Green Springs' open valley is a poor land-use decision. The penal reception and medical diagnostic center will be highly visible as it occupies a central location at the bottom of the basin.

Environmentally, this location poses more than aesthetic questions. The impact of delivering the required amount of water for the prison on the water supply of the area, as well as the prison's sewage effluent discharge on non-navigable streams in the area, presents serious problems.

There are negative impacts wherever such a facility is located, but when it is placed in a prominent place within a Critical Environmental Area and Historic District, alternative sites should be chosen.

Whether or not federal funds are used directly or indirectly or not at all, the State of Virginia should be assured that its pioneering work in recreation and environmental land-use planning is supported by its state programs and projects. The state should set the proper examples and precedents. If a prison is placed in a Critical Environmental Area and Historic District, then a power plant could be located at Mt. Vernon--following the Green Springs precedent. The State of Virginia has a responsibility to and a trust with its people to assure public land-use decisions are in accord with its stated policies and objectives. The location of a penal reception and medical diagnostic center in Green Springs, with no thorough and open investigation of alternative sites or adequate study of environmental impact or of employment potential, or any local or regional planning input, belies this responsibility and trust.

Visitors' Market

Green Springs' historic and cultural amenities, if safeguarded and enhanced, can become popular attractions. Colonial farms, mansions, towns like Williamsburg, scenic vistas,

caves and monuments now draw millions of visitors per year to Virginia. Most of these are isolated, often commercial, and rarely working situations. Green Springs--as a live, working, agricultural area with a mixture of landmark houses and more typical small farms--could be an interesting and informative visitor feature within a few hours of major metropolitan areas.

Visitors can be accommodated in a multitude of ways.

attraction
to visitors

- It is, therefore, important to decide what is the nature of the attraction, how it is best portrayed, how visitors can learn the most, and how local and state, public and private agencies, can work out a visitor program which can benefit themselves as well as the public.

The quiet pastoral quality of Green Springs' rural life could be altered considerably if there were steady streams of buses and cars touring the scenic lanes. Likewise, tourists might not see or learn all they could by such unstructured driving.

- An interpretive center, possibly near the spring, should be considered.

Such a center could provide information and exhibits on the history of Green Springs, its geology, its natural history, its farming, its houses, its life and how it has evolved. From such a center, there could be organized tours and walks which could both inform visitors and control the numbers and distribution of their movement through Green Springs. Uncontrolled diffusion could be a serious problem.

- To explore the visitor potential in Green Springs, as well as the means of handling it, it is suggested that a committee be

organized immediately which will include two representatives of the county, two representatives of Historic Green Springs, Inc., two representatives of the State Landmarks Commission, one from the federal government and one from the county-at-large.

Both the state and federal governments have considerable experience in interpretive centers which would prove useful. At the same time, the local representatives can well investigate revenue production which might be seen as a source of funds for the protection and maintenance of Green Springs.

Since the values of Green Springs are worthy of special designation by the state and federal governments, means should be devised for the public to visit and learn from this unique example of man and nature in harmony. How, where and when are the problem--and these can be carefully investigated by the proposed committee.

Private Activities

private
citizen

The private citizen and organizations of private citizens serve important functions in land-use activities, especially where innovations are involved. Public agencies can gain from the ideas and work of the private citizens and, in turn, private citizens can gain from the experience and authority of public agencies. Both need each other although they often do not want to admit it.

In a land-use planning situation such as Green Springs, it is easy to see how its innate geology and topography, its productive agriculture and architecture--which have blended into a pleasing, yet distinct rural area--can be taken for granted. The same pattern of life has existed for generations, and why would it not continue? There is nothing overwhelmingly dramatic about Green Springs. It is not the last tidal marsh, nor the habitat of a vanishing species, nor the site of the tallest mountain. It is an example of a working agricultural

area, with good productivity, pleasing setting, interesting houses and buildings. Recognition of these qualities of Green Springs and their value for the public today--and tomorrow--is not something which public agencies have traditionally pursued aggressively.

The private citizens of Green Springs have taken the lead in recognizing the values of their area for the public, in stimulating interest in Green Springs' unique historical, social, cultural and physical environment, and in gaining state and federal confirmations of this uniqueness. Landowners in Green Springs and other interested persons have formed Historic Green Springs, Inc., to conserve the best of Green Springs' past and accommodate changes of the future.

donation of
easements

The potential threats of the state penal institution and private vermiculite mining, which could destroy most of the overall ambience of the district, have forced Historic Green Springs, Inc., and some Louisa County residents and officials into strongly polarized positions. The granting of over 7,000 acres of open space easements might not have been made had there not been the threat and need.

communication
between
groups

An able citizenry, as it exists in Green Springs and in many other areas, could be using its talents and money for so many positive programs in the area if there were communication and mutual respect between private and public groups. Historic Green Springs, Inc., has the flexibility, skills and commitments to provide many services and functions to Louisa County which may not be immediately available from public programs. In many cities and counties, citizen organizations have been able to achieve a working partner relationship with the public agency--providing funds to carry over the lagtime in urban renewal work, bringing in experts for special advice, preparing model legislation and in making the public aware of new programs in a community.

The citizen organization, like Historic Green Springs, Inc., must try to understand the concerns, hopes and fears of the county's public agencies, and evolve means of communicating with those agencies which show how the ideas of protecting Green Springs enhance, not just that particular valley, but the entire country.

It is the public responsibility of the private organizations to produce innovative land-use ideas which can avoid the feared loss of county revenue, and inequities associated with

land-use control, be it zoning, an Historic District or condemnation. New approaches--like compensatory regulations, a real estate syndicate or a tax system which can spread the gains equitably--should be explored by such a citizen group. How can the gains which the county anticipates from the prison and mining operation be otherwise met? How many county employees will be needed in both operations? How do their benefits and costs work out? How renumeration could tourism be for Green Springs and Louisa County?

These are some of the questions Green Springs and Louisa County will need to know as it proceeds in land-use planning. Public land-use planning needs the inputs, as well as the spurs, from private citizens and private citizen organizations in order to produce effective and imaginative land-use programs.

Public Agencies

Private citizens and organizations can stimulate, aid, support and fund land-use activities, but they never have the ultimate power and responsibility of public agencies in land use. In the case of Green Springs, the role of county government is critical as it controls zoning, subdivision and planning. The county can direct the course of development--types, time, location and density of development. Louisa County is making decisions every day which, singly and cumulatively, affect the future of the county. It is in a position to see that those decisions make sense economically, socially and physically in the long-and-short-run for Louisa County. In order to do so, a comprehensive planning program is needed.

- Louisa County must establish a comprehensive planning program and adopt a comprehensive plan for the county.

Louisa County is moving toward a comprehensive planning program. It has a zoning ordinance and subdivision regulations which is like a carburetor and valves without the rest of the engine

parts. Just because a county has these ordinances, there is no reason to feel it has an adequate planning program.

Louisa County needs a plan establishing goals and priorities against which land use and public facility decisions can be evaluated. At this point, for instance, the prospect of both vermiculite mining and the state penal institution--which will have major impacts on the county--require such an evaluation.

county can
avoid
conflict

Requirements for state plans which, in turn, involve county plans are surfacing continuously in land-use legislation. When counties do not have plans, it may be necessary for the state either to require a county to do such plans or for the state to do the county plans itself. Louisa County has initiated the first steps of a planning program and if it could complete the process, it can avoid any conflict with the state and can also determine, on its own, where and how it wants Louisa County to develop.

- Louisa County must adopt, upgrade and revise land-use regulatory tools such as zoning, subdivision, site plan, soil erosion and sedimentation ordinances.

Regulatory tools should be implementing policies and objectives set forth in the comprehensive plan. Without a policy and objective framework, such regulatory tools can be seen as potentially arbitrary. This is another compelling reason to complete the county comprehensive plan. Regulations can be adopted and altered simultaneously with the preparation and adoption of the county plan.

revise
zoning
ordinance

- Revise the county zoning ordinance:

--To reflect the policies of a new plan.

--Rework agricultural and residential zones to current internal problems such as 30,000 square feet minimum lot size in an A-1 zone.

--Add new zones, such as:

Mobile home park zones.

Mining zone.

Historic district zone.

Conservation zone.

New residential and commercial zones to provide design flexibility and to encourage quality development.

- Revise the subdivision ordinance.

- To reflect the policies of the new plan and the zoning ordinance.

- Review and tighten allowed exceptions.

- Lot size clause should be deleted now that Louisa County has a zoning ordinance.

- Adopt a site plan ordinance,

- To insure quality design and construction to safeguard the public.

- To promote quality development for large commercial and industrial buildings and complexes (single family and agricultural uses are excepted).

--To include bonding.

--To become part of zoning ordinance.

- Designate scenic highways.

If routes 15 and 22 in Green Springs are designated as scenic highways the county should initiate zoning controls on land adjacent to those roads to maintain the rural and open space land uses. Maintenance of the rural quality of those roads is important not only to the immediate visual satisfaction of Louisa County residents but, also, to the visual satisfaction of potential visitors who can add to the county and state coffers if the historical and cultural qualities of Green Springs are enhanced and if the visitor market is well managed.

- Initiate land-use value taxation.

preferential
taxation

Louisa County can implement its plan and zoning ordinance in areas designated for agricultural, timber or open space uses by initiating preferential taxation, i.e., taxation at use value, not fair value. This may seem unnecessary in a rural county, but as development pressures build up, it may serve as a means of protecting some of the lands zoned for non-urban uses.

- Implement new tools.

As Louisa County has not been developed or urbanized like most metropolitan counties, it has options which urbanized metropolitan counties have long since lost. Thus, the county is in a position to direct its pattern of land uses if it has a plan of action and tools to carry out that action. Louisa County may find it necessary to use new tools to carry out its planning program.

It may want to investigate means of revising its tax structure so the county can gain from the profits of industrial and commercial operations in the county--many of whom, like W.R. Grace and Company, may be out-of-county, out-of-state companies or developers who also are out-of-state. As counties in metropolitan areas have discovered, the basic community services costs for private industries are borne by those counties yet the profits are taken out of the county. Louisa has an opportunity to see how such a situation can be averted through a restructured tax system.

land banks

Means of preventing untimely leap-frogging development is another new avenue which Louisa County would do well to explore. Land banks and other techniques might keep development in line with planning policies and public budgets.

- Louisa County should establish a committee of public agency and citizen representatives who would explore new techniques and tools for Louisa land-use assistance.



CONCLUSION

It should be obvious from the findings of this report that Green Springs is not another pleasant area in the Virginia Piedmont represented by a group of prosperous landowners who are opposed to "progress". It is instead, an extraordinarily unusual area of state and national significance. As has been pointed out, this is true due to a fortuitous combination of geology, topography, historic architecture, culture and scenery.

Vital to the protection of Green Springs' environment is the sustenance of Green Springs' economic and social viability. Green Springs is first and foremost a living place--not a museum. The question is how can Green Springs' way-of-life, which historically has been both economically and culturally productive, be continued.

The answers to this and other questions facing Green Springs and Louisa County lie in a sound planning program and process for the county. Such a planning process must be a continuing political process involving public officials and private citizens. It is not an easy accomplishment, but it is necessary if Louisa County and Green Springs want to have a hand in shaping their future. Continuous involvement of both public officials and private citizens is required for a planning process to be effective. Passing ordinances and legislation is only a first step. Without implementation, they mean little. Yet implementation involves constant work, care, imagination and surveillance, which, in turn, involves conscientious participation of public officials and citizens.

For planning to work in Louisa County and Green Springs, an extensive education and information program must be mobilized to show the public what options are available to them and how planning tools can carry out those options. Equally important is the need for coordination between public officials and private citizens. One group cannot operate without the other as the currently polarized Louisa County officials and Historic Green Springs, Inc., have learned. Likewise, Green Springs and Louisa County cannot operate independently. What planning is done for Green Springs can benefit the county and what planning Louisa County does benefits Green Springs.

Green Springs and Louisa County are in a fortunate position in having far more options than most urban or suburban counties to preserve their past and enhance their man-influenced landscape. "We can," as René Dubos said, "manipulate the raw stuff of nature and shape it into environments which are ecologically sound, economically profitable, aesthetically rewarding and favorable to the growth of the human spirit."

This has been done for two-hundred-and-fifty years in Green Springs and it can be continued if careful land-use planning and land-use controls are introduced. It calls for responsible stewardship.

BIBLIOGRAPHY

Batemen, A.M., Economic Mineral Deposits. John Wiley and Sons, Inc., New York, 1952.

Boozer, Earl W., J. B. Carter, G. R. Epperson, and J. W. Wills, Soils of Louisa County, Virginia, Report Number 16. Soil Conservation Service, Virginia Polytechnic Institute and State University, Louisa County, July, 1972.

The Bureau of Population and Economic Research. Estimate of the Population of Virginia Counties and Cities: July 1, 1971 (Provisional). University of Virginia Graduate School of Business Administration, Charlottesville, Va., 1971.

Carter, J.B. et al, Soils of Louisa County, Virginia. Soil Conservation Service, Virginia Polytechnic Institute and State University, 1972.

Colony, William M., The Tahoe "Land Capability" Approach to Resource Management: A Case History, Master's Thesis. University of Virginia, Woodrow Wilson Department of Government and Foreign Affairs, 1972.

Commonwealth of Virginia, Commission of Outdoor Recreation. The Virginia Outdoors Plan, 1970. Richmond, Va., 1970.

Commonwealth of Virginia, Department of Conservation and Economic Development, Division of Water Resources. York River Basin Comprehensive Water Resources Plan, Vol. I, II and III. Richmond, Va., 1970.

Commonwealth of Virginia, Division of State Planning and Community Affairs. Critical Environmental Areas. Richmond, Va., 1972.

Commonwealth of Virginia, Division of State Planning and Community Affairs. Economic Data Summary - Louisa County. Richmond, Va., 1969.

Commonwealth of Virginia, Division of State Planning and Community Affairs. Virginia Planning Legislation 1970. Richmond, Va., 1970.

Commonwealth of Virginia, Virginia Employment Commission. Population Work Force Data, 1970-1971, Counties-Cities.

Commonwealth of Virginia, Virginia Historic Landmarks Commission. Open-Space Easements.

Dubos, Rene Jules, "Critical Reading", Book World, 24 December, 1972.

Dubos, Rene Jules. "Humanizing the Earth", Washington Post. 31 December, 1972.

Dubos, Rene Jules. A Theology of the Earth. U.S. Government Printing Office, Washington, D.C. (A lecture delivered on 2 October, 1969, at the Smithsonian Institution).

Harris, Malcolm H., M.D., History of Louisa County, Virginia. Dietz Press, Richmond, Va. 1936.

Historic Green Springs, Inc., Comments and Information on Environmental Impact of Proposed Reception and Diagnostic Center in Green Springs, 1972.

Historic Green Springs, Inc., Green Springs House Tour Map & Guide. 15, 16 and 17 October, 1971, and 21, 22 and 23 October, 1972.

Hanover — Caroline Soil Conservation District, Louisa County Board of Supervisors, Thomas Jefferson Soil Conservation District, Town of Louisa, Va. Watershed Work Plan, South Anna River Watershed, 1964.

McHarg, Ian L., Design With Nature. The Natural History Press, Garden City, 1969.

National Clearinghouse for Criminal Justice, Planning & Architecture, Environmental Impact Statement Section. (Draft) Environmental Impact Statement, Reception & Medical Center, Green Springs, Louisa County, Virginia, Vol. I, II & III. Department of Justice, Law Enforcement Assistance Administration.

Hopkins, Robert, Geology of Western Louisa County, Virginia. Ph.D. Dissertation, Cornell University, 1960.

National Park Service, Criteria for Parklands. U.S. Government Printing Office, Washington, D.C., 1971.

North Georgia Mountains Authority, The Tallulah Study: Tallulah Gorge — Phase I, 1971.

Scott, Glenn Allen, "Springs of Controversy",
The Commonwealth, December, 1971.

Sherwood, W. Cullen, J.H. Huang, J.J. Dudash
and K.H. McGhee. Porosity and Permeability
Studies of Virginia Aggregates. Final Report,
Highway Planning and Research Project 0785,
U.S. Federal Highway Administration, 1972.

Simonds, John Ormsbee, Landscape Architecture,
McGraw-Hill Book Company, Inc., New York,
1961.

Smith, Robert Leo, The Ecology of Man: An
Ecosystem Approach, Harper & Row, Publishers,
Inc., New York, 1972.

U.S. Geological Survey, Water Resources Data
for Virginia. Prepared in cooperation with
the State of Virginia and Other Agencies,
1968.

Vice, R.B., H.P. Guy and G. E. Ferguson, Sediment
Movement in an Area of Suburban Highway Construction,
Scott Run Basin, Fairfax County, Va., 1961-64. U.S.
Geological Survey Water Supply Paper 1591-E, 1969.

Vineyard Open Land Foundation, Looking at the
Vineyard, 1973.

Whyte, William H., The Last Landscape. Doubleday
& Company, Inc., Garden City, 1968.

Wirth, Theodore J. & Associates, A Land Use Plan for North Anna Reservoir, Virginia. Theodore J. Wirth & Assoc., Chevy Chase, Md., 1971.

Dietrich, R.V., Geology and Virginia, University Press of Virginia, University of Virginia, Charlottesville, Va., 1970.

Woolman, M.G. and A.P. Schick, Effects of Construction of Fluvial Sediment, Urban and Suburban Areas of Maryland, Water Resources Research, Vol. III, 1967.

CREDITS

- This study was prepared by the staff of Meade Palmer, F.A.S.L.A.,
Landscape Architect

Meade Palmer	-- Principal in charge
Barry Starke	-- Project Director
Fred T. Kines	-- Project consultant and Graphics coordinator
Isabelle Palmer	-- Editor

- In association with:

Rosser Payne, AIP	-- Planning consultant
Ann Satterthwaite, AIP	-- Planning consultant
Dr. W. Cullen Sherwood	-- Geology, soils and hydrology consultant

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Robert A. Murdock	-- Executive Director, Association for the Preservation of Virginia Antiquities
Thomas Richards	-- Member, Commonwealth of Virginia Commission of Outdoor Recreation