

APPLICATIONS OF THE LAND EVALUATION AND SITE ASSESSMENT
(LESA) SYSTEM IN
VIRGINIA: CASE STUDIES AND THE LESSONS LEARNED

by

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(ABSTRACT)

The Land Evaluation and Site Assessment (LESA) system is a systematic evaluation technique developed by the United States Department of Agriculture (USDA), Soil Conservation Service (SCS), to evaluate the productivity of agricultural land and its suitability or non-suitability for conversion to non-agricultural use. LESA has recently (July, 1983) been made available to state and local governments to assist them in their own farmland protection programs. LESA is an important program for planners to understand because it is the principal implementing device of federal and State (Virginia) farmland protection statutes and because local governments are beginning to use it for their own programs. Furthermore, local planners are the principal agents in LESA's establishment and implementation.

This paper involves case studies of the application of LESA in Virginia. The paper consists of a detailed case study of Clarke County's experience with LESA. Clarke County has been successfully using LESA longer than any other Virginia County. Issues and problems associated with the system are gleaned from the Clarke County case. The paper also includes subsequent case studies, of Culpepper, Hanover, and Montgomery Counties, which are less detailed but focus on the treatment of the issues and problems found in the Clarke County case study. Based on the case studies, several conclusions are made regarding the problems and issues involved in making and using an effective and useful LESA system.

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Chapter I
INTRODUCTION

1.1 JUSTIFICATION FOR THIS STUDY

The Land Evaluation and Site Assessment (LESA) system is a systematic evaluation technique developed by the United States Department of Agriculture (USDA), Soil Conservation Service (SCS), to "evaluate the productivity of agricultural land and its suitability or non-suitability for conversion to non-agricultural use" ¹. LESA was designed to be the principal tool for implementing the federal Farmland Protection Policy Act of 1981 which seeks to minimize unnecessary, irreversible destruction of farmland by U.S. agencies.² The act requires that USDA provide assistance in establishing LESA programs to state and local governments and private organizations wishing to conserve farmland. After LESA is established and formally adopted at the state or local level, federal agencies must locate their projects so that they are compatible with state or local LESA findings regarding conversion of land to non-agricultural use.

¹ Federal Register V48 No.134 31866

² Land Letter, Feb. 1982, pg 4-6.

The State of Virginia, through amendment of the Code of Virginia, has adopted a farmland protection policy that is entirely compatible with the LESA system. The Virginia legislation requires that each county, city, and town, in cooperation with USDA, designate the important farmlands within its jurisdiction.³ By incorporating the same definition of important farmland⁴ as used by the federal act, the state legislation makes LESA the method of choice for its implementation.

LESA has recently (July, 1983) been made available to state and local governments to assist them in their own farmland protection programs. According to some recently published figures, 454 counties or municipalities are now using LESA.⁵ Given that the system was developed in 1981,

³ House Bill 523. The law does not require the LESA program, but does require the same information that LESA's Land Evaluation component generates. Since local governments are required to cooperate with USDA to produce this information, LESA (at least the Land Evaluation component) will generally be used.

⁴ Important farmland consists of prime and unique farmland and other farmland that is of statewide or local importance for agricultural production. Prime farmland is land that has the best combination of physical characteristics for the production of agricultural crops with minimal inputs and without intolerable soil erosion. Unique farmland is land used for production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture needed to economically produce sustained yields. Federal Register. Cited above, note 1; and Virginia House Bill 523.

this represents a rather rapid rate of adoption.

LESA is an important program for planners to understand because it is the principal implementing device of federal and State (Virginia) farmland protection statutes and because local governments are beginning to use it for their own programs. Furthermore, local planners are the principal agents in LESA's establishment and implementation. However, no comparative assessment has been made of the establishment and implementation of the system. Such an assessment would be timely since LESA will be well used throughout Virginia and the nation.

1.2 DESCRIPTION AND METHODOLOGY OF STUDY

This paper involves case studies of the application of LESA in Virginia. The objectives of the paper are to determine (a) if there are any preconditions necessary to establish and implement a LESA system; (b) what problems have been encountered in establishing and implementing LESA systems and how have they been treated; and (c) what steps have been taken to make LESA systems more useful and effective. To make these determinations, personal interviews were conducted with planners, administrators, and other people involved in the use of LESA in Virginia.

⁵ NASDA Research Foundation Farmland Project, Farmland Notes, V. 3, No. 2, February 1984.

This paper consists of a detailed case study of Clarke County's experience with LESA. Clarke County has been successfully using LESA longer than any other Virginia County. Issues and problems associated with the system are then gleaned from the Clarke County case. The paper also includes subsequent case studies, of Culpepper, Hanover, and Montgomery Counties, which are less detailed but focus on the treatment of the issues and problems found in the Clarke County case study (for locations, see Figure 1).

1.3 HISTORY OF THE SYSTEM

The LESA system consists of two parts. The first, Land Evaluation, is based on soil survey information and evaluates the suitability for agriculture of the soil types of a given area. The second part, Site Assessment, is "designed to identify factors other than soils that contribute to the suitability of an area for retention in agriculture" ⁶. These factors are developed by local planning officials with the assistance of a LESA committee composed of a broad cross-section of people knowledgeable in the area's agriculture.

⁶ Wright, L.E., W. Zitzmann, K. Young, and R. Googins. 1983. "LESA -- agricultural Land Evaluation and Site Assessment". Journal of Soil and Water Conservation, March/April 1983. pg 82-86.

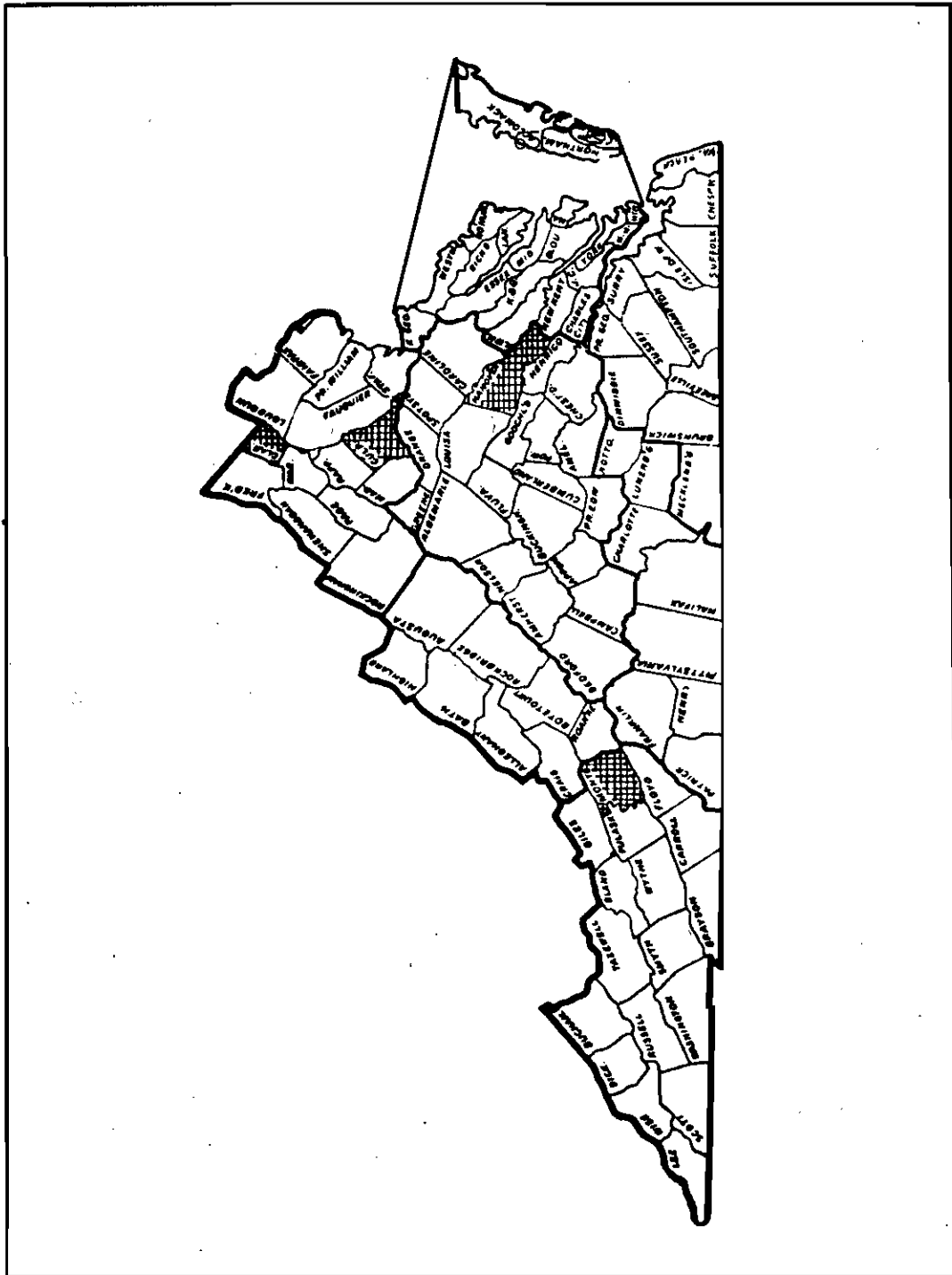


Figure 1. Location of Virginia LESA Case Study Counties.

The LESA system was developed because local planners found other SCS farmland evaluation methods of limited use in judging whether or not to protect farmland from development. The standard soil survey provides a purely physical basis (soils and landscape features) for judging suitability of sites for agricultural and non-agricultural use but does not consider economic factors.⁷ The SCS's Important Farmland Mapping Program attempted to take into account economic factors by delineating the nation's most inexpensive to farm, high yield soils. However, this standard proved to be of limited use when applied to local situations:

For instance, in Dekalb County, Illinois, 97% of the farmland is classified as prime farmland. Obviously, not all this land can be preempted for agricultural use since there are demands for uses also. On the other hand, in Whitman County, Washington, only 2.8% of the land is in the prime category because of steep slopes and high erosion potential. Yet, Whitman is the most productive wheat county in the nation, and most of the land in the county is under cultivation.⁸

In both cases, the Important Farmlands Mapping Program was of little use in helping to channel development away from the best farmland.

⁷ Steiner, F. R., R. W. Dunford, R. D. Roe, W. R. Wagner, and L. E. Wright. "The use of the SCS agricultural Land Evaluation and Site Assessment (LESA) system in Whitman County, Washington". Landscape Journal, V. 3, No. 1, pg. 3 - 14, March 1984.

⁸ Ibid. pg 6.

1.4 LESA AS AN IMPROVEMENT

The LESA system was designed "to determine the quality of land for agricultural uses and to assess sites or land areas for their agricultural economic viability." ⁹ LESA was designed to have at least three major advantages over other SCS land evaluation systems:

1. It was designed to allow use of a more comprehensive base of considerations in evaluating land. This includes extensive use of physical soil data, agricultural economic potential, and non-agricultural factors important to local land use decision making.
2. LESA was designed to provide a consistent and objective means of evaluating conversion of agricultural land to other uses. It can be used, for example, to evaluate rezoning requests on agricultural land. The system can be defensible because much scientific and economic data are used as well as the opinions of a team of experts in local land use and agriculture. A LESA system can evaluate land use changes in a consistent and objective manner.

⁹ LESA Handbook, 310-VI, Issue 1, January 1983. U.S. Soil Conservation Service.

3. Flexibility to local conditions and program needs was also sought in the design of LESA. The factors considered and their relative importance in land use decisions are determined at the local level.

1.5 OVERVIEW OF THE LESA SYSTEM

Setting up a LESA system involves putting local soils and farming information plus land use criteria derived by the local LESA committee into the general LESA framework. The general LESA framework consists of two parts, Land Evaluation and Site Assessment.

1.5.1 Land Evaluation

Land Evaluation is primarily for ascertaining the relative suitability of soils for agricultural use. Groups of soils, ranging from the best to the worst for the agricultural use are identified and ranked using data from the National Cooperative Soil Survey. The Land Evaluation process uses soil-specific information on production costs and yields to rate the quality of the land for agriculture. Establishing soil classes reflecting different agricultural suitabilities is a primarily technical procedure involving the physical characteristics of soil. The process is considered an advance the Land Capability Classification and

the Important Farmlands Mapping Program, two earlier attempts at farmland evaluation.

More specifically, Land Evaluation integrates different methods of classifying soils, including the Land Capability Classification, the Important Farmlands classification system, and measures of soil productivity and when available, soil potentials. Soil productivity indicates the expected yield for a specified indicator crop under a high level of management. Soil potential adjusts the productivity ratings by considering the cost of measures to overcome limitations such as erosion, wetness, etc., and continuing limitations after the measures are taken.

The final result of the Land Evaluation system is a series of ten or so soil groups, each containing soils of similar agricultural suitability. The groups are formed based on Land Capability ratings, Important Farmland classification, and either soil productivity or potential ratings. For example, soils of the same capability class might have different productivity ratings and so would be put in different groups. Ideally, the ten groups should each represent 5 to 15 percent of the total acreage of the planning area.

It is important to note that Land Evaluation is usually based on only one indicator crop, the crop for which soil

productivity and potential ratings are derived. These ratings are not necessarily indicative of soil productivity or potential for other crops. The example of the Land Evaluation system shown in Table 1 uses corn-for-silage as the indicator crop.

1.5.2 Site Assessment

The Site Assessment system is designed to account for the factors, other than soils, that affect agricultural land suitability. Some examples of these other factors include the effect of location, distance to markets, adjacent land uses, and zoning. Criteria that can comprise a Site Assessment system are derived from seven groups of factors:

1. agricultural land use;
2. agricultural viability factors;
3. land use regulations and tax concessions;
4. alternatives to proposed use;
5. compatibility of proposed use;
6. compatibility with comprehensive development plans;
and
7. urban infrastructure.

Developing the Site Assessment system involves identifying factors important in local land use decision-making regarding agriculture retention. Each factor is then

Table 1. Montgomery County Land Evaluation System.

Soil Group	Constituent Soil Types ¹	LCC ²	Imp. Farmland Class	SPI Range ³	Weighted Avg. SPI	Acres	%	Rel. Value ⁴
1	28, 30B, 16B, 12B, 20B	2E/2W	Prime	100	100	10,105	3.9	100
2	13B, 15B, 19B, 33	2E/2W	Prime	94-84	90	7,695	3.0	90
3	11B, 12C, 15C, 21C, 30C	2E/3E	Statewide	92-81	87	11,881	4.6	87
4	11C, 13C, 14, 17C, 31C	3E/3W	Statewide	77-69	74	12,676	4.9	74
5	2B, 25, 2C	2E/3E/4W	Local	76-61	64	12,177	4.7	64
6	1C, 26C, 10	3E/3S	Local	57-48	55	11,102	4.3	55
7	22C, 16C	3E	Statewide	53-45	47	9,964	3.8	47
8	30D, 15D, 16D, 13D	4W	Statewide	33-21	22	12,668	4.9	22
9	9C, 3D, 26D	4E	Local	17-13	16	10,290	4.0	16
10	3E, 4E, 5D, 6E, 7D, 8D, 8E, 9D, 29, 16E, 18B, 18C, 18D, 23C, 24D, 26E, 27E, 32B, 32C, 32D, 34E	6E/6S/7S	None	---	--	159,865	61.8	0

¹ Soils types are identified by mapping unit number

² Land Capability Classification

³ Soil Productivity Index

⁴ Value used in calculating LEESA score

(Source: Montgomery County Planning Department, Christiansburg, Va.)

operationalized as one or more quantifiable criteria. A range of values (0 - 10) is assigned to each criterion with 10 the most favorable condition of the criterion in terms of agricultural retention or viability. At this point, relative weights are assigned to each criterion, so that more important criteria are emphasized with respect to less lesser ones.

The Site Assessment system establishes a framework for land use decision-making. Site Assessment is generally used on a case by case basis to assess individual sites after the framework is devised. Unlike the Land Evaluation system, it is not necessary to determine the Site Assessment ratings for the entire planning area to set up the LESA system. An example of the Site Assessment system framework is shown in Table 2.

1.5.3 The Combined System

Once Land Evaluation and Site Assessment components are developed, combining them involves setting the weighting of each in the final outcome. SCS recommends giving the Site Assessment scores twice the importance of Land Evaluation scores. Any weighting scheme is possible, however. At this point, comparisons of alternative agricultural sites for a development project, for example, could be assessed in terms of suitability for retention.

Table 2. Montgomery County Site Assessment System.

LESA ADOPTED CRITERIA AND WEIGHTS REVISED 7/12/83	
WEIGHTING SCORE	
7	1. PERCENT OF AREA IN AGRICULTURE WITHIN 1/2 MILE RADIUS OF THE PROPERTY BOUNDARY
	10 95 - 100%
	8 75 - 95%
	6 50 - 75%
	4 25 - 50%
	2 10 - 25%
	0 0 - 10%
7	2. LAND USE ADJACENT TO SITE
	10 ALL SIDE OF SITE IN AGRICULTURE
	8 ONE SIDE OF SITE ADJACENT TO NONAGRICULTURAL LAND
	5 TWO SIDES OF SITE ADJACENT TO NONAGRICULTURAL LAND
	2 THREE SIDES OF SITE ADJACENT TO NONAGRICULTURAL LAND
	0 SITE SURROUNDED BY NONAGRICULTURAL LAND
8	3. ZONING
	10 SITE AND ALL SURROUNDING SIDES ZONED FOR AGRICULTURAL USE
	8 SITE AND THREE SIDES ZONED FOR AGRICULTURAL USE
	5 SITE AND TWO SIDES ZONED FOR AGRICULTURAL USE
	2 SITE AND ONE SIDE ZONED FOR AGRICULTURAL USE
	0 SITE ZONED FOR NONAGRICULTURAL USE AND/OR SITE ZONED ON ALL SIDES FOR NONAGRICULTURAL USE
8	4. AVAILABILITY OF LESS PRODUCTIVE LAND
	10 MORE THAN 2/3 OF THE LAND WITHIN A 2 MILE TRAVEL DISTANCE IS LESS PRODUCTIVE
	5 1/3 TO 2/3 OF THE LAND WITHIN A 2 MILE TRAVEL DISTANCE IS LESS PRODUCTIVE
	0 LESS THAN 1/3 OF THE LAND WITHIN A 2 MILE TRAVEL DISTANCE IS LESS PRODUCTIVE
8	5. COMPATIBILITY WITH COMPREHENSIVE PLAN
	10 AGRICULTURAL USE COMPATIBLE WITH PLAN
	0 AGRICULTURAL USE INCOMPATIBLE WITH PLAN
6	6. CENTRAL WATER DISTRIBUTION SYSTEM
	10 NO PUBLIC WATER WITHIN 1 MILE
	7 PUBLIC WATER WITHIN 2,000 FEET
	4 PUBLIC WATER WITHIN 500 FEET
	0 PUBLIC WATER AT OR ADJACENT TO SITE
6	7. CENTRAL SANITARY SEWAGE SYSTEM
	10 NO PUBLIC SEWER LINE WITHIN 1 MILE
	7 PUBLIC SEWER LINE WITHIN 2,000 FEET
	4 PUBLIC SEWER LINE WITHIN 500 FEET
	0 PUBLIC SEWER LINE AT OR ADJACENT TO SITE
4	8. TRANSPORTATION
	10 SITE ACCESS TO UNIMPROVED ROAD
	5 SITE ACCESS TO SECONDARY ROAD
	0 SITE ACCESS TO PRIMARY ROAD
8	9. COMPATIBILITY OF PROPOSED USE WITH SURROUNDING EXISTING LAND USE
	10 INCOMPATIBLE
	0 COMPATIBLE
5	10. SITE IN AGRICULTURAL AND FORESTAL DISTRICT (AFD)
	10 IN AFD
	0 NOT IN AFD
5	11. SOIL CONSERVATION PLAN FILED
	10 ACTIVE PLAN
	5 INACTIVE PLAN
	0 NO PLAN
5	12. FAMILY FARM VALUE
	10 THREE GENERATIONS OR MORE
	5 TWO GENERATIONS
	0 ONE GENERATION

(Source: Montgomery County Planning Department, Christiansburg, Va.)

For determining if a specific parcel of land should be converted to another land use, or alternatively, be included in some protection program such as an agricultural district, a "cut-off" value is needed. The LESA committee can select such a value for which scores above it are considered worth preserving while ones below it are suitable for conversion (higher scores indicate better farmland).

An example of the use of LESA to rate a farm for a rezoning is shown in Figure 2. First, the Land Evaluation Average Site Value is calculated by determining the agricultural (soil) group and corresponding relative value for each map unit of soil; then acreage of each soil is multiplied by its corresponding relative value and a weighted average is calculated. The weighted average is the Land Evaluation Average Site Value. The Site Assessment score consists of the rating for each factor (from 0 to 10; assigned points column) multiplied by the adjusted factor weights, yielding the adjusted weight assigned points; these later figures are totaled, giving the Site Assessment score. The adjusted weights used in Site Assessment are derived from the factor weights (Table 2) and scaled so to set the maximum possible Site Assessment score at 200 (twice the maximum possible Land Evaluation score of 100); relative weighting relationships among factors is the same as in Table 2.

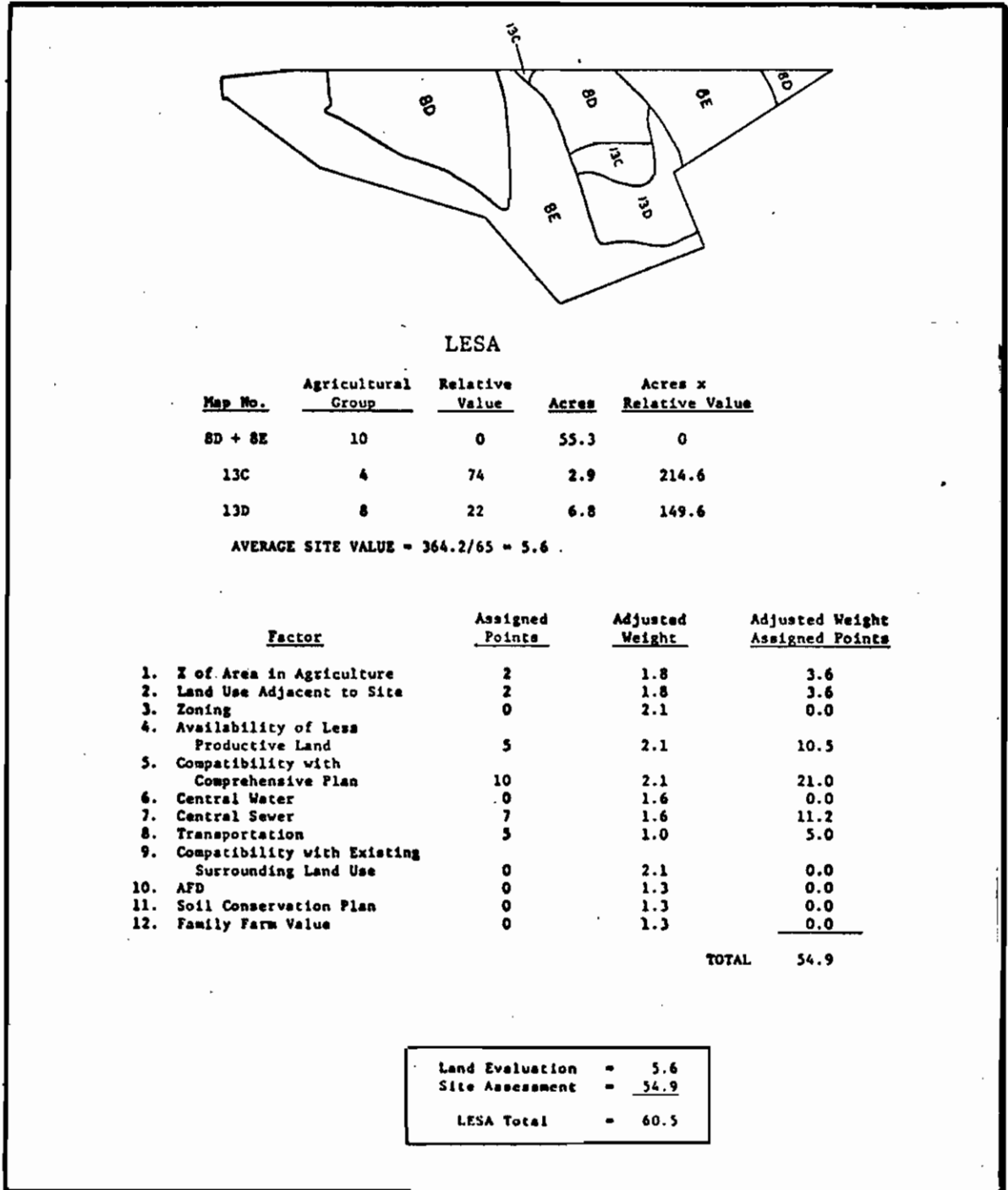


Figure 2. An example of the use of the Montgomery County LESA system.

(Source: Montgomery County Planning Department, Christiansburg, Va.)

Chapter II

THE CLARKE COUNTY LESA

Clarke County, Virginia, is one of the northernmost counties in the state and is entirely within 65 miles of Washington, D.C. Despite annual population growth rates of 3.6% to 5.6% in adjacent Loudoun, Fauquier, and Warren Counties (see Figure 1), Clarke County has a growth rate of about half that of its neighbors.¹⁰ Instead of encouraging growth, Clarke County has favored maintaining its rural, agricultural character.

A highly diversified agricultural industry is the cornerstone of the County's economy.¹¹ Orchards, dairies, and beef cattle, horse, and swine production comprise the major enterprises.¹² With a population of 9,965 distributed rather uniformly throughout its 110,000 acres, Clarke County is still a rural county. LESA was applied in Clarke County to help preserve agricultural lands.

¹⁰ U.S. Census of Housing and Population. 1970 and 1980. Bureau of the Census.

¹¹ Maizel, Margaret Stewart, and G. Robert Lee. 1982. The development and utilization of the Land Evaluation and Site Viability (LESA) system for the definition of important farmlands by Clarke County, Virginia. Office of the Administrator, County of Clarke, Berryville, Va.

¹² Ibid.

In this chapter, the problems and issues encountered regarding Clarke County's experience with LESA are reported. Lessons the County learned about LESA are discussed, as well.

2.1 CONDITIONS LEADING TO AN INTEREST IN LESA

Clarke County was one of twelve "pilot project" counties in the nation selected to use LESA on a trial basis in 1981 shortly after SCS had developed the system. Clarke County asked that it be included by SCS among the twelve pilot projects so the County could identify its important farmlands¹³. Four major conditions contributed to the County's interest in LESA.

Firstly, Clarke County has a long-standing progressive attitude regarding public policy to preserve farmland. Agricultural zoning was first enacted in 1956.¹⁴ In 1974, this was changed to a form of large lot zoning, which required a five acre minimum lot size. This policy was somewhat successful in maintaining the rural character of the area, but it did little or nothing to preserve farmland.¹⁵ The five acre minimum lot size lead to a more

¹³ Clarke County's definition of important farmland is the same as the state and federal definition as cited above, note 4.

¹⁴ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

rapid conversion of farm acreage to residential use and actually wasted land.

Sliding scale zoning, the first of its kind in Virginia, replaced large lot zoning in 1980.¹⁶ For the majority of Clarke County (the non-mountainous land west of the Shenandoah River; see Figure 3), "preservation of remaining agricultural land and protection of it from the intrusion of incompatible residential development¹⁷" has been the County's goal. Threats to achievement of this goal lead the County to search for means to strengthen its farmland protection policies.

Secondly, in 1978, neighboring Frederick County proposed locating a major (6 - 12 mgd) Regional Wastewater Treatment Plant on land adjacent to agricultural zoned land in Clarke County.¹⁸ This project would have the potential to induce relatively high density residential development in Clarke County. This prompted County planning and administrative officials to investigate ways available for

¹⁵ Clarke County Comprehensive Plan. 1980. page 63. Clarke County Planning Commission.

¹⁶ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

¹⁷ Clarke County Comprehensive Plan. Cited above. Page 63.

¹⁸ Maizel, Margaret Stewart and G. Robert Lee. Cited above.

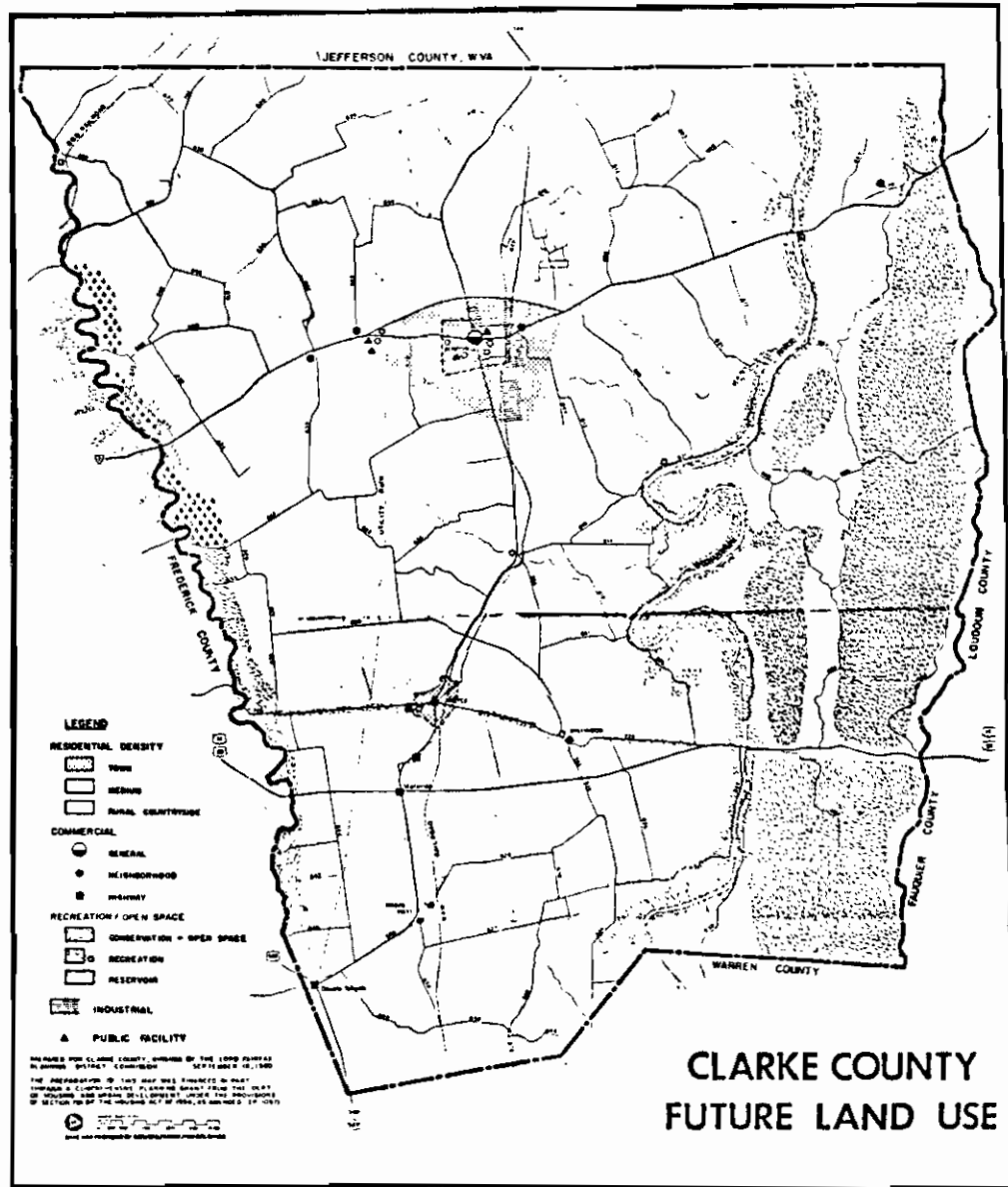


Figure 3. Future Land Use Map of Clarke County, Virginia.

(Source: Office of the Administrator, County of Clarke, Berryville, Va.)

protecting the farmland. Ensuing actions taken by Clarke County helped make the yet undeveloped LESA system well suited to meeting the County's needs.

Thirdly, after finding that there were no effective federal policies for protecting farmland, the Clarke County Board of Supervisors "initiated and obtained legislation in April, 1981, to establish a state policy to preserve farmland."¹⁹ Following enactment of the federal Farmland Protection Policy Act in December of 1981, the Clarke County Board initiated an amendment to the state policy act to make the two acts compatible. The key to this compatibility was identical definitions of important farmlands, the lands which were intended for protection.²⁰ Compatibility meant that the LESA system provided for under the federal act for identifying important farmland could be used to satisfy the state policy act requirements.

Fourthly, also instrumental in encouraging the use of LESA in Clarke County was the sentiment among County planning and administrative officials that justifications were weak for farmland preservation policies, particularly the sliding scale zoning.²¹ The County was concerned that

¹⁹ Ibid. The policy is contained in Code of Virginia, Sec. 3.1 - 18.4 through 18.8, amended Feb. 9, 1982.

²⁰ Federal Farmland Protection Policy Act. Federal Register. Cited above, note 1.

there was no objective process for deciding on subdivision and rezoning requests. Furthermore, without an objective decision-making process, there was concern that the newly adopted sliding scale zoning could be lost should a court battle over it arise. This was a particularly acute concern because of the stringent nature of the sliding scale zoning.

The sliding scale zoning system assigns development rights to all agricultural and forestal land owners in the County on basis of parcel size. In this technique, smaller land owners are permitted to develop a higher percentage of their property than large landowners (see Table 3). This places more emphasis on preservation of large farms because they are more critical to maintenance of agricultural support industries. Also with the sliding scale zoning system, the minimum lot size was reduced from five acres to one and a maximum lot size of two acres was established.²²

The County felt legally at-risk because this zoning was applied to 90 percent of the County. Without a technically sound and objective basis for reviewing rezoning requests, the County's decisions might appear arbitrary and capricious. LESA was sought as a way of helping produce

²¹ Opinions of Margaret Maizel, March, 1984 and G. Robert Lee, April, 1984.

²² "Sliding Scale Zoning". 1982. Clarke County Planning Commission, information leaflet.

Table 3. Clarke County Development Rights Allocation System.

<u>Size of Tract of Land</u>	<u>Number of Single-Family Detached Dwelling Units Permitted</u>
0 - 14.99 acres	1
15 - 39.99 acres	2
40 - 79.99 acres	3
80 - 129.99 acres	4
130 - 179.99 acres	5
180 - 229.99 acres	6
230 - 279.99 acres	7
280 - 329.99 acres	8
330 - 399.99 acres	9
400 - 499.99 acres	10
500 - 599.99 acres	11
600 - 729.99 acres	12
730 - 859.99 acres	13
860 - 1029.99 acres	14
1030 acres or more	15

(Source: "Sliding Scale Zoning". Office of the
Administrator, County of Clarke, Berryville, Va. 8/30/83.)

consistent and defensible rezoning decisions.

In strengthening its agricultural policies, Clarke County officials had to ensure that politicians and citizens recognized that there were threats to the rural, agricultural character of the County. The level of concern on the part of citizens and the Planning Commission was the target of an educational effort. Consciousness of the problems of mixing residential development with agriculture was raised by actions including dissemination of the booklet "Disappearing Farmlands" ²³. At this point, County planners did not publicly proclaim LESA to be the needed solution. Instead, they emphasized the problems that would lie ahead unless farmland was protected from development pressure.

2.2 SETTING UP THE LESA SYSTEM

Setting up the Clarke County LESA system involved establishing committees to develop the Land Evaluation system and the Site Assessment system. The committees addressed several potential problems inherent in the LESA system. How these problems were treated was important in making the LESA system a success.

²³ Disappearing Farmlands: A Citizen's Guide to Agricultural Land Preservation. 1980. National Association of Counties Research Foundation, Washington, D.C.

2.2.1 Setting up the Land Evaluation system

Two committees were established: the Land Evaluation Team and the Important Farmlands Committee which worked on the Site Assessment portion of LESA. The Land Evaluation Team consisted of the SCS State Soil Scientist, the SCS Area Conservationist, and the SCS District Conservationist.²⁴ The Land Evaluation Team dealt with a problem in LESA's design that was somewhat unique to Clarke County.

By using one indicator crop to gauge soil productivity, a single type of farming enterprise could be favored over others by the LESA system. The use of a single indicator crop may work well only in counties where one crop predominates.²⁵ However, in Clarke County, a diverse mix of agricultural enterprises exists.

Corn was initially selected as an indicator crop²⁶ because it is the most widely grown crop for which yield data were available and it is valuable to the County's dairy, hog, and beef cattle production enterprises.²⁷ A second indicator crop, grass-legume hay was also used to represent the extensive hay fields and pastures which are

²⁴ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

²⁵ Comments of Jon Hutcheson, Professor of Urban and Regional Planning, University of Virginia. Feb., 1984.

²⁶ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

²⁷ Ibid.

important to the County's horse industry.²⁸ For each soil type, soil productivity ratings of the two crops were averaged.²⁹ Aside from this innovation, the Land Evaluation portion of Clarke County's LESA was developed in accordance with the general procedure described in the LESA Handbook³⁰.

2.2.2 Setting up the Site Assessment system

The Important Farmlands committee had other potential problems to treat in designing the Site Assessment portion of LESA. This committee, chaired by the County Administrator, consisted of a representative from the Planning Commission (who was also Chair of the County Agricultural Advisory Committee), a representative from the U.S.D.A. Agricultural Stabilization and Conservation Service (who was also chair of the Lord Fairfax Soil and Water Conservation district), the Vice-Chairman of the Board of Supervisors, the County Extension Agent, and the SCS District Conservationist and the Soils Technician.³¹ This committee identified principles which it followed to avoid

²⁸ Ibid.

²⁹ Comment of G. Robert Lee, Clarke County Administrator, April, 1984.

³⁰ National LESA Handbook 310-VI, Issue 1. Feb. 3, 1983. U.S. Dept. of Agriculture, Soil Conservation Service, Washington, D.C.

³¹ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

potential problems with LESA.

2.2.2.1 Evaluating Potential Viability

In developing the Site Assessment criteria, an important understanding among committee members was that the potential viability of farms should be assessed, not performance characteristics of the farmer. Possible Site Assessment criteria offered by SCS include ones that measure characteristics of farmers, but these were eliminated by the committee. The reason for doing so is that farms with the most potential for continuing in agriculture should be protected first, rather than farms that are experiencing high productivity primarily because of the farmers' practices. In addition, evaluating farmers' characteristics could result in less protection for potentially viable farms. If, for instance, financial characteristics are included in the evaluation, a potentially viable farm with a poor financial manager would get a lower LESA rating and possibly not be preserved.³²

³² Part of the unwillingness to allow conversion based on evaluation of farmer's characteristics is that Clarke County is considering advertizing its farmland to prospective farmers. Preserving a potentially viable farm that has failed financially would be instrumental in seeing that farming can continue.

In accordance with this principle, certain Site Assessment criteria were not incorporated into the system.³³ "Family Farm Value" is one criterion that was not used because it did not concur with this principle. "Family Farm Value" would have given a higher Site Assessment score to land farmed by the same family for three or more generations. Continuation of the family farming tradition and responsible land stewardship are presumed to be more likely if the family has farmed the land for generations.³⁴

Another similar criterion, "Farms which Completely Support Farming Families", was also not used. It was thought that farms must be well-managed and productive to completely support farming families. However, it was felt that this criterion would assess the family more than the farm.³⁵

Another criterion rejected because it tended to evaluate farmers was "SCS Conservation Plan Filed". This criterion was intended to give higher scores to well managed farms. It was thought that having a SCS conservation plan would indicate a greater commitment to farming. Not only did this criterion attempt to measure characteristics of the

³³ Discussion of these criteria based on Maizel, Margaret Stewart, and G. Robert Lee. Cited Above.

³⁴ Important Farmlands Pilot Project. 1982. Office of the Administrator, County of Clarke, Berryville, Va.

³⁵ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

farmer (land management practices) instead of the farm, it was not accurate in doing so. In practice, farmers with SCS plans may not follow them. In other cases, farmers who do not care for SCS advice, can have excellent conservation practices and no SCS plan filed. In Clarke County, this criterion would have only measured farmers' willingness to seek SCS advice.

2.2.2.2 Simplifying the System

The second principle of the Clarke County Important Farmlands Committee was a response to the potential intimidation of citizens and decision-makers because of LESA's technical nature.³⁶ The Committee felt that a complex LESA system is less likely to be understood by these people and therefore less likely to receive their support. Simplicity was seen as a highly desirable attribute in the LESA system.

Examples of steps taken to simplify the system included eliminating two criteria which in theory, are important measures of agricultural viability. "Percent of Area in Agriculture within One Mile Radius of Farm" can be an important indicator of farm viability because it is easier to maintain a farm in an area devoted exclusively to

³⁶ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

agriculture than in an area where much of the land has been converted to other uses. This factor was eliminated because all farms in the County would receive full value; i.e., all farms were in areas where the surrounding land use was almost exclusively agricultural. Similarly, the "Proximity to Agricultural Support Industries" criterion was eliminated because in a county as small as Clarke, no farms are significantly different in distance to support industries as to affect relative viability.

Other criteria were eliminated based on the amount of complexity they added to the system. "Farms Completely Supporting Farming Families" was judged to be exceedingly complicated for the importance of the information it provides. Aside from other reasons mentioned previously, this criterion was eliminated because scoring it would involve determining the families sources of income. This would complicate scoring farms because this information is not readily available to County personnel.

"Capital Improvements in Farm" was eliminated partly because accounting for all the different investments on a farm would make the system too complicated.³⁷ Rejuvenated farms, for example, would require frequent updating of LESA scores in order to keep track of the investments. Although

³⁷ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

this criterion can directly reflect a commitment to continued farming and the ease of farming, it was eliminated to simplify the system.

By avoiding use of inaccurate and irrelevant criteria, the Site Assessment portion of LESA was simplified. Furthermore, the elimination of potentially meaningful but overly complex criteria, streamlined the system (see Table 4).

2.2.2.3 Compatibility with the Comprehensive Plan

One additional principle important in developing the Clarke County LESA system was compatibility of the system with the County's Comprehensive Plan. LESA may have the potential to encourage disorderly development patterns.³⁸ Furthermore, LESA could shift development pressure from

³⁸ Kramer, Randall. 1984. "The LESA system: an analysis"; paper presented before the Conference on Land Retention in the Southeast, Knoxville, Tennessee, March 22-23, 1984. If undue weight is placed on Land Evaluation relative to Site Assessment, the location of land suitable for conversion, as determined by LESA, would be primarily dependent on soils instead of development goals and existing land uses. This could lead to a disorderly development pattern.

Table 4. Weighting of the Clarke County Site Assessment Criteria.

<u>Criterion</u>	<u>Weight (initial)</u>	<u>Weight (revised)</u>
Size of Farm	10	7
Compatibility with Comprehensive Plan	4	6
Adjacent Land Use	9	5
Investment for Urban Development (public)	8	4
Investment for Urban Development (private)	8	4
Land Use Regulations	7	3
SCS Conservation Plan Filed	6	(eliminated)
Percent of Area in Agriculture	5	(eliminated)
Distance to Town	3	2
Water Resources	2	1
Family Farm Value	1	(eliminated)

(Source: "Important Farmlands Pilot Project". 1982. Office of the Administrator, County of Clarke, Berryville, Va. and "Site Viability Assessment". 1983. Office of the Administrator, County of Clarke, Berryville, Va.)

farmland to areas LESA may not recognize as worthy of protection such as wetlands or other wildlife habitats.³⁹

Protection of such non-agricultural environmentally sensitive areas is generally addressed in comprehensive plans. In fact, comprehensive plans seek to promote orderliness and efficiency in land development. Thus if LESA is designed to take comprehensive plan guidelines into account, a better development pattern may result than had either been used alone.

Initially, the Important Farmlands Committee did not give much emphasis to compatibility between the County Comprehensive Plan and LESA. The criterion "Compatibility with the Comprehensive Plan" was included as the sixth most important criterion (in terms of weighting value assigned) out of the ten original criteria. The criterion gives full value to farms which conform to the Comprehensive Plan's official future land use map. Broad land areas designated for retention in agricultural use as well as areas that can be efficiently converted to residential, commercial, and industrial usage are delineated on the future land use map.

"Compatibility with the Comprehensive Plan" was given greater emphasis after the County Planning Commission reviewed the Site Assessment criteria. This criterion's

³⁹ Comment of Jon Hutcheson. Feb., 1984.

weighting increased, making it the second most important criterion in the Site Assessment system (see Table 4).

The most important criterion, "Size of Farm", also reflects the aims of the Comprehensive Plan. Because of economies of scale in farm operation, larger farms are more likely to be viable than small ones. A large farm is also more important to maintenance of agricultural support industries than a small one. For these reasons, the County's sliding scale zoning allows a higher percent of the land to be developed on a small farm than a larger one.

LESA and the Comprehensive Plan are mutually reinforcing because farm size categories in the "Size of Farm" criterion are the same as used in the zoning ordinance. Thus, this criterion indirectly complements sliding scale zoning in reflecting the Comprehensive Plan's aims by amplifying the need to retain large farms in agriculture. In addition, the criterion "Distance to Nearest Urban Concentration" reflects the Comprehensive Plan goal of keeping the development pattern compact and centered on existing towns.

The Important Farmlands Committee designed the Site Assessment portion of LESA to be as simple as possible, compatible with the Comprehensive Plan, and a measure of farms' potential viability instead of its current

performance. The Site Assessment documentation is simple; the narrative is brief but fairly clear, categories within each criterion are few and unambiguous, assigned weights are whole numbers making arithmetic simple, and there are only eight criteria. Compatibility with the Comprehensive Plan makes the Site Assessment system act to strengthen the County's ability to achieve its land use goals.

Compatibility is assured by having several criteria reflect the aims of the Comprehensive Plan. Criteria measuring the farms' potential viability instead of the farmers' performance characteristics were used to identify farms with the land use conditions most supportive of continuing agriculture.

2.2.2.4 Problems with Institutionalizing LESA

The Important Farmlands Committee stopped short of recommending an ordinance to recognize LESA as an official decision-making tool. LESA might be referenced in the next revision of the Comprehensive Plan as an aide to decision-making. No stronger means of formally institutionalizing the system are contemplated at this time. Currently, LESA has the status of "staff policy" among Clarke County planning officials.

By not formally institutionalizing LESA, Clarke County avoided some potential problems. For one, fine tuning of the system is more easily accomplished when it is not an ordinance. No public hearing, for example, is required for changes in Clarke County's LESA system.

The Clarke County LESA's lack of formal standing has also reduced concerns that the system would take decision-making authority from the Planning Commission or Board of Supervisors. Because of LESA's technical nature, people who do not understand it can be intimidated and suspicious. By making LESA staff policy, this problem is largely defused.

The final benefit of not formally institutionalizing LESA in Clarke County involves recognizing that the system is not always a deterministic decision-making tool. There can be cases where LESA is not much help in land use decision-making. Appropriate land use decisions can be clearly determined for farms that have relatively high or low LESA scores. Scores in the middle (scores of 60 to 75 out of possible 92.95), however, are indecisive. For farms with middle range scores, facts other than agricultural viability as determined by LESA may be more important in decision-making. Institutionalizing LESA leaves open the possibility that this limitation of the system might not be properly addressed. By not formally institutionalizing LESA,

land use decisions for farms with indeterminate scores can be made based on factors most relevant to the particular case.

2.2.2.5 Remaining Concerns

Clarke County has set up a successful LESA system, but there is concern about certain deficiencies. The most notable deficiency from a technical perspective is that orchards are not well represented in the system. Using corn and hay as the indicator crops in the Land Evaluation component of LESA tends to bias the system against orchards. Compared to hay or corn, orchard productivity is less dependent on soil characteristics and more on other site conditions not measured by LESA. Furthermore, orchards in Clarke County may warrant special protection because they are unique⁴⁰ in the region and the state. Additional work needs to be done to give orchards fair and systematic evaluation for land use decision-making.⁴¹

⁴⁰ Unique as in terms of the federal and state definitions of important farmland. Noted above, note 4.

⁴¹ Opinion of G. Robert Lee, Clarke County Administrator, 4/9/84. In addition, Mr. Lee said an example of what might be done to correct this problem is to give orchards a ten point bonus.

The most prominent problem with the Clarke County LESA system is that because it is not formally institutionalized, it can easily be lost. This could happen, for example, if the County Planner and the County Administrator were replaced. The County Administrator recognizes that to assure continuation of the system while still having the advantages of not institutionalizing it, additional efforts are needed. Specifically, members of County Planning Commission and Board of Supervisors should be made more knowledgeable of the system so that they may become committed to using it.

At the present, these officials generally support use of LESA. But without deeper understanding and commitment to the use of LESA, reversion to less defensible ad hoc decision-making may result.

2.3 IMPLEMENTATION OF THE CLARKE COUNTY LESA

Clarke County developed LESA to identify important farmlands. Having this consistent rating system for assessing the importance of farmland was seen as necessary for making defensible decisions on rezoning requests. In addition, the system was developed with the intention that it would meet the requirements of the state and federal farmland protection acts. Doing so would help prevent any more state or federal projects like the proposed Frederick-

Winchester Regional Wastewater Treatment Plant that would lead to farmland conversion in the County. However, LESA's first use in Clarke County was not one for which the program was sought, but for evaluating applications to an Agricultural District.

In 1982, Clarke County created a 23,000 acre agricultural district, the largest single agricultural district in the state at that time. LESA was used as an aid in deciding which applications for inclusion in the district would be approved. County officials felt a consistent, systematic means of evaluating applications was needed for such a large district.

Although LESA seemed ideal for creating the agricultural district, two unforeseen problems arose. First was the problem that LESA is not deterministic for middle range scores. Clarke County used a 60 point cut-off; farms with scores of 60 or more were admitted to the district. However, the rigidness of this cut-off does not reflect the ambiguity of scores close to 60. To compensate for this, all admissions decisions were open to appeal. In one instance, a farm with a score of 59 was admitted to the district after the farmer made a special request before the Planning Commission.⁴²

⁴² Comments of Margaret Maizel. May, 1984. The farm in question was small but substantial in terms of the

The second and most disconcerting problem with implementing LESA was that of application processing time. Planners who have used LESA have remarked that it is a particularly time consuming process; planners can easily spend a half day getting the LESA score for a single farm.⁴³ This problem became especially acute with creating a large agricultural district.

Agricultural District Legislation in Virginia establishes a time schedule for application processing. Although the decision on an application must be made within 120 days of the filing date, the Planning Commission is required to make its recommendation to the Board of Supervisors within 30 days. This means that the planning staff must process all applications through LESA in under 30 days.

In Clarke County, the County Administrator and County Planner are the only personnel available for processing applications. In addition, the local SCS office was unable to offer assistance in scoring the Land Evaluation portion. The time problem was overcome with the help of a citizen who was involved in developing LESA and agreed to score the Land

County's hog production. Furthermore, the farmer, by renting farmland, actually farmed much more land than he owned. These factors were considered important but are not recognized by LESA.

⁴³ Kramer, Randall. Cited above.

Evaluation portion for applications. The time problem of LESA was particularly pronounced in such an extensive use of the system (approximately 100 applications). In Clarke County's case, the time problem was overcome with volunteer help and overtime work by County personnel.

Although agricultural districting has been the only use of LESA in Clarke County, it is expected to be implemented in two other areas in the near future -- rezoning requests and open space easements. In the County, approximately 2,000 acres of farmland have been dedicated to open space easements through the Virginia Outdoor Foundation, a state agency designated for this purpose.⁴⁴ Review by the U.S. Treasury Department of federal regulations pertaining to easement donations led to a two year moratorium on accepting easements. New instructions⁴⁵ now require easements to have a specific property value as defined by local or state governments. Clarke County expects that LESA will be able to help fulfill this requirement allowing open space easement donation to restart.⁴⁶

⁴⁴ Maizel, Margaret Stewart, and G. Robert Lee. Cited above.

⁴⁵ "Determining the value of donated property", Publication 516, Dept. of Treasury, Internal Revenue Service, Revised Nov., 1981.

⁴⁶ Opinion of Margaret Maizel, Planning Commission member. April, 1984.

Aiding in rezoning decisions was one of the original purposes for which LESA was sought. However, LESA has not been implemented for this purpose because there have not been any rezoning requests for agricultural land since LESA was set up in 1982. However, it is important that such a technically and therefore legally defensible means of making rezoning decisions exists. Without the system, rezoning decisions could appear arbitrary and capricious and place the stringent sliding scale zoning development rights allocation system in jeopardy.

2.4 EFFECTIVENESS AND USEFULNESS OF THE CLARKE COUNTY LESA

Clarke County's LESA system has been useful in helping the County realize the goal of preserving farmland. The system's use in creating the state's largest agricultural district and its expected uses in rezoning decisions and open space easements help strengthen the County's farmland protection policies. Specifically, LESA has enabled the County administration to improve the quality of land use decision-making.

7 Implementing LESA has taken political pressure off of politicians by providing them with a rational, consistent, and defensible decision-making aid.⁴⁷ Although LESA does not

⁴⁷ Opinion of Margaret Maizel, April, 1984.

apply well in borderline cases, it does obviate the worst decisions in more clear cut cases. For instance, when the agricultural district was being formed, farms of outspoken proponents of the district were denied admission. Decision-makers might have found it politically difficult to deny admission to the district's advocates, had not LESA given them the technical backing for doing so.

LESA's use in forming the agricultural district also helped reinforce the validity of the district. In creating such a large district, it was important that all admissions decisions be defensible. Otherwise, if one bad decision was made and successfully challenged in court, the entire district could lose its special status. Such a consequence would be a tremendous set-back to agricultural preservation in Clarke County.

LESA may also prove useful to Clarke County in a preventative sense. Having LESA in-place can help prevent state or federally funded projects which would lead to farmland conversion by forcing consideration of alternatives that are less threatening to farmland. LESA also helps minimize the County's legal risk by making decisions more consistent and rational. This in turn minimizes the chances that a farmland protection policy, such as agricultural districting or sliding scale zoning, will be disallowed in the courts.

Clarke County has found LESA to be useful as an optional tool to have on hand for future use. The system's use was important in forming the agricultural district, although this was not one of the major purposes for which it was originally sought. Other potential uses for the Clarke County LESA include capital facilities planning, and mapping the County's important farmlands.

LESA has served well in identifying important farmlands in Clarke County. By helping make this determination, County farmland protection policies have been strengthened by enabling their implementation to be more rational, consistent, and defensible. Because LESA has improved the quality of decision-making, farmland preservation policies are much less likely to be deemed arbitrary and capricious and be disallowed.

2.5 LESSONS LEARNED

The Clarke County LESA system was carefully devised, successfully implemented, and has proven useful in furthering the County's desire to preserve agricultural land. Several important issues and problems associated with LESA arose over the County's three years of experience with the system. From Clarke County's treatment of the problems and issues, several important lessons can be gleaned:

1. The political and community setting is important in having a successful LESA system. The level of concern and degree of commitment to farmland preservation are directly related to the desire to act to strengthen farmland preservation policies. Even though Clarke County is a small, relatively homogeneous, rural county, efforts were made to educate citizens and decision-makers about the problems an agricultural community faces when strong farmland protection policies are lacking. Furthermore, the threat of the Frederick-Winchester sewage treatment plant helped raise awareness of the weakness of existing policies.
2. In devising a LESA system, it is important to make it understandable and not unnecessarily complex. The primary benefit in doing so is that citizens and decision-makers are more likely to support the system if they can understand it. This can be instrumental in achieving a broad base of support for LESA.
3. Also important in devising a LESA system is the need to emphasize compatibility with the community's comprehensive plan. Because LESA is just one of several tools used to preserve farmland, compatibility between LESA and established tools is essential if inconsistent decisions are to be

avoided. Furthermore, making LESA reflect the aims of the comprehensive plan ensures that the future development pattern will be consistent with established community goals.

4. To make LESA useful, it is important to devise the Site Assessment component so that potential agricultural viability of sites is measured. This means that characteristics of the farm that accurately indicate potential for continued farming should be evaluated, not performance characteristics attributable to the farmer. Potentially productive farms should not be slated for development because of poor financial management by a particular farmer, for example. Clarke County avoided this by eliminating several SCS-recommended criteria from the Site Assessment component. Inaccurate indicators of agricultural viability were eliminated, as well.
5. Important in creating a technically accurate and therefore potentially useful LESA system is use of only criteria that reflect the local conditions. Careful choice of indicator crop(s), elimination of irrelevant criteria, adapting other criteria, and testing the system are keys to accuracy and usefulness of LESA.

6. Recognition that use of LESA can be time consuming may be crucial in successfully implementing the system. This is particularly true of larger undertakings such as the Clarke County agricultural District. All applications had to be processed within 30 days. Without the system's simplicity, a volunteer's help, and dedication on the part of the County Administrator, the time constraints may have been too severe to use LESA in the County's agricultural districting.
7. Finally, because LESA's technical nature can be intimidating to citizens and decision-makers, it is important not to attempt to formally institutionalize the system. Particularly when the system is newly formed, people do not fully understand it and tend to think LESA is taking over decision-making responsibility. By not formally institutionalizing LESA, these problems are defused and fine tuning of the system can proceed more easily. After substantial confidence and experience with the system are gained, formal institutionalization might be attempted.

Chapter III

LESA IN OTHER VIRGINIA COUNTIES

Of Virginia counties, Clarke County has had the most experience with LESA. However, other counties are gaining experience with the system. In addition, several counties are now beginning to consider developing their own LESA systems. A few other counties have developed LESA systems and are about to implement them. Furthermore, Hanover County, like Clarke County, was one of the twelve original LESA pilot projects in the nation.

In this chapter, the experiences with LESA of three additional Virginia counties are reported in order to further understanding of how to successfully utilize the system. To do so, the experiences of two counties with newly devised LESA systems, Montgomery and Culpeper, are examined to see how LESA's problems and issues were treated. Hanover County's LESA system is similarly examined. Hanover County's experience with LESA contrasts with Clarke County's in that the system has not been very useful there.

3.1 HANOVER COUNTY'S LESA SYSTEM

Hanover County is comprised of a wide range of land uses including rural agricultural areas and urban land on the fringe of Richmond. In the late 1970's, a strong sentiment for managing growth existed and led to the County's adoption of large lot zoning in its rural areas. LESA was seen as a potential tool for managing growth in rural parts of the County.

Hanover County sought to develop a LESA system because there were both the need and an opportunity to use it in strengthening growth management policies. The need stemmed from concern that rezoning decisions for the large lot zoned rural areas were not being based on any firm and legitimate criteria. The ten acre large lot zoning was seen as "a law suit waiting to happen".⁴⁸ LESA was seen as providing the framework for developing a systematic, consistent, and defensible set of decision-making criteria.

The opportunity Hanover County planners saw for strengthening growth management policies was that the County's Comprehensive Plan was due for revision. In 1980, the revision process began. Shortly thereafter, SCS made LESA available on a project pilot trial basis. County

⁴⁸ Opinion of John Hodges, Executive Director, Hanover County Planning Department. April, 1984. According to Mr. Hodges, the large lot zoning is still in this perilous position.

planners felt that incorporating LESA into the Comprehensive Plan, thereby using LESA as an official guideline, would help reinforce growth management policies.⁴⁹

The focus of Hanover Countys growth management efforts was not predominately agricultural lands preservation.⁵⁰ Growth management was more a response to wasteful public infrastructure investments made in the late 60's and early 70's. Because of an anticipated 6% residential housing growth rate for the 70's, County bonds were used to finance infrastructure in the urbanizing Mechanicsville area (see Figure 4). However, the full demand for infrastructure connections never occurred and bonds were not paid off as expected.

This misguided public investment lead to a county-wide concern in the late 70's to limit growth to the Mechanicsville area, keeping it out of the rural areas. Preserving agricultural lands was only incidental to a larger concern for recouping lost public investments. Furthermore, the political and community climate that initially was conducive to developing LESA for growth management later changed.

⁴⁹ Comment of John Hodges. April, 1984.

⁵⁰ Discussion on why growth management was sought is based on comments of John Hodges, April, 1984.

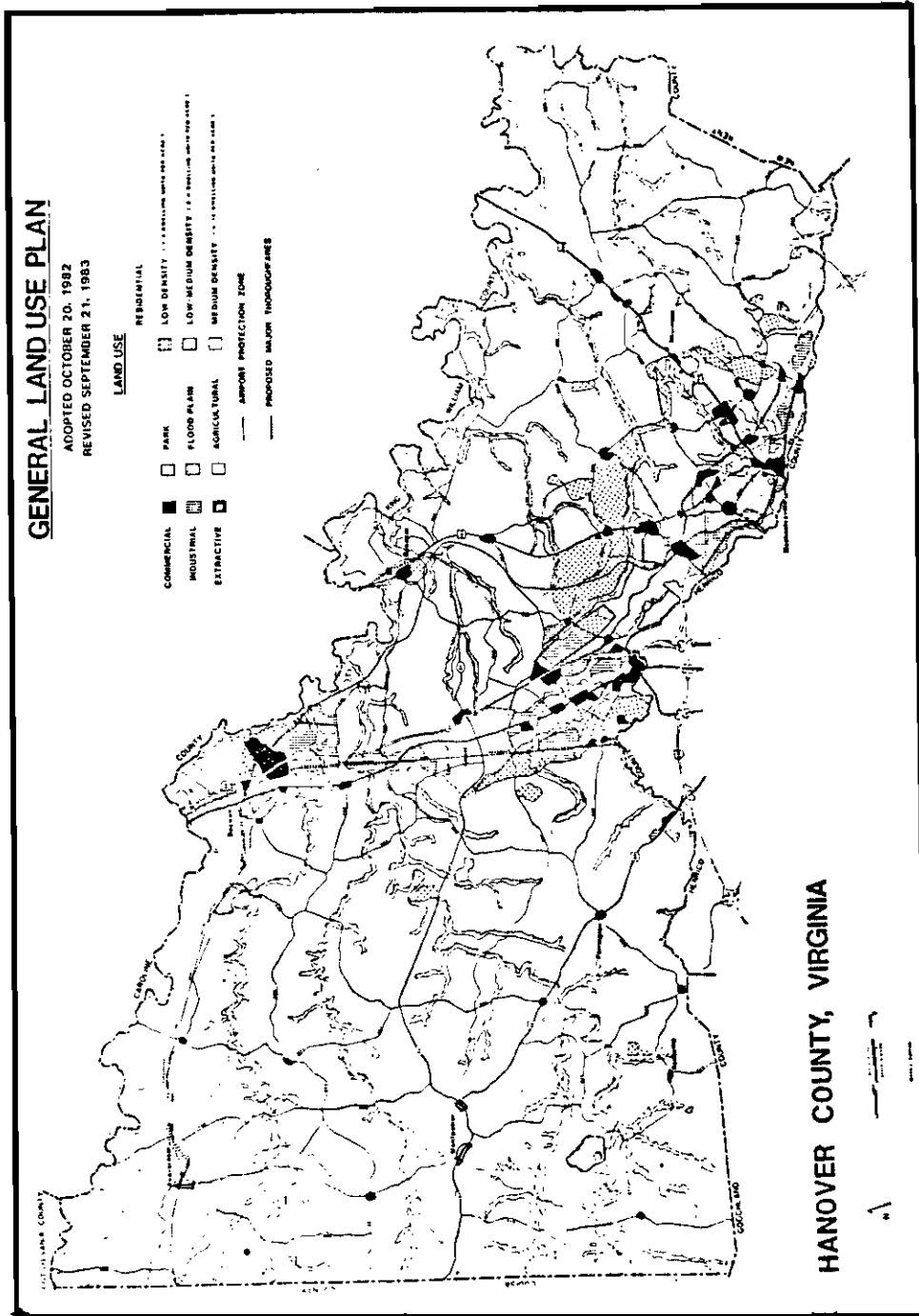


Figure 4. General Land Use Plan of Hanover County, Virginia.

(Source: Hanover County Planning Department, Hanover, Va.)

When a slump in home building began in the early 1980's, development interests sought less regulation.⁵¹ Elections in 1983 reflected the newer sentiment in the County as the newly elected Board of Supervisors was more development oriented, favoring less restriction on home building. Also by this time, County taxpayers had become accustomed to the idea of having a fiscal deficit. Channeling growth to existing unused infrastructure had become less of a priority.

Farmland preservation never had a consensus favoring it for its own sake. Furthermore, by 1983, the strong growth management concern, which had incidentally sponsored farmland protection, was losing support. Development of the LESA program was under way at this time, amid decreasing desire for development regulation and growth management.

3.1.1 Development of the Hanover County LESA

Development of the Hanover County LESA pilot project began in 1982 with the creation of a Citizens' Committee to generate the Site Assessment criteria. The Committee was composed of ten people, including one representative from each of the County's seven magisterial districts and one from the Board of Supervisors, the County Extension Service,

⁵¹ Discussion on the changing political and community climate is based on comments of John Hodges. April, 1984.

and the Hanover-Caroline Soil and Water Conservation District. To help minimize controversy, the Committee was comprised primarily of ordinary citizens.

The Site Assessment was developed in light of the role of LESA as limiting rural subdivision development, thus channeling growth to the urban Mechanicsville area. Overall, the Site Assessment criteria chosen tend to emphasize containment of development instead of preserving potentially viable farms. For instance, some of the criteria have no bearing on farm viability but would tend to restrict development: Factor 5, "Impact on pattern of development in Rural Area", is designed to discourage strip development or other development that would interfere with transportation efficiency; Factor 8, "Impact on Historic Areas", is designed to discourage development near historic landmarks. Furthermore, there is only one criterion that measures a physical attribute of the farm indicative of viability, "Size of Parcel".

The Site Assessment system that resulted clearly had some problems that would later limit its acceptability. One problem was that of length. The system uses only eight criteria but each has a lengthy narrative and many values are possible for each criterion. The total Site Assessment criteria documentation is twelve pages long.

The second problem is the system's complexity. The complexity is in part due to the large number of possible values each criterion has. For example, the "Percent of Area in Agriculture" criterion has 18 possible values of which three are chosen and averaged to give the criterion's score. Even the least complex criteria in the system have three values from which to chose.

Furthermore, the system is complex because it uses highly specific numerical values, as well. For example, all criterion weights are expressed as three digit numbers (e.g., 2.68) instead of whole numbers. This tends to complicate arithmetic when calculating scores.

Recognizing the complexity of the system and wishing to have citizen participation in developing LESA, the Planning Department sent out 1,300 copies of a newsletter about LESA. Little discussion of justification or purpose for the system was included, but the entire Site Assessment system was displayed. In retrospect, the County planner felt the content was probably overly detailed and not appropriate for the public audience.⁵²

Following development of the Site Assessment criteria, official approval of the LESA system was sought to begin implementation. In March of 1983, LESA was completed and

⁵² Opinion of John Hodges. April, 1984.

tested as a prerequisite of approval. LESA's accuracy was checked by scoring past rezoning cases to see if the same decision would be arrived at with the system. The Hanover County LESA proved to be consistent with past decisions. At this point, a Planning Commission hearing was set for June, 1983 to consider incorporating LESA into the Comprehensive Plan.

In the interim, a rezoning was requested for a proposed 130 acre subdivision in the large lot agricultural zone.⁵³ Land for the subdivision was agricultural but had been idle for four or five years. However, the parcel ranked high with LESA (229/300) but a mere four points above the cut-off of 225. Although one Planning Commission member felt LESA over emphasized the land's farming potential, the majority of the Commission sided with recommending denial of the request. The developer decided not to take the case to the Board of Supervisors until after the hearing on LESA.

At the June, 1983 Planning Commission hearing on LESA, the developer's attorney made a strong case against the use of LESA.⁵⁴ The argument was that no matter what criteria are used, the rigid system for decision-making is bound to yield

⁵³ Minutes of the Hanover County Planning Commission. April, 1984.

⁵⁴ Based on comments of Bernard Cross, Attorney for the Aqua-Terri subdivision developer, May, 1984.

arbitrary decisions when scores are close to the cut-off score. Furthermore, it was argued the system did not allow discretion on the part of elected officials to consider other factors that might be relevant in a close decision. The Planning Commission, now feeling LESA was too controversial, recommended further testing instead of giving approval.

Up to this point, LESA had been referenced in the Comprehensive Plan draft in a non-binding but formal manner. The County's rural area was planned to have "agricultural and forestry operations of all types" plus "accessory and complementary land uses". Low density residential development was planned for rural areas with existing vested development rights and for "marginal lands not indicated as in conflict with agricultural and forestry development by the LESA system".

In September of 1983, LESA was up for approval before the Board of Supervisors. The Board decided not to approve LESA as referenced in the Comprehensive Plan. LESA was relegated to further review and references to it were removed from the Plan. Even its unofficial use, for information purposes only, is presently tenuous.

Reasons for the Board's denial of LESA can be traced to the way the system was set up. One primary factor working

against LESA was its length and complexity which made it hard to understand and thus intimidating. Opposition to the system, initially expressed at the June Planning Commission hearing, was also voiced at the Board of Supervisors hearing and helped convince the Board that the system was too technical and bureaucratic.⁵⁵

Another problem with the way LESA was set up, the degree of formal institutionalization proposed, appears to have contributed to the system's rejection. The LESA system was not a binding decision-making tool as it was referred to in the Comprehensive Plan. However, there was confusion regarding this point; some Board members felt LESA would take away decision-making authority and flexibility. Furthermore, other members felt incorporating LESA into the Plan would inevitably lead to ordinance status for the system. The degree of institutionalization proposed LESA contributed to the Board's perception that the system was a threat to their decision-making powers.

⁵⁵ Comment of John Hodges, April, 1984.

3.1.2 Lessons Learned in Hanover County

Hanover County sought LESA as an aid in making consistent, rational, and defensible rezoning decisions. The system was expected to help channel residential subdivision development into the urban Mechanicsville area. However, due to defeats at the Planning Commission and Board of Supervisors hearings, the system has not yet been implemented to help strengthen the County's growth management policies. The system's complexity made it difficult to understand and thus limited its base of supporters. Furthermore, incorporating LESA into the Comprehensive Plan was an overly assertive proposal given the system's intimidating technical nature. Finally, and possibly most importantly, the County and its elected representatives did not have an enduring commitment to preserving agricultural lands. Under present circumstances, it is uncertain that the LESA system will ever be useful in Hanover County.

Lessons learned from Hanover County's experience with LESA include the following:

1. Citizen participation efforts emphasizing the detail of a LESA system were not successful in winning public acceptance of the system. Furthermore, the use of a citizens' committee to develop the Site

Assessment criteria did not minimize controversy. Instead, a complaint voiced at public hearings on LESA was that the committee did not contain people who were familiar with local land use and development conditions.

2. Complexity and lengthiness of the system inhibits understanding and acceptance of LESA. LESA systems have the potential to be intimidating because of their technical nature. Hanover County planners think the system is too complex. Opposition at public hearings emphasized this point and helped convince officials to reject LESA.
3. Without a firm and continuing concern for farmland preservation, LESA is difficult to implement. Hanover County never had a consensus backing farmland protection. Furthermore, the concern for growth management faded and along with it, the desire to keep subdivisions out of the rural areas. When administrations unfavorable to additional development regulations replaced the more growth management oriented administration of the late 1970's, the political climate became less conducive to LESA.
4. Formal institutionalization of LESA, although in a non-binding manner, aroused concern that decision-

making power and discretion would be lost. Some of this concern was due to confusion on the Board of Supervisors as to whether incorporating LESA into the Comprehensive Plan would make the system binding or not. However, concern was also due to the perception that adopting LESA in the Plan was the first step towards making it an ordinance.

3.2 THE MONTGOMERY COUNTY LESA

In Montgomery County, Virginia, 90% of the land is zoned for agricultural use.⁵⁶ Livestock and forage production are the main agricultural enterprises in the County, with dairying accounting for 46% of the value of the County's agricultural products.⁵⁷ Forestry is also significant in terms of land use, with 58% of all land in the County supporting commercial forestry.⁵⁸

Efforts to preserve the County's farmland have been increasing in recent years. Since 1977, 40,000 acres of

⁵⁶ Comment of William Ruska, Assistant Planner, Montgomery County Planning Department, Christiansburg, Va. April, 1984. The agricultural zoning is A-1, not exclusive agricultural zoning, allowing residential development densities of one dwelling unit per acre.

⁵⁷ Montgomery County Comprehensive Plan. 1983. Montgomery County Planning Commission, Christiansburg, Va.

⁵⁸ Ibid.

agricultural and forestal districts have been established⁵⁹ (see Figure 5). In addition, the County's 1983 Comprehensive Plan strongly favors farmland preservation because of the importance of farming in the local economy and as an aesthetic value. More exclusive agricultural zoning is being considered for the County, as well.⁶⁰ LESA was sought as a general tool that might be a useful complement to agricultural preservation policies.

3.2.1 Setting up the System

Montgomery County's LESA was developed by two committees. The Land Evaluation component was devised by a technical committee of SCS personnel and used corn-for-silage as the indicator crop. A committee of local representatives developed the Site Assessment system. This committee was composed of representatives from the County Board of Supervisors, the Virginia Farm Bureau, the League of Women Voters, the County Economic Development Committee, the Planning Commission, the Agricultural and Forestal Districts Advisory Committee, the Sierra Club, SCS, the U.S.D.A. Agricultural Stabilization and Conservation Service, Virginia Division of Forestry, the Fourth Planning

⁵⁹ Ibid.

⁶⁰ Opinion of William Ruska. April, 1984.

District Commission, the County Extension Service, the Skyline Soil and Water Conservation District, and the County Planning staff.

In developing the Site Assessment system, the committee had to consider the problem that LESA may evaluate farmers' performance instead of farms' potential viability. The committee's philosophy regarding this issue was that it is ultimately the farmer who preserves farmland.⁶¹ Thus, while no criteria are actual measures of performance, some criteria measure characteristics of the farmer. "Family Farm Value" was included because farms owned by a single family for generations are not likely to be speculative holdings.⁶² The committee also felt such farms deserve more protection because of their historic value and for political reasons.⁶³

Another criterion, "SCS Conservation Plan Filed", is used and measures a characteristic of the farmer. This criterion is intended to reflect a farmer's commitment to farming. However, this criterion may measure this inaccurately since many farmers do not seek or follow SCS conservation advice. This criterion was included at least

⁶¹ Comment of William Ruska, April, 1984.

⁶² Comment of Larry Wilkenson, District Conservationist, SCS, Christiansburg, Va. May, 1984.

⁶³ Comment of Dr. Alan Heath, Sierra Club representative on the committee, May, 1984.

partly because the County requires a SCS Conservation Plan of farms in agricultural districts. Incorporating this criterion makes the Montgomery County LESA more useful for creating agricultural districts.

In setting up the Site Assessment system, the committee was not particularly concerned with possible problems of complexity in the LESA system. However, the completed system is not exceedingly complex. There are twelve criteria, but seven have only two or three possible values each. Furthermore, criteria weights are whole numbers and procedures for determining values are fairly simple. Although the LESA system is not complex, it is rather lengthy, leading the County Assistant Planner to feel that using the system is particularly time consuming.

As with the complexity problem, the committee did not have a concrete principle established concerning making LESA compatible with the Comprehensive Plan. However, the Comprehensive Plan was given some consideration in the Site Assessment criteria. "Consistency with the Comprehensive Plan" and "Consistency with Zoning" were given the highest weights assigned to criteria.

The Montgomery County LESA system has not yet been fine-tuned nor officially approved. Fine-tuning is still needed because the system is not sufficiently free of

subjectivity to produce repeatable results. The system is not likely to be approved until it is reviewed and fine-tuned by the committee. Presently, the degree of institutionalization that will be proposed is unknown.

Probably the most important concern lying ahead for the committee, from the standpoint of making LESA useful and defensible, is the selection of a cut-off score. Although SCS recommends a cut-off value equal to two-thirds of the highest possible LESA score, County planners feel this will not be appropriate. Farmland preservation in Montgomery County is sought not only because farming is important economically. Farmland preservation is also motivated by a desire to protect ground water, maintain wildlife habitats, open space, and the rural character of the County.⁶⁴ Furthermore, 60% of the land in the County gets the lowest possible Land Evaluation score (zero). In other words, most of the County is marginal farmland. Few farms in the County would rate at 200 or above in the Montgomery County LESA.

Careful testing of LESA against past rezoning decisions may help establish a cut-off that is compatible with the County's land use goals.

⁶⁴ Montgomery County Comprehensive Plan. Cited above.

3.2.2 Lessons Learned

Because Montgomery County has just begun to use LESA it is not possible at this time to comment extensively on what makes the system useful. Clearly, some of the problems and issues identified in Clarke and Hanover Counties were addressed in Montgomery County. But at this point, many of the treatments of these problems and issues cannot be conclusively evaluated.

However, there are some lessons to be learned from the Montgomery County experience with LESA. These are:

1. Time can be a problem with LESA. The Montgomery County LESA has already drawn criticism because it is time consuming to use. The number of criteria in the Site Assessment system is largely responsible for this problem.
2. The choice of an indicator crop is a sensitive factor in a LESA system. Montgomery County's land, over half of it covered with commercial forests, cannot be properly evaluated using just corn as an indicator crop. Forest productivity and viability of forestry operations are not necessarily related to the same factors as farm viability and productivity.⁶⁵ Without

⁶⁵ As the LESA handbook notes (cited above, note 10), a LESA system for forest lands has been developed. Such a system could be useful in when forestry is a prominent land use as in Montgomery County.

considering this, important forests could be under-protected from development pressure while some farms could be over-protected. Having LESA take into account the Comprehensive Plan helps mitigate this problem. But the choice of an indicator crop is still important in developing a technically and therefore legally defensible LESA system.

3. Similarly, choice of a cut-off score is an important consideration in developing LESA. Blindly accepting the SCS recommended two-thirds of total possible score as the cut-off must be avoided. To do otherwise might lead to too much or too little farmland protection with respect to local goals.

3.3 THE CULPEPER COUNTY LESA

Culpeper County is one of the first Virginia counties to use LESA after it had been tested in the twelve pilot project counties and made available to all municipalities nationwide. Culpeper County's use of LESA is interesting because it was used in developing the County's Comprehensive Plan.

The Site Assessment portion of the Culpeper County LESA has not yet been completed, so many of the treatments of problems and issues cannot be evaluated presently. This

limits the number of useful lessons that can be learned from this case. However, one important lesson regarding the LESA in comprehensive planning can be learned from the Culpeper County experience.

3.3.1 Background on Culpeper County

Culpeper County's economy is predominantly agriculturally based.⁶⁶ The County has expressed concern for maintaining farming as a significant portion of the economic base by protecting and enhancing farming opportunities.⁶⁷ The County presently has county-wide use value taxation and 45,000 acres in agricultural and forestal districts. LESA was seen as another tool for helping preserve farmland. Specifically, the County hoped to use LESA to identify areas that should be allowed to be converted to non-agricultural land uses.

⁶⁶ Opinion of Charles Carter, Director of Planning, Culpeper County Planning Department, Culpeper, Va. April, 1984.

⁶⁷ Culpeper County Comprehensive Plan. 1984. Culpeper County Planning Commission, Culpeper, Va.

3.3.2 Use of LESA in Culpeper County

LESA was used in Culpeper County as an analytical planning tool to help develop the Comprehensive Plan. LESA provided useful quantification of the agricultural importance of land in the County. By determining the relative importance of all the County's land, the farmland worth retaining was identified for the entire County. This information was then used to constrain the future development pattern plan.

The methodology used consisted of four basic steps. First, the theoretical maximum population capacity for each of 208 separate subdivisions (cells) of the County was ascertained (see Figure 6). This was done by analyzing each cell's soil characteristics in terms of its ability to support development.⁶⁸

The second step was interpretation of adopted goals and objectives into land use constraints. Based on a survey of County citizens, a list of goals, including goals for maintaining, protecting, enhancing, and expanding Culpeper County's agriculture was formally adopted by the Board of Supervisors. The Land Evaluation component of LESA was then

⁶⁸ Culpeper County Comprehensive Plan. 1984. The soil characteristics examined were slope, shrink-swell, septic tank suitability, depth to bedrock, and depth to water table. No public sewers were assumed to be built either.

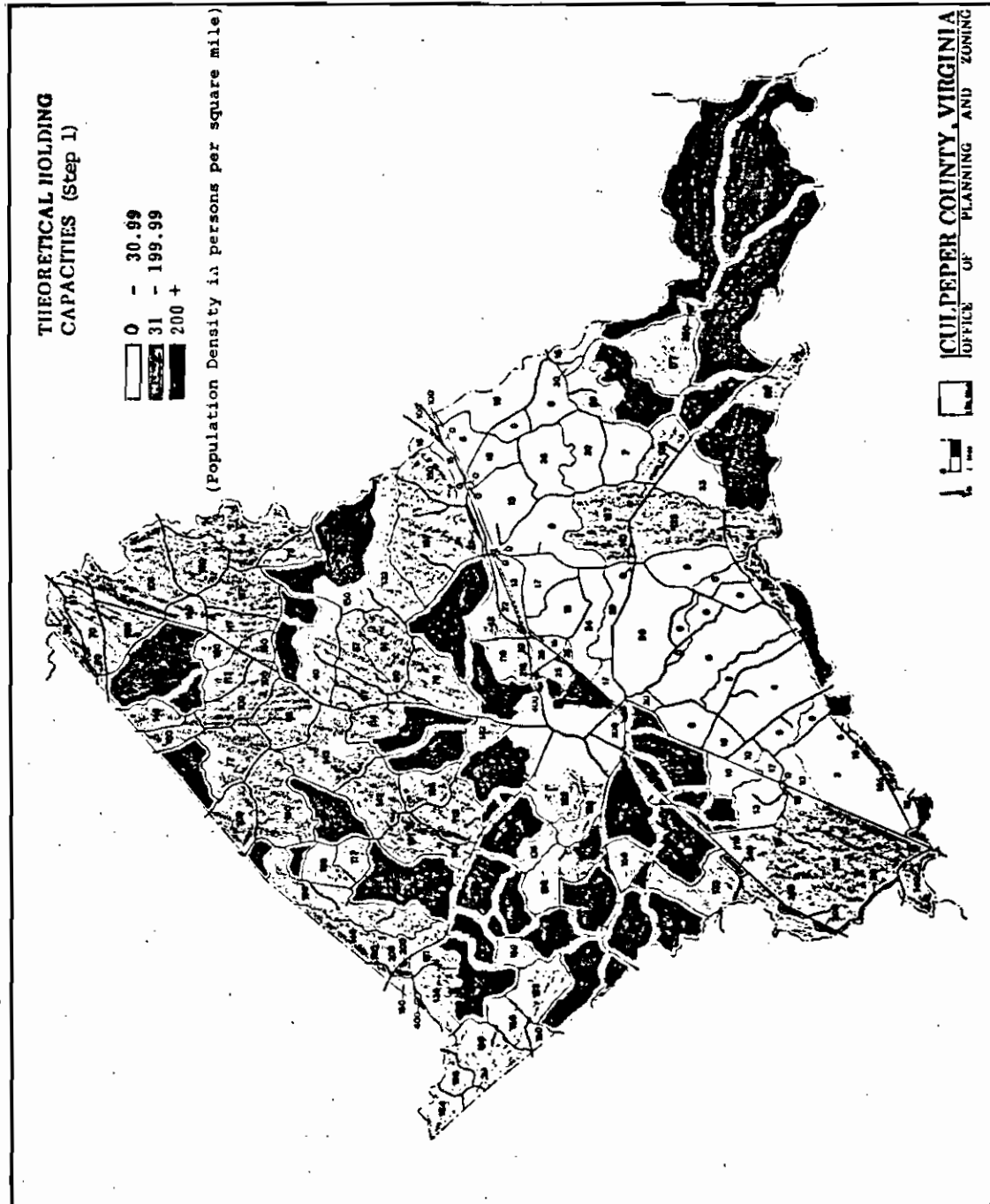


Figure 6. Theoretical Maximum Population Capacities of Culpeper County, Virginia (step 1).

(Source: Culpeper County Planning Department, Culpeper, Va.)

used to rate all land in the County in terms of soil suitability for agriculture.

Based on the Land Evaluation, it was ascertained that 75% of the County was rated as either prime farmland, farmland of statewide importance, or farmland of local importance.⁶⁹ The Board of Supervisors then formally resolved to reserve, where appropriate, all agricultural land suitable for continued farming (i.e., the prime, statewide important, and locally important farmlands). Theoretical maximum population capacities were then reduced to agricultural densities in cells having soils suitable for both farming and development (see Figure 7).

The third step involved adjusting the still theoretical population capacities to account for existing land use and population conditions. The Site Assessment system of LESA was used in this step to help identify cells which could not be realistically retained in agriculture. Viability of agriculture was ascertained for each cell; cells in which agriculture was rated as not viable even though their soils were suitable for agriculture were assigned rural-residential or suburban population densities (see Figure 8).

⁶⁹ Based on comments of Charles Carter. May, 1984. Locally important farmlands were lands whose soils were neither prime nor of statewide importance but were found adjacent to and had only minor additional limitations compared to statewide important farmlands. Corn-for-silage was the indicator crop.

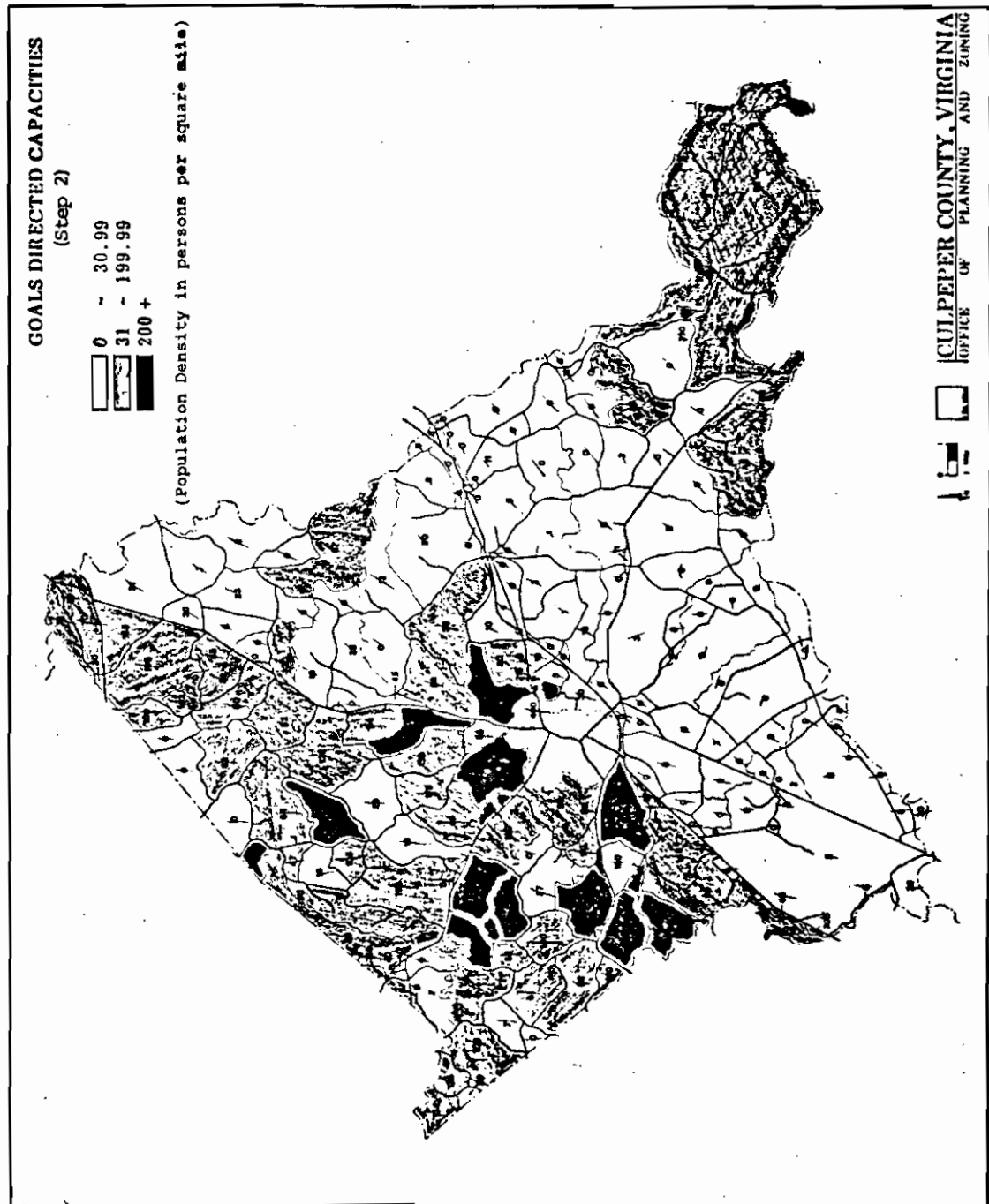


Figure 7. Goals Directed Population Capacities for Culpeper County, Virginia (step 2).

(Source: Culpeper County Planning Department, Culpeper, Va.)

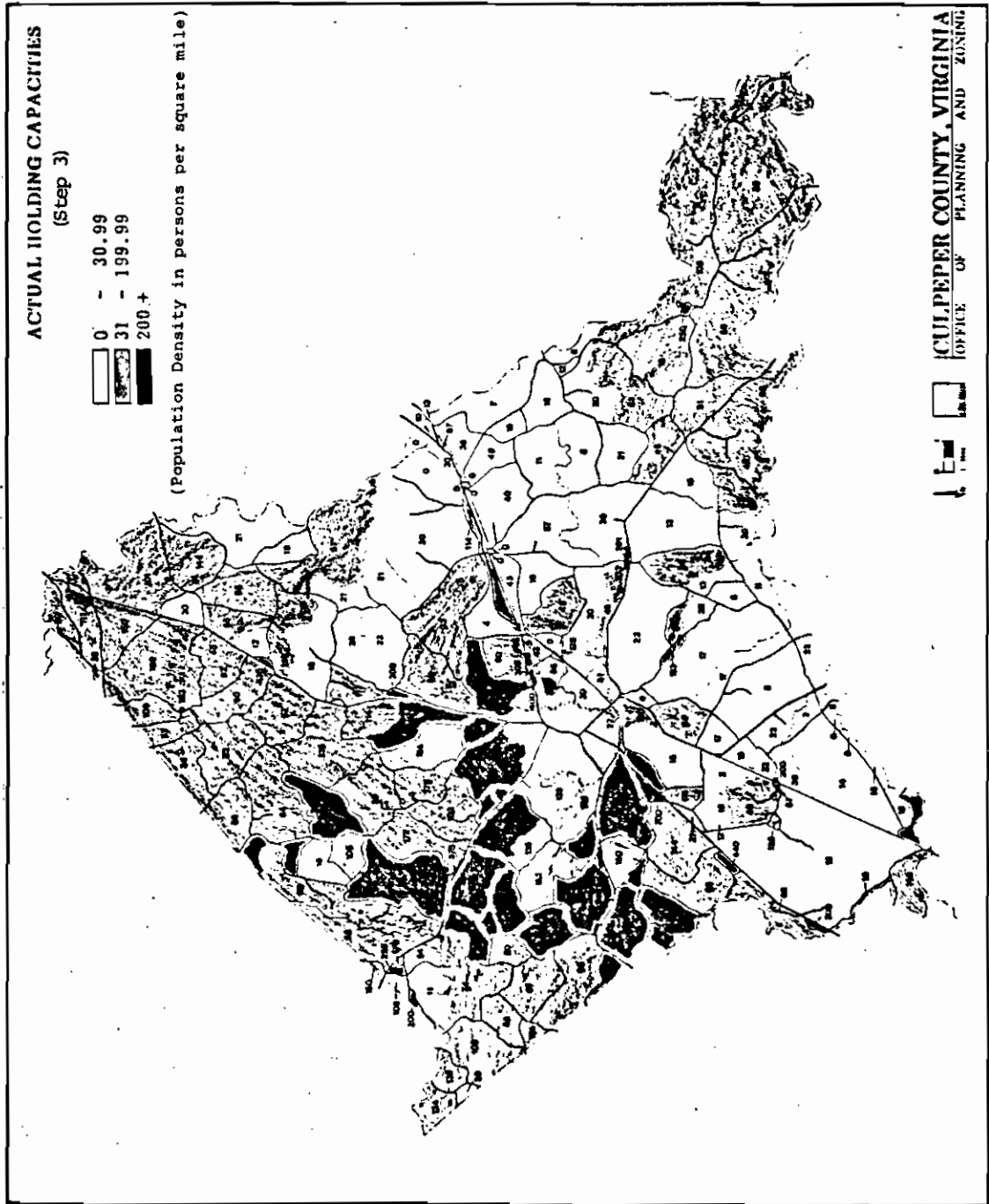


Figure 8. Actual Population Capacities of Culpeper County, Virginia (step 3).

(Source: Culpeper County Planning Department, Culpeper, Va.)

Viability was not assessed as precisely as has been done with other Virginia counties' Site Assessment systems. Instead, a relatively unrefined Site Assessment system was used as a general framework to help roughly estimate viability.⁷⁰ Scores were not calculated for each cell, but the Site Assessment criteria helped planners standardize their appraisals of agricultural viability. This was considered an adequate level of precision because the future land use map does not require the specificity of, for example, a zoning map.

The final step in developing the County's land use plan was to account for the influences of "focal points" (existing villages, retail areas, etc.) and the transportation network on the development pattern. The result was a map showing the variations in maximum desired population densities across the County. The final land use plan is a conversion of these densities into land uses and intensities (see Figure 9).

In developing the Plan, LESA served two purposes. First, the Land Evaluation portion was used to ascertain the suitability of land for agriculture in terms of soil characteristics. The Board of Supervisors decided all land that is suitable for agriculture should be preserved. The

⁷⁰ Comment of Charles Carter. May, 1984.

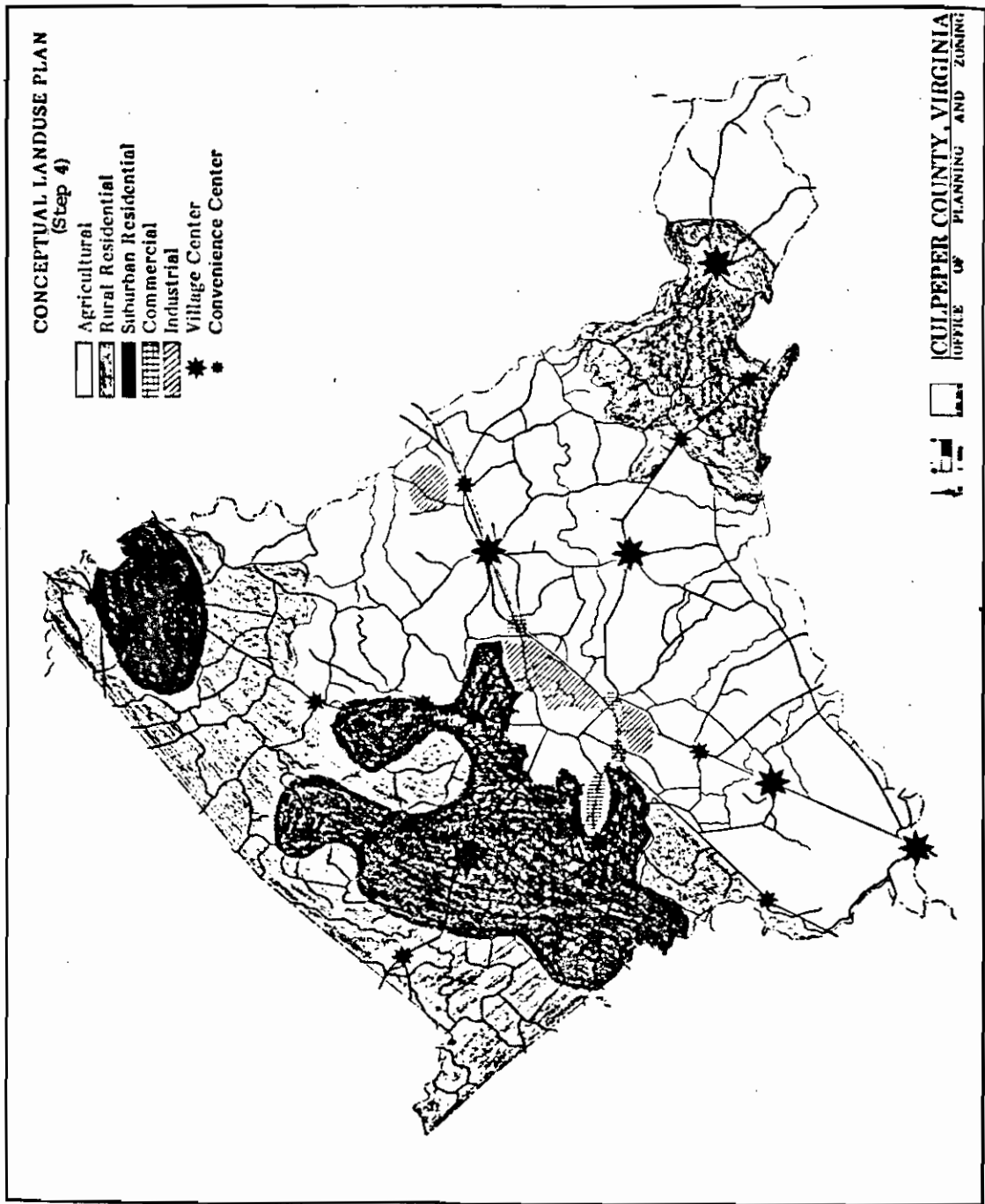


Figure 9. Conceptual Land Use Plan of Culpeper County, Virginia (step 4).

(Source: Culpeper County Planning Department, Culpeper, Va.)

Land Evaluation component identified which land, given this policy, warranted protection.

Secondly, the Site Assessment system aided in determining which of the lands warranting protection could feasibly be preserved. Farmland having low viability ratings, as estimated in light of the Site Assessment criteria, was not planned for continued agriculture. The Site Assessment system served to make the Comprehensive Plan more realistic in terms of what it sought to achieve in farmland preservation.

3.3.3 Lesson Learned from the Culpeper County LESA

Perhaps the most important lesson that can be gleaned from Culpeper County's experience with LESA is that the system can be successfully used as a plan producing tool. LESA need not be seen as merely a plan or policy reinforcing tool. LESA can be used to help determine a technically and therefore legally appropriate development plan for achieving land use goals.

Chapter IV

CONCLUSIONS

There are advantages in looking at several applications of LESA instead of just one case. For one, a more comprehensive understanding of the problems and issues and their treatments can be gained. The universal problems and usefulness of the system can be recognized as such. Successful treatments of these problems may be directly transferable to future applications of LESA. Another advantage is that LESA's issues are put into a broader perspective than can be achieved by looking a single case. This helps in recognizing that when using LESA, principles important to follow in one community will not necessarily be appropriate in an other.

Based on the preceding case studies, some conclusions can be made regarding the problems and issues involved in making and using an effective and useful LESA system:

1. The community and political setting is important. LESA was not accepted in Hanover County, where community and political sentiments were turning against agricultural preservation. The other three counties all had a strong consensus for farmland preservation when LESA was introduced.

However, merely having farmland preservation as an adopted community goal does not ensure that the setting will be conducive to LESA. In Clarke County, additional steps were taken to raise citizens' and decision-makers' consciousness of their farmland conversion problem and increase their will to take action. Educational efforts aimed at characterizing the problem helped accomplish this.

In contrast, citizen involvement efforts in Hanover County were aimed at including citizens in the development of LESA and informing the public about the system. However these efforts backfired; complaints that many of the LESA committee members were unqualified for making land use decision were voiced. Furthermore, the newsletter about LESA that was publicly circulated was not helpful because it dwelled too much on LESA instead of the problems LESA was to address. When trying to make the setting more conducive to LESA, emphasizing the threats and problems of farmland conversion will probably be more fruitful than trying to explain the details of LESA.

2. Compatibility with the comprehensive plan is important in making LESA useful. By having the Site Assessment reflect the aims of the comprehensive

plan, some potential problems can be avoided. These problems include inconsistent decision-making, forcing development into non-agricultural environmentally sensitive areas, and disorderly development patterns.

In addition to making LESA compatible with the comprehensive plan, LESA can actually be used in developing the plan. This was demonstrated by Culpeper County's use of LESA. In this way, LESA becomes a comprehensive analytical planning tool.

3. Time is an important consideration in developing and using LESA. If the Site Assessment component is complex or has a large number of criteria, the system can be extremely time consuming to use. Even with a streamlined LESA, Clarke County planners had difficulty processing 100 agricultural district applications within 30 days, as required by law. When developing LESA and when making provisions for its use, the system's time consuming nature should be considered.
4. LESA is most useful when it accounts for local conditions. A LESA that does not is likely to be technically and possibly legally invalid. Care should be taken in developing LESA to eliminate irrelevant

and inaccurate criteria, to choose the proper indicator crop(s), to make provisions to account for unique agriculture and forestry, and select an appropriate cut-off score.

5. Whether LESA should measure agricultural viability or farmers' performance should be decided based on the community's definition of important farmlands (i.e., the lands to be preserved). The Clarke County committee established the principle that characteristics of the farmer should not be measured. In Clarke County, important farmlands are farms that are potentially viable, not necessarily all currently productive farms. Important farmlands were seen as a resource that should be retained regardless of the farmer's performance and intentions for the land.

In Montgomery County, the farmer was seen as the most important factor in farmland preservation. Therefore, criteria measuring characteristics of the farmer were included in LESA. Montgomery County's important farmlands are farms that might not be highly viable and financially self-sustaining but are important in preserving groundwater, wildlife habitats, and the County's rural atmosphere.

6. LESA's complexity can inhibit support of the system. In Hanover County, their complex LESA system was opposed partly on the grounds that it was too technical and bureaucratic. Even Clarke County's relatively simple LESA is not entirely understood by decision-makers, although they accept and appreciate it. Clarke County planners feel additional steps are needed to help decision-makers understand LESA so they can support it independently of the planners' persuasion.

To get the support of decision-makers, LESA must not be too complicated to be understood by them. Furthermore, to make LESA more enduring, it may be necessary to make decision-makers understand precisely how LESA works.

7. Because of LESA's technical nature, attempts to formally institutionalize it can intimidate citizens and decision-makers. In Hanover County, even a non binding, but formally institutionalized LESA lead to concerns that the system would preempt decision-making authority.

There are some advantages in not formally institutionalizing LESA. First, fine-tuning of the system can be accomplished more readily. Secondly,

decision-makers still have discretion in all cases. This is particularly important with indeterminate "middle-range" LESA scores, close to the cut-off value. LESA helps obviate the worst decisions, but should not be counted on to actually make decisions.

Use of LESA by state and local governments will be increasingly common in the near future. LESA is attractive as a planning tool because it can provide a rational, consistent, technically sound, and therefore legally defensible framework for a wide variety of land use decision-making applications. However, LESA needs to be carefully devised and judiciously used in order to be effective and useful. It is hoped that the lessons learned from these case studies of LESA's applications in Virginia will be helpful to planners, administrators, and others considering developing a LESA a system.