United States Department of Agriculture
Natural Resources Conservation Service

NATIONAL AGRICULTURAL LAND EVALUATION AND SITE ASSESSMENT (LESA) HANDBOOK

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National Agricultural Land Evaluation and Site Assessment (LESA) Handbook

Part 600—General

600.0 Introduction

A. The intent of this handbook is to explain the preparation and use of the Agricultural Land Evaluation and Site Assessment (LESA) system developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS). The handbook was developed to meet the requirements of the Farmland Protection Policy Act (see exhibit 605.0). The LESA system is designed to determine the quality of land for agricultural uses and to assess sites or land areas for their agricultural economic viability. The LESA system can be used to facilitate decision making by State and local planners, landholders, developers, and governing officials.

B. The LESA system consists of two parts:

(1) *Land evaluation.* In agricultural land evaluation, soils of a given area are rated and placed into groups ranging from the best to the worst suited for a stated agricultural use, i.e., cropland, forest land, or rangeland. A relative value is determined for each group: the best group is assigned a value of 100 and all other groups are assigned lower values. The land evaluation is based on data from the National Cooperative Soil Survey.

(2) *Site assessment.* Site assessment identifies important factors other than soils that contribute to the quality of a site for agricultural use. Each factor selected is stratified into a range of possible values in accordance with local needs and objectives. This process provides a rational, consistent, sound basis for making land use decisions.

C. Application of LESA combines a value for land evaluation with a value for site assessment to determine the total value of a given site for agriculture. The higher the total value of a site, the higher the agricultural economic viability.

D. The LESA system can help units of government meet two overall objectives. These are to—

(1) Facilitate identification and protection of important agricultural land by landowners, developers, and State and local planners and governing officials; and

(2) Assist State and local government officials in implementing farmland protection policies.

E. The LESA system was field tested in 1981 in a national pilot program involving 12 counties in six States (Florida, Maryland, Illinois, Pennsylvania, Washington, and Virginia). Program participants recommended to SCS that the LESA system be introduced nationally as SCS technical assistance to State and local governments. The LESA system had been presented to SCS state staffs and various State officials as a result. Currently, the system is being considered for use in all States and is being used by and developed for both State and local governments across the country.

600.1 LESA System Design

A. The LESA system was designed to be applied consistently from case to case. LESA provides a framework within which land evaluation and site assessment procedures are documented before individual sites are considered. This process permits different individuals to evaluate sites consistently and without bias.

B. The LESA system was designed to be flexible to accommodate differences among States, counties, or areas. A LESA system can be developed at various levels of government, i.e., State, county, parish, town, or township, or for an area such as a major land resource area (MLRA). In some States, there are wide differences among and even within counties. Some differences include the following:

   (1) Some States have a high percentage of cropland; others have a high percentage of forest land or rangeland. Some have significant amounts of all three land uses.
   (2) Some counties have more than 95 percent prime farmland; other counties have little or no prime farmland. In both cases, local government may want to protect the best agricultural land from conversion to nonagricultural uses.
   (3) Some States and counties have significant acreage of both irrigated cropland and nonirrigated cropland.

C. The LESA system was designed to be based on existing knowledge. LESA utilizes soil survey information and interpretations that are widely available throughout the United States. It also uses planning concepts and principles easily understood and regularly used by planners.

D. The LESA system was designed to protect the integrity of national land evaluation and classification systems. Currently, national and State legislation incorporates one or more land evaluation and classification systems. A LESA system can be compatible with these systems and support the legislation.

E. The LESA system was designed to be a tool to assist decision makers. It does not take away the power of local or State officials to make land use decisions. Rather, it assists them in making rational, consistent, and sound land use decisions.

F. The LESA system was designed to include local values and objectives by using a local work group or committee to facilitate the development of the system.

G. The LESA system was designed to be developed at the governmental level at which it will be used, i.e., State, county, township, or town.

H. The LESA system was designed to be supportable. Planners and others need a supportable system to evaluate land and to determine under what conditions agricultural land should or should not be converted to nonagricultural uses. Soil survey information provides technically sound data for the land evaluation part of LESA. Thorough documentation of the site assessment part of LESA also provides supportability. Use of a local work group organized to facilitate development of the system also lends credence to the system.

600.2 Uses of the System

LESA provides information for—

A. Identifying important farmland;

B. Implementing national, State, and local farmland protection policies;

C. Preparing and updating comprehensive land use plans;

D. Guiding the appropriate use of State, local, or Federal funds where important farmland is involved;

E. Assessing tax on agricultural land;

F. Purchasing or transferring development rights;

G. Preparing environmental impact statements as they relate to agricultural land;

H. Planning water and natural resource projects;

I. Planning sewage, water, and transportation systems;

J. Planning agricultural districts or determining the need for them; and

K. Determining the minimum size of farm units to be included in agricultural districts.

600.3 Responsibility for Developing LESA Systems

A. A flow chart of the LESA process, showing the party responsible for each step, is shown in exhibit 605.1.

B. State or local officials, i.e., planners, soil and water conservation district officials, other elected officials, agency heads, etc., are expected to—

(1) Request assistance from NRCS through soil and water conservation districts or other appropriate units of government in developing the system as they have need;
(2) Outline the needs for a system (develop specific objectives) and inform decision makers and others about them;
(3) Assist in developing and testing the system; and
(4) Take the lead in the development of the site assessment part.

C. NRCS has the responsibility to assist in developing appropriate LESA systems at the request of a State or local governing body or its designee with jurisdiction over the land area for which the LESA system is to be developed. NRCS and others can assist the governing body in adequately considering the soil and related resources in developing a LESA system. This includes the following activities:

(1) In cooperation with soil and water conservation districts, NRCS will assist units of government to determine the need for protecting important agricultural lands for the long-term agricultural needs of the area.
(2) NRCS will prepare information programs needed to inform State and local officials of the existence of the LESA system, why it is needed, how it is developed, and how NRCS and local officials share responsibilities in using the system.
(3) NRCS will provide leadership in developing the land evaluation part of any LESA system and will present alternative evaluations, based on available soils data and technical guide information, to State and local officials for their use. State and local officials will be informed that it is their responsibility to organize appropriate committees or other groups and to develop the site assessment part of their LESA system.
(4) NRCS will adequately document its input to the land evaluation part of the system. Documentation will be needed to explain—
(i) The list of important farmland soils;
(ii) The development of soil productivity or soil potential indexes;
(iii) Identified soil limitations;
(iv) Conservation measures needed to overcome identified soil limitations and their related annual costs; and
(v) The computation of "relative value" for each "agricultural value group" included in the evaluation.
(5) NRCS will provide information, data, and other assistance as needed to enable local or State officials to develop the site assessment part of their LESA system.
(6) NRCS will ensure that its activities are undertaken in cooperation with other government agencies providing technical assistance.

(7) NRCS will assist in preparing maps to display the prepared land evaluation and other informational material.

D. The NRCS district conservationist has the responsibility to assist local units of government in developing local LESA systems.

E. The NRCS state office staff has the responsibility to work with State officials in developing statewide LESA systems.

600.4 Local Committee or Work Group

A. In most cases, one or more committee(s) or work group(s) should be organized to assist and guide the development of a LESA system. In some areas, agricultural land protection committees already exist and no new committee should be needed.

B. The committee(s) may want to create separate work groups to deal with the technical development of each part of the system.

C. When a committee or work group is being organized for the sole purpose of developing LESA, persons to be considered for inclusion on the committee or appointment as advisors to the committee include—

(1) Area planners;
(2) Planning commission members, board members, etc;
(3) Soil and water conservation district representatives;
(4) Cooperative extension agents;
(5) Representatives from the Farm Services Agency, Rural Development, the Tennessee Valley Authority, the Bureau of Land Management, etc.;
(6) Representatives from State or local forestry agencies and the forest industry;
(7) County commissioners, township representatives, and other local government officials;
(8) Agricultural leaders, farmers, representatives of farm organizations, etc.;
(9) NRCS representatives;
(10) Representatives of the building industry, local bankers, members of real estate developers' associations, etc.;
(11) Representatives from local public-interest groups;
(12) Local government agency (parks, transportation, etc.) representatives; and
(13) Others with interest and knowledge of State or local planning needs and goals.

Part 601—Land Evaluation

Subpart A—General

601.0 Introduction

A. A technically sound land evaluation system is needed where existing or proposed policy or legislation establishes a planning, zoning, or taxation system that requires the identification of land characteristics or kinds of soils and their ranking according to a consistently applicable scheme. The LESA land evaluation procedure helps responsible planners and decision makers determine the importance of the area's soil resource in terms of its importance to the agricultural industry. Both cropland and forest land, or forest land and rangeland, must be evaluated in many planning areas.

B. The LESA agricultural land evaluation system should meet the following objectives:

(1) It should determine land quality for agricultural uses.
(2) It should distinguish between classes of land of differing quality to enable decision makers to select lands to be protected for agricultural uses.
(3) It should be consistently applicable within a given area.
(4) It should be technically sound and compatible with national land classification systems.
(5) It should be flexible to accommodate differences among areas.
(6) It should be useful to agricultural land protection programs, land use planning, and agricultural tax assessment programs.
(7) It should be stable and not subject to change as interest rates, yields, and farming methods change. It should establish relative land quality for a long time (20 to 25 years). Interest rates, yields, and prices used should reflect long-term averages.

601.1 General Considerations

The following are considerations in developing effective and useful land evaluation for LESA:

A. *The level at which the land evaluation system will be used,* i.e., county, parish, town, State, or national. The system must be based on the level of government at which decisions will be made. For national policy planning, the land capability classification system and the important farmland classes are very useful. However, a soil potential system or soil productivity system may have more meaning for county- or township-level planning. It is important at the national level to monitor the conversion of prime farmland and land capability classes 1 and 2 to urban uses. At the local level, officials are concerned with protecting their most important agricultural land from conversion, with little regard for how it is classified nationally. Local planners are primarily concerned with the degree of difference between the most and least suitable lands for a given agricultural use.

B. *The purpose of the land evaluation system and the existing land use.* A land evaluation system must rate the limiting factors that affect the planned use of the soil.

C. *The availability of land with given value for the planned use.* Land use planners in Whitman County, Washington, have little concern with conversion of prime farmland to urban uses since less than 4 percent of the county is listed as prime. Planners in DeKalb County, Illinois, are concerned with the conversion of prime farmland but, since 97 percent of the county is prime, protection of all prime farmland would be virtually a no-growth policy. Both are important

agricultural counties, producing some of the highest wheat and corn yields, respectively, in the Nation. Both counties are concerned with protecting the best suited lands for agriculture, and they want to use less well suited lands for urban development. A land evaluation system for these counties needs to provide a basis for rating land in more detail than is afforded by the prime farmland criteria.

D. *The type of land evaluation system, if any, being used at present.* The land evaluation system to be developed should make maximum use of any existing system, such as land capability classification, so that understanding and use can develop from the existing system to the new system. Land evaluation systems that are not understood by local planners will be of little value in land use management. More States are currently using the USDA land capability classification than any other land evaluation system in farmland protection programs.

E. *The availability of soil surveys.* LESA can best be developed where soil surveys, the basis for all land evaluations, are complete. For procedures to use where there is no soil survey, see part 601.2(E).

F. *Existing legislation.* LESA systems should be compatible with and help to implement any legislation that uses other land evaluation systems.

601.2 National Cooperative Soil Survey

A. A soil survey is an inventory and evaluation of the soil resources of an area. It is an essential tool in developing land evaluation systems. In the United States, soil surveys are made cooperatively by NRCS, the Forest Service, the Department of the Interior, State land-grant colleges, and others. Much of the United States has available soil survey information. Information on the availability of soil surveys can be obtained from each NRCS state office or from the NRCS website (http://soils.usda.gov/survey/printed_surveys/).

B. Soil surveys contain soil maps, soil descriptions, management information, and interpretations for different uses. The soil maps are published at various scales to fit local needs, mostly 1:12,000 and 1:24,000. Official soil surveys can be viewed through Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm) or digital spatial and tabular data can be downloaded from the Soil Data Mart (http://soildatamart.nrcs.usda.gov/) and used in a Geographic Information System (GIS). Soil maps show locations of mapping units identified during the soil survey. Each area of soil (mapping unit) shown is identified by an alphabetic or numeric symbol or a combination of both, i.e., DoB, 18, 20B2, etc. The number of soils in survey areas ranges widely, depending on the size of the area, the complexity of geology and landscape, climatic differences, etc.

C. Soil descriptions included in soil surveys contain information about soil texture, depth, drainage, structure, color, landscape position, flood hazard, rockiness, stoniness, droughtiness, and other properties useful for planning purposes. Interpretations of soil properties are presented for various uses, such as cropland, forest land, rangeland, homesites, recreation, wildlife habitat, and septic tank filter fields.

D. Land evaluation systems interpret soil survey information.

(1) Some of the different kinds of interpretations used in cropland evaluations are land capability classification, soil productivity for specified indicator crops, soil potential ratings, important farmland classification, natural soil groups, and limitation or suitability ratings. The LESA land evaluation method for cropland integrates soil survey interpretations for important farmland classes, land capability classification, and either

soil productivity or soil potential ratings. (See exhibit 605.2 for a description of some of these interpretations. Important farmland classes are defined in exhibit 605.3.)

(2) The LESA land evaluation method for forest land integrates woodland productivity (based on specified indicator tree species), value of commercial tree species in the area, slope (as related to management), and soil features that affect use and management for woodland.

(3) The LESA land evaluation method for rangeland is currently under design and development by NRCS.

E. LESA systems can best be developed in areas having a completed soil survey. However, in areas that lack a completed survey, the land evaluation part of LESA can be designed by—

(1) Expansion of National Resource Inventory soil information; or

(2) Expansion of available soil surveys by MLRAs.

F. Use of either of the above procedures will result in a less precise design than could be planned based on a completed modern soil survey for the planning area. Individual sites and areas being considered in application of a LESA system using either (1) or (2) above require onsite soil survey information.

G. NRCS state soil scientists or their representatives should review and approve technical aspects of all land evaluations prepared in the development of a LESA system.

601.3 Agricultural Land Uses—Definitions

A. LESA land evaluation procedures have been developed for three recognized land uses, defined as follows:

(1) *Cropland* includes all agricultural lands that are not included in forest land or rangeland.

(2) *Forest land* includes land stocked by at least 10 percent forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use. Also included under forest land are areas to be protected for forest land.

(3) *Rangeland* includes land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. Also included under rangeland are areas to be protected for rangeland.

B. For each land use, specific criteria or elements must be considered in the design of a land evaluation system. These specific criteria are discussed in the appropriate subparts of this handbook.

601.4 Lands To Be Considered

A. One of the duties of the local committee is to clearly define the planning area for the land evaluation. In most cases, the planning area will be countywide, parish-wide, statewide, or township-wide.

B. Crops, forest, and rangeland often occupy specific areas within a county or State. In such cases, a land evaluation can be prepared for a specific part of the whole area.

C. In some cases, all or part of the planning area may be occupied by urban land or other nonagricultural land use and cities may have expanded onto important farmlands.

D. In all cases, land not available to the specified land use, i.e., cropland, forest land, or rangeland, may be excluded from the planning area. Any soils in the proposed planning area that are known

to be unavailable for the proposed land use may be excluded from further consideration. For example, consider excluding State lands, Federal lands, and urban lands.

E. Total acreage and percent extent for each mapping unit shown in the land evaluation procedure should represent land that is available for the specific use in question. This means that the computer printout may need to be adjusted with regard to soils, productivity index, and acreage and extent. Rerun the computer program to obtain data applicable to only those soils known to be available for the specific land use.

Subpart B—Land Evaluation for Cropland

601.10 Introduction

A. The LESA land evaluation procedure for cropland uses accepted methods of land evaluation to meet planning needs at all levels of government. (Exhibit 605.4 gives a complete example.) The procedure recognizes the merits of the following individual methods as it integrates them:

(1) *Land capability classification* (see exhibit 605.2). The use of the USDA land capability classification system identifies for local planners the degrees of agricultural limitation that are inherent in the soils of a given area. Planners can use the system to plan and implement programs at regional and State levels.

(2) *Soil productivity* (see exhibit 605.2). The use of soil productivity in the land evaluation system enables planners to consider the local agricultural industry from the standpoint of soil productivity for a specified indicator crop. Using both soil productivity and land capability classification should permit estimation of relative net income expected from each category of soils.

(3) *Soil potentials* (see exhibit 605.2). When they are available, soil potentials for specified indicator crops are used in the land evaluation system in place of soil productivity. Soil potentials rate soils according to a standard of performance, taking into account the costs of overcoming soil limitations plus the cost of continuing limitations, if any exist. The use of these ratings enables planners to consider the local agricultural industry.

(4) *Important farmland classification* (see exhibit 605.3). The use of important farmland definitions as part of a local land evaluation system enables planners to consider national efforts to protect prime and other important farmland. It enables planners to identify prime and other important farmlands at the local level. Use of the national criteria for definition of prime farmland provides a consistent basis for comparing local farmland with farmland in other areas.

B. The integrated land evaluation procedure developed for LESA can be used more confidently and objectively than any of the individual methods alone.

601.11 Soil Survey Computer Printout

A. Soil data for completed soil survey areas are stored in the Soil Data Mart. NRCS developed a computer program to retrieve information needed in preparing a cropland evaluation system. The computer printout for farmland criteria can be generated in NASIS. The computer program is explained in exhibit 605.5.

(1) Each state office will generate a farmland criteria printout for an individual county or area as requested by the local district conservationist or by a responsible State or local official. The district conservationist and local committee should provide information needed to generate the printout.

(2) Information needed to generate the printout, such as available water capacity, soil moisture regime, C factor, etc., will be verified by the state office soil survey staff before it is entered into the computer.

(3) The computer printout (see exhibit 605.6) will contain soil productivity information for a specified indicator crop selected by the LESA committee. It also arrays capability class information for each soil and verifies the prime farmland classification of each soil. The selected indicator crop(s) should be grown on a wide array of soils in the planning area and should reflect the local agricultural industry to the extent possible.

(4) The state soil survey staff will review the computer printout for accuracy of data and resolution of conflicts between prime soils on the State list versus those on the printout. Documentation of changes to the table is essential. Changes are to be approved by the state office soil survey staff. The state conservationist, in consultation with the cooperators of the National Cooperative Soil Survey Program, has the flexibility to make local deviation from the permeability criterion or to be more restrictive for other specific criteria to assure the most accurate identification of prime farmlands for a State. Any changes should be minimal and should be forwarded to the appropriate national technology support center (NTSC) for review. For example:

(i) The computer printout may show a very gravelly soil to be prime. Published soil survey information may indicate that this soil has a low available water capacity and is droughty. The state conservationist should notify the MLRA soil survey regional office (MO) and the NTSC that this soil is not prime in his or her State because of the low available water capacity.

(ii) The computer printout may show a given mapping unit to be not prime because of soil slope and given erodibility value. If such a mapping unit is thought to be prime within a survey area, furnish documentation showing the average slope of the mapping unit to be less than that correlated. Use the published soil survey mapping unit description to help verify slope ranges and other features.

(5) The corrected and approved computer printout is forwarded to the local district conservationist for use in completing the land evaluation.

(i) The district conservationist will review the printout for conformance to the local soil survey legend.

(ii) The local committee should review the crop yield data and update yields if needed. If yields are updated, the productivity index should be refigured.

(6) The computer printout arrays soil survey data that are needed to document the system developed. It should be retained in local files.

601.12 Worksheet l—List of Soils and Evaluations

A. This worksheet constitutes table 1.

B. *Headnote information.* The blanks in the headnote on Agricultural Evaluation Worksheet 1 should be filled in from the computer printout. Worksheet 1 presents summary information that may be used by a number of people; only a few people will need to review the computer printout.

C. *Column 1—Map symbol.*

(1) This column records the map symbol for all of the soils in the planning area. The map symbol recorded should be the same as the approved publication symbol in most areas. These symbols may be obtained from a soil survey of the area or from the computer if

Table 1.—Agricultural Evaluation Worksheet 1
List of Soils and Evaluations

County and State: De Kalb County, Illinois
Indicator crop(s): Corn
Minimum required AWC without irrigation: 4 inches
Minimum required AWC with irrigation: _____
Irrigation water available: Yes ____ No ____

MLRA: 95 and 108
Climatic C factor: _____
Temperature regime: Mesic
Moisture regime: _____

Map symbol	Soil name	Slope	Land capability class and subclass	Important farmland determination	Productivity index of soil potentials (local)	Productivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agricultural group
1	2	3	4	5	6	7	8	9	10
198A	Elburn	0 to 2	1	Prime	100		9,386	2.31	1
154A	Flanagan	0 to 2	1	Prime	98		57,007	14.04	1
171A	Catlin	0 to 2	1	Prime	94		7,858	1.94	1
148A	Proctor	0 to 2	1	Prime	93		322	0.08	1
152A	Drummer	0 to 2	2w	Prime	97		42,583	10.49	2
68A	Sable	0 to 2	2w	Prime	97		623	0.15	2
206A	Thorp	0 to 2	2w	Prime	86		383	0.09	2
330A	Peotone	0 to 2	2w	Prime	83		2,845	0.70	2
171B	Catlin	2 to 5	2e	Prime	93		35,898	8.84	3
512B	Danabrook	2 to 5	2e	Prime	93		56,035	13.80	3
148B	Proctor	2 to 5	2e	Prime	92		54	0.01	3
663B	Clare	2 to 5	2e	Prime	91		885	0.22	3
667B	Kaneville	2 to 5	2e	Prime	89		4,241	1.04	3
792B	Bowes	2 to 4	2e	Prime	88		467	0.12	3
791B	Rush	2 to 4	2e	Prime	88		316	0.08	3
662B	Barony	2 to 5	2e	Prime	86		2,365	0.58	3
344B	Harvard	2 to 5	2e	Prime	85		176	0.04	3
679B	Blackberry	2 to 5	2e	Prime	84		2,405	0.59	3
233B	Birkbeck	2 to 5	2e	Prime	84		377	0.09	3
233A	Birkbeck	0 to 2	1	Prime	85		885	0.22	6
325B	Dresden	2 to 4	2e	Prime	79		275	0.07	7
656C2	Octagon	4 to 6	2e	Prime	75		3,740	0.92	7

NASIS data were used to generate the printout. The map symbol enables one to go from soil survey to database in this system for information on any given map unit.

(2) In cases where a land evaluation system is being developed for a State, multi-soil survey, or MLRA, map symbols may not be appropriate or available unless the State is using a statewide soil survey legend.

(3) Map symbols should be listed in column 1 in order of the soil's land capability class and subclass: i.e., soils in class 1 should be listed first and soils in class 8 should be listed last (see explanation for column 4).

D. *Column 2—Soil name.*

(1) Record the approved series name in column 2. If significantly different phases of series, other than slope, are mapped in the same area, record phase information, i.e., DeKalb and DeKalb, STV (very stony), or Heiseton and Heiseton, saline-alkali.

(2) Approved series names are in the Soil Data Mart or are on the Web soil survey used to generate the printout.

E. *Column 3—Slope.*

Record the slope in column 3. Slopes listed should be the same as those of the soils in the planning-area soil survey.

F. *Column 4—Land capability class and subclass.*

(1) List soils in capability class 1 first, followed by 2e, 2w, 2s, 2c, 3e, 3w, etc., through capability class 8. The computer printout has the soils of a planning area arranged in that order, which has the advantage that "groups" of soils may be most readily perceived.

(2) Class and subclass listed should be the same as in the Soil Data Mart or on the computer printout if the printout was obtained by using the Web soil survey. Discrepancies or changes should be noted and documented for future reference.

G. *Column 5—Important farmland determination.*

(1) List the assigned important farmland class based on the approved list for the State and planning area, i.e., "prime," " unique," "statewide importance," "local importance," or "other" (see exhibit 605.3 for definitions).

(2) "Prime." Complex mapping units should be classified as "prime" if more than half of the mapping unit is prime as verified by the Soil Data Mart. For any map unit classified "prime" but with a qualifying statement, use the following guidelines:

(i) For "where irrigated": If 50 percent or more of a given prime soil in the planning area is irrigated, consider all of that soil in the area to be "prime." The class for areas not irrigated will be adjusted during site assessment.

(ii) For "where drained": If 50 percent or more of a given prime soil in the planning area is drained, consider all of that soil in the area to be "prime." The class for areas not adequately drained will be adjusted during site assessment.

(iii) For "where protected": If 50 percent or more of a given prime soil in a planning area is protected from flooding or does not flood during the growing season, consider all of that soil in the area to be "prime." The class for areas not protected will be adjusted during site assessment. (See part 601.20, Adjustment for Local Conditions.)

(3) "Unique." The use of "unique" should be approved by the state soil scientist. The reasons for this classification should be documented in both field office location files and the state soil scientist's files.

(4) "Statewide importance." This classification is based on a determination made by appropriate State agencies and approved by the state conservationist.

(5) "Local importance." This classification is based on a determination made by local agencies and approved by the state conservationist.

(6) "Other." Soil in this class is usually of little or no importance to agriculture. "Other" includes all map units not assigned to a higher class.

H. *Columns 6 and 7—Soil productivity index of soil potentials.*

(1) In areas where a soil potential index (SPI) has been prepared for the specified indicator crop(s), it should be shown in column 6. If the SPI exceeds 100 for any soil, that SPI should be converted to 100 and all other SPIs should be converted to an index relative to 100.

Example:
High SPI of 110 is converted to 100.
Then an SPI of 90 would be equal to the ratio of 90/110 = 0.82 x 100 = 82.

(2) Column 6 should also be used to record a local or statewide soil productivity index if one has been prepared for the specified indicator crop(s).
(3) Column 7 should be used to record the soil productivity index for the specified indicator crop(s) as developed on the computer printout for individual soils based on Soil Data Mart data.
(4) In any of the cases noted above, the index for soils in the planning area should range from 100 for the best soils to some lower value for soils having low yields.
(5) Documentation for the local soil productivity index used, or soil potential index developed, should be kept in the local NRCS files.
(6) Where more than one crop was used to develop a local index, documentation should show the crops used and how the data were combined (refer to *Land Evaluation and Site Assessment: A Guidebook for Rating Agricultural Lands*, chapter 4, pages 52-58). For example, if corn silage and hay yields are converted to total digestible nutrients (TDN), the index can be developed from TDN.

I. *Column 8—Number of acres.*

Record the number of acres for each mapping unit in the Soil Data Mart. Adjust acreage, if needed, to include only soils available for the specified land use.

J. *Column 9—Acres as percentage of area.*

(1) Record the percent extent of each mapping unit in the area from the Soil Data Mart. Adjust percent extent, if needed, to include only soils available for the specified land use.
(2) Columns 8 and 9 are for use in developing significant groups of soils in terms of area and extent. (See part 601.4, Lands to be Considered.)

K. *Column 10—Agricultural group.*

This column cannot be completed until after worksheet 2 is completed. It should then be completed to provide documentation and to reference soils to agricultural groups.

L. When completed, worksheet 1 becomes part of the documentation for the development of the land evaluation part of the LESA system and should be retained in local files. It is also used during site assessment to identify the mapping units and appropriate agricultural groups.

M. Worksheet 1 should be used to—

(1) List all area soils in order of land capability classification;
(2) Show the land capability classification, important farmland class, and productivity index for each map unit (soil) in the area (if available, soil potential index should be used *in lieu* of productivity index);
(3) Show the amount of each soil in terms of acres and percent extent in the area as determined from published or unpublished soil survey information; and
(4) After the completion of worksheets 2 and 3, show the placement of each soil in an agricultural group (see parts 601.13 and 601.14).

N. In statewide areas or MLRAs, the farmland criteria printout may be used in place of worksheet 1. In such a case, add columns for acres and percent extent of each soil, expanded from Natural Resources Inventory (NRI) or MLRA summaries or from Soil Data Mart information.

601.13 Worksheet 2—Design of Land Evaluation for Area

A. This worksheet constitutes table 2.

B. *Column 1— Agricultural group.*

The soils of a given area are rated and placed into agricultural groups ranging from the best suited to the worst suited for the agricultural use considered, i.e., cropland. Working through the land evaluation part of LESA will show that the soils of most survey areas (or planning areas) can be arrayed in about 15 groups in several different combinations. Agricultural group 1 should contain the best soils available, i.e., those with the highest relative value for the stated agricultural use in terms of productivity index or potential and with the least limitations to such use. The soils in agricultural groups 2 through 15 should have successively lower relative values in terms of overall productivity index or potential index, higher costs to correct and maintain soil limitations, or both.

(1) Three land evaluation methods are integrated in developing the 15 or so groups of soils, i.e., land capability classification, soil productivity index (SPI), and important farmland class. When several land classification and evaluation methods are integrated, there should be few questions about the placement of the best soils in the highest agricultural group and the other soils in successively lower groups and the assumptions made for any one of the methods should become less important. For example, if soil productivity is used as a single factor, a class 1 soil on a flat slope (0 to 1 percent slope) with a productivity index of 100 would rate the same as a class 2e soil on a 3 to 8 percent slope with a productivity index of 100; this single-factor system does not consider the erosion hazard on the 2e soil. By integrating the land capability classification into the system, the 2e soil is placed in a lower group and the yield is adjusted to account for costs of overcoming the erosion limitation.

(2) The use of important farmland classes and the land capability classification helps lessen the long-term effect that short-term interest rates, costs of conservation practices and maintenance, and land removed for installation of certain practices may have in evaluation methods based solely on soil productivity.

Table 2.—Agricultural Evaluation Worksheet 2
Design of Land Evaluation
(De Kalb County, Illinois)

Agri-cultural group	Land capability class and subclass	Important farmland determination	Soil potential or productivity index	Percent-age of total area	Acres	Relative value
1	2	3	4	5	6	7
1	1	Prime	90-100	21.4	86,670	100
2	2w	Prime	83-99	31.8	128,970	99
3	2e	Prime	84-93	25.4	103,220	95
4	3w	Prime	84-94	2.9	12,150	91
5	3w	Statewide	89	0.4	1,470	91
6	1	Prime	75-89	1.5	6,200	86
7	2e	Prime	75-83	10.7	43,470	80
8	3e/4e	Statewide	64-88	5.2	21,180	80
9	6e/7e	None	52	0.2	880	53
10	8	None	0	0.5	1,710	0

(3) In developing the 15 groups of soils, keep in mind the question, "If all things were equal (cost per acre, location, water supply, markets, etc.), which kinds of soils would you buy first?" In many cases, one would not buy a soil having the highest yield if it required expensive soil and water conservation measures or intensive management to produce the yield.

(4) Ideally, each of the 15 groups should contain about 6 percent of the planning area. However, groups containing 5 to 15 percent of the planning area are practical. In some cases, groups may contain more or less than 5 to 15 percent of the planning area and fewer or more than 15 groups may be needed. The intent is to provide enough groups for planners to adequately differentiate significant classes to meet planning needs.

C. *Column 2—Land capability class and subclass.*

(1) List the land capability class or classes included in each group. Show any subclass designations needed to identify differences in groups, e.g., 2e in group 2 and 2w in group 3. Subclass designation should be noted only where the overall cost of conservation practices is different for each subclass.

(2) In most cases the lowest land capability class for the soils in an area should occur in agricultural group 1. It is possible, however, when relative values are determined on worksheet 3, that the final ranking of agricultural groups may not always be from lowest to highest capability class. The final order of agricultural groups is determined by the relative values determined on worksheet 3.

(3) In general, capability classes 1 and 2 should not be combined, because class 1 soils require no adjustment. Class 2 soils require adjustment for moderate limitations.

(4) It is acceptable to have agricultural groups that have more than one capability class or subclass. If State or local farmland protection policy is based on the land capability classification, the integrity of the policy should be protected. For example, State law might require that all proposed conversions of capability classes 1 through 3 be reviewed by the State Department of Agriculture. In this case it is acceptable to have groups consisting of classes 1 through 3 or a combination thereof. It would not be acceptable to group class 3 with class 4, as only part of the group would consist of class 3 soils and thus be subject to the State law.

(5) NOTE: The land capability classification system is used in more State and local agricultural land protection programs than any other land evaluation system.

D. *Column 3—Important farmland class.*

Agricultural group 1 should generally include the highest class of important farmland available. In some cases this may be either "prime" or "unique;" in other cases it may be "statewide importance." In planning areas having a high percentage of "prime" farmland soils, the first five or six agricultural groups may consist of "prime." In other cases, only one agricultural group may be needed for "prime" farmland soils. Different classes of important farmland should not be combined in any one group; "prime" farmland soils should be in a group or groups by themselves and "statewide importance" soils should be in a group or groups by themselves, etc. This guideline is important inasmuch as LESA should be used to implement national, State, and local farmland protection policies and some State and national legislation emphasizes the "prime" class.

E. *Column 4—Soil potential or productivity index.*

(1) List the limits in soil productivity index (SPI) for the soils in each agricultural group. Each group should have relatively narrow limits, e.g., 90-100, 80-90, etc. Groups with a range wider than about 15 or 20 should be regrouped if possible to achieve a narrower range, but a wide range may be necessary in some of the lower groups where soil

productivity may be quite variable. If an individual group contains a combination of capability classes, for example 2/3, show the limits of productivity index for each class, e.g., 65-80/75-95. In the example noted, the class 2 soils require moderate adjustment for erosion limitation and the class 3 soils require more extensive adjustment. However, the relative value of the soils should be about equal.

(2) In most cases, the limits in soil productivity index displayed in this column will decrease from the highest, shown in agricultural group 1, to a lower value or zero in some lower groups. There are some cases, however, where soils in lower groups have a relatively high productivity index. Such soils are placed in a lower group because of the high costs of overcoming soil limitations resulting from a class 3, 4, or higher classification.

F. *Column 5—Percentage of total area.*

This column is used to show the percent extent of each group in the planning area. The intent is to have a significant amount (5 to 15 percent) of the planning area in each group as an aid to planners. However, there can be exceptions. One soil may make up 20 percent or more of the planning area; whichever group this soil is placed in will have a minimum of 20 percent. One should not group a soil of limited percent extent with another if such a combination would compromise the integrity of important farmland classes (shown in column 3). The percent extent of each group can be calculated from information shown on worksheet 1. If any group consists of two or more capability classes, e.g., 2/3, the percent extent of each class should be shown in column 5 as, for example, 1.3/5.6, total 6.9. The total for all groups should equal 100 percent of the planning area.

G. *Column 6—Acres.*

(1) The total acreage of soils in each group can be calculated from information shown on worksheet 1.

(2) Note for columns 5 and 6: For planning areas larger than individual survey areas, percent extent and acreage information may not be available. For large areas, such as a statewide system, the information might be obtained through expansion of NRI data, Soil Data Mart information, or MLRA soil survey data. For planning areas smaller than soil survey areas, such as for a part of a county, percent extent and acreage may need to be recalculated by remeasurement of the planning area. Acreage data should be useful to planners in determining whether alternatives to proposed conversions exist.

H. *Column 7—Relative value.*

(1) Relative value is determined on worksheet 3; so column 7 cannot be completed until worksheet 3 is completed.

(2) Where the relative value of lower agricultural groups is zero for corn or another specified indicator crop, but the land can produce a less valuable crop such as hay and is being used to do so, establish a relative yield for the soils in terms of the indicator crop (i.e., corn) and determine the relative value. The relative yield established should never be higher than that of the lowest groups of soils that can still be used to produce the indicator crop. Documentation in local files should show how the relative yields were established, e.g., tons of hay equivalent to bushels of corn.

I. In cooperation with the local committee, the local NRCS district conservationist should prepare two or three alternative groupings on worksheet 2. The local committee should help select the final land evaluation alternative that will best meet the needs and objectives of local planners.

J. Worksheet 2 should be kept in local files as part of the documentation for the system.

601.14 Worksheet 3—Determining Relative Value

A. This worksheet constitutes table 3. The relative value determined on this worksheet for each agricultural group is a land evaluation value used in conjunction with a site assessment value in the application of a LESA system.

B. *Column 1—Agricultural group.* These groups are the same as those shown on worksheet 2.

C. *Column 2—Adjusted yield divided by the highest adjusted yield.*

This column may be used to show either (1) adjusted weighted average yield or (2) weighted average SPI or some other measure of productivity. For each group, the adjusted weighted average yield is divided by the highest adjusted weighted average yield. If weighted average SPI is used, no further adjustment or indexing is needed; the weighted average SPI is the same as the relative value in column 5.

(1) The first step in determining adjusted yields is to develop a weighted average yield for soils in each agricultural group. Yield information is arrayed on the computer printout. Examples: Where soils AbA, BeA, and CoA are all of the soils in any group with the acreage shown—

(i) Based on yield and acreage:

	Yield		Acreage		Product
Soil AbA -	160 bu corn/acres	x	20 acres	=	3,200
Soil BeA -	155 bu corn/acres	x	10 acres	=	1,550
Soil CoA -	165 bu corn/acres	x	10 acres	=	1,650
			40 acres		6,400

Weighted average yield = 6,400/40 = 160 bu/acre;

Table 3.—Agricultural Evaluation Worksheet 3
Determining Relative Value
(De Kalb County, Illinois)

Agri-cultural group	Adjusted yield for the group divided by the highest adjusted yield	Quotient of relative yield	Times 100	Relative value
1	2	3	4	5
1	174/174	1.00	x 100	100
2	172/174	0.99	x 100	99
3	165/174	0.95	x 100	95
4	158/174	0.91	x 100	91
5	158/174	0.91	x 100	91
6	150/174	0.86	x 100	86
7	140/174	0.80	x 100	80
8	140/174	0.80	x 100	80
9	93/174	0.53	x 100	53
10	0/174	0.00	x 100	0

(ii) Based on yield and percent extent:

	Yield		Percent extent/100		Product
Soil AbA -	160 bu corn/acre	x	0.50	=	80 bu
Soil BeA -	155 bu corn/acre	x	0.25	=	39 bu
Soil CoA -	165 bu corn/acre	x	0.25	=	41 bu
			1.0		160 bu

Weighted average yield = 160 bu/acre

(2) Careful grouping of the soils into agricultural groups 1 through 10 will always result in the soils in agricultural group 1 having the highest weighted average yield. If the soils in agricultural group 1 are in capability class 1, no adjustment of the weighted average yield is needed because the soils in capability class 1 have few or no limitations to use for cropland. Therefore, no adjustments are needed to account for costs of overcoming soil limitations such as erosion hazard, seasonal wetness, etc.

(3) If the highest weighted average yield represents soils in capability classes 2, 3, 4, etc., an adjustment should be made to account for the costs of conservation practices needed to overcome soil limitations. The rationale for adjustment of yields in each agricultural group must be documented in local files. For each group, proper documentation should show—

(i) The name of each soil or map symbol;
(ii) The kind of limitation, e.g., erosion hazard, seasonal wetness, salinity, etc., for each soil;
(iii) The kinds of practices or cropping systems needed or already installed to overcome the limitations (these practices, etc., must conform to the specifications of local technical guides);
(iv) The annual costs involved in applying the needed practices, etc., shown in item (iii) above;
(v) The annual maintenance costs; and
(vi) The land loss, if any, because of installation of practices, cropping systems, etc.

(4) To determine the amount of adjustment needed for each group, adjust each soil in the group. Raw crop yields of individual soils can be reduced by an amount equal to the cost of corrective measures and annual maintenance converted to bushels of the indicator crop.

(i) Example 1—Soil Alpha (AlB), with a moderate erosion hazard, is in capability class 2e. It has a raw yield of 135 bushels of corn per acre. The annual cost of overcoming the erosion hazard is determined to be $15.00 per acre. The $15.00 cost is equal to 5 bushels of corn at $3.00 per bushel. The adjusted yield would be 135 minus 5 bushels, or 130 bushels.
(ii) Example 2—Soil Alpha (AlC), with a severe erosion hazard, is in capability class 3e. It has a raw yield of 135 bushels of corn per acre. The annual cost of overcoming the erosion hazard is determined to be $30.00 per acre. This is equal to the cost of 10 bushels of corn at $3.00 per bushel. The adjusted yield would be 135 minus 10 bushels, or 125 bushels.

(5) The amount of adjustment for each soil or soils should include the costs for—

(i) The amount of land lost, as in the case of ditches or diversions;
(ii) The amount of loss from increased length of crop rotation;
(iii) The increased frequency of irrigation needed or different methods of irrigation; and
(iv) A variety of conservation practices needed to correct soil limitations.

(6) When the yield of each soil in a group has been "adjusted," the weighted average yield is an adjusted yield.

(7) If all the soils in a group are in the same capability class and subclass, such as 3e, the cost of overcoming the erosion limitation and the continuing costs can be determined for the entire group at once. For example, in agricultural group 3, all soils are in land capability class 3e and the weighted average yield is 135 bushels of corn per acre. All the soils in agricultural group 3 need the same resource management consisting of stripcropping, diversion terraces, waterways, and conservation tillage. Average annual loss or cost is documented as follows:

Loss of land due to waterways, diversions, short rows, etc. = 4 percent

0.04 x 135 = 5 bu

Annual cost of maintenance for resource management system = $6/acre

6/3 = 2 bu (at $3.00/bu)

Total annual cost = 7 bu

The adjusted yield is 135 - 7 = 128 bu

(8) Instead of adjusted weighted average yield, a weighted average soil potential index (SPI) can be used.

(i) In some cases the SPI of individual soils can exceed 100. If so, the SPI should be adjusted so that the high value, e.g. 117, is equal to 100. The SPIs for all soils rated should then be adjusted so that they are relative to 100 rather than 117.

(ii) An SPI based on 100 needs no further adjustment, as the costs of correcting the continuing limitations have been taken into account in developing the SPI.

(iii) The weighted SPI for the soils in each group is entered in column 2.

(iv) Completed worksheets used in developing the SPI should be kept in local files to provide part of the land evaluation documentation.

(9) In some States, the yields of each soil were adjusted to produce an adjusted productivity index on worksheet 2 in column 4. If this is done, the weighted average soil productivity index for each group can be entered in column 2 of worksheet 3 and no further adjustment is needed.

(10) If an agricultural group includes soils in different capability classes, e.g., 2e and 3e, each must be adjusted according to the degree of limitations involved. A weighted average adjustment must be applied to the weighted average yield calculated for each capability class.

(11) The lower agricultural groups, e.g., 7 through 10, may have very low yields and high adjustments, depending on the soils in the planning area. In such a case, the lower groups may have a relative value of 0 for agriculture.

D. *Column 3—Quotient of relative yield.*

This column records the result (quotient) of the division indicated in column 2. The result in all cases is 1 for agricultural group 1 and a fraction, e.g., 0.44, for lower agricultural groups, down to a possible value of 0.

E. *Column 4—Times 100.*

Multiply the result (quotient) shown in column 3 by 100.

F. *Column 5—Relative value.*

Record the whole number obtained by multiplying the column 3 values by 100. Column 5 should contain a range of values starting at 100 for agricultural group 1 and successively decreasing to some lower value or 0. The development of this array is useful to planners in visualizing the value of the soils in the various groups relative to the best soils in the planning

area, that is, the soils in agricultural group 1. If the soils in agricultural group 5 have a relative value of 63, the inference can be made that those soils in agricultural group 5 are only 63 percent as valuable for the indicator crop as the soils in agricultural group 1, which have a relative value of 100.

G. Completion of worksheet 3 completes the land evaluation part of the LESA system. The only value to be used with the site assessment part of LESA is the relative value (column 5 of worksheet 3).

Subpart C—Adjustment and Application of Relative Values for Specific Sites

601.20 Adjustment for Local Conditions

A. There are several conditions under which relative values developed on worksheet 3 may need some adjustment.

(1) In some large planning areas, i.e., large counties or whole States, some soil series may be mapped across a significant rainfall differential; for example, 10 inches versus 20 inches annual precipitation. In some cases, one or more soil series may span a significant difference in number of growing days, e.g., 200 days in one part of the area and 110 days in another part. Government-sponsored flood control, drainage districts, or irrigation water may be available in one part of the planning area but not in another part for the same soils. In these cases it may be necessary to adjust the relative value for some of the agricultural groups in the area. In most cases, soils of any given series occur in only one climatic zone or range of elevation and adjustment should not be needed.

(2) In some local areas, i.e., counties or towns, some areas of a given soil may be drained and others may not be. Some areas of a given soil may be adequately protected from flooding and others may not be. Other kinds of contrasting situations may exist that would require some adjustment of relative values.

B. In developing the adjustments, add points to the existing relative value if the poorest condition in the planning area was used to develop the relative value on worksheet 3. If the best condition in the area was used to develop the relative value on worksheet 3, subtract points. The point values assigned to specific conditions should be relative to the kinds of limitations imposed by the conditions and to each other condition considered. Point values assigned should adequately reflect cost differences between the best and worst conditions with regard to clearing, drainage, flood protection, etc. For example:

Ag. group	Rel. value	Climate adjustment	Flood control	Adjusted rel. value
1	100	-10	---	90
2	94	-10	-5	79
3	80	-10	---	70

C. In the example above, the ideal climate and flood protection were considered in adjusting the relative values. Ten points were subtracted from the relative values of groups 1, 2, and 3 for a negative climatic zone in the planning area. An additional 5 points was subtracted from the relative value of group 2 for soils lacking flood control in some part of the planning area.

D. A tabular display such as the one above should be prepared as the land evaluation part of a LESA system is being developed. The points assigned for various conditions should be approved by the local committee. Test the point values to ensure that their use in the LESA system will help meet its local objectives.

E. The need for an adjusted relative value for any condition is generally determined during assessment of a specific site.

601.21 Application

The relative value of a site should be determined by local officials when a decision is to be made about converting the site to nonagricultural use or taking other action that affects use of the site for agriculture. A site is defined as a tax parcel or that part of a tax parcel for which land conversion is planned.

A. To determine average relative value for a small site (having a maximum size of 100 acres, or up to 500 acres if soils on the site are uniform), use the following procedure:

(1) Locate the site on a soil survey map and determine the kind of soils on the site.
(2) Determine the acreage of each soil on the site and the appropriate agricultural group for each soil.
(3) Multiply the number of acres of soils in each agricultural group times the assigned relative value (or adjusted relative value if needed) on worksheet 3.
(4) Add the products of the multiplication performed in step (3).
(5) Divide the total value obtained in step (4) by the total acreage on the site. The quotient will represent an average relative value for the site.
(6) Example:

Ag. group	Rel. value	Acres	Acres x rel. value
1	100	50	5,000
3	80	40	3,200
6	30	10	300
Total		100	8,500

Average site value = 8,500/100 = 85

B. An average site value generally should be used only for small sites (up to 100 acres, or more if soils on the site are uniform) or if most of a site is being used for crops. An average site value generally should not be used with large sites as the average value will be greatly affected by a large number of acres of very poor land having a relative value of 0. When an entire large site is being considered for conversion, however, the average site value must be determined as above.

(1) Example:

Ag. group	Rel. value	Acres	Acres x rel. value
1	100	400	40,000
2	94	100	9,400
10	0	500	0
Total		1,000	49,400

Average site value = 49,400/1,000 = 49

(2) In this example, the site has 500 acres of high relative value land but the 500 acres in agricultural group 10 drastically reduces the average relative value. (The average relative value for agricultural groups 1 and 2 alone would be about 99.)
(3) In most cases less than 1,000 acres of land would be converted at any one time.

C. With large sites of which only parts are being considered for conversion, the relative values for each agricultural group on the site should be arrayed for consideration by planners and decision makers. The areas having low or zero relative values for cropland may have a high relative value for forest land or other use. In terms of cropland protection, however, no efforts should be

made to protect areas having low or 0 relative values. Planners should always consider the effect of conversion on adjacent and nearby agricultural land.

Subpart D—Land Evaluation Procedures for Forest Land

601.30 Introduction

A. This procedure is based on commercial values of designated tree species.

B. A land evaluation for forest land is prepared at the request of a State agency exercising control over State forest lands or a governing body with jurisdiction over the land area for which the evaluation system is being developed. NRCS and others can assist units of government in adequately considering soil, water, and related resources in developing a land evaluation procedure. (See part 600.3, Responsibility for Developing LESA Systems, and part 600.4, Local Committee or Work Group.)

C. A land evaluation for forest land is needed in planning areas where land use conversions will adversely affect the forest industry in the area. The land evaluation procedure for forest land establishes classes of land (agricultural groups) in which the best soils in the planning area for forest products are in agricultural group 1 and the poorer soils for forest products are in some lower group, i.e., 2 through 10. In most cases, about 5 to 10 significant groups of soils can be established.

D. The LESA land evaluation procedure for forest land integrates the following factors:

(1) *Productivity rating.* This rating is based on the productivity of the designated indicator tree species for each soil. The indicator species is defined in the NRCS *National Forestry Handbook* as "that species which is common in the area and is generally the most productive on the soil in question." The indicator species for each soil is determined from the Soil Data Mart Forestland Productivity tables. The indicator species is usually a species listed under the column heading "Potential Productivity." In the model to be presented, productivity is presented in terms of cubic feet/acre/year, but other units of measurement may be used.

(2) *Species rating.* This rating is based on the value of the indicator species that occur in the planning area. Values assigned to the various indicator species listed are in terms of the major wood product in the area, such as sawlogs, pulpwood, etc.

(3) *Slope rating.* In many cases, slope steepness is one of the most important factors limiting forest management activities or making them more costly. If desired, an alternative rating (such as equipment limitations) may be used.

(4) *Soil or other management limitations.* In this rating, soil features, other than slope, that limit management activities or make them more costly are evaluated for the planning area.

E. The intent of integrating these factors is to provide balance between production items and management items. Generally, the production items are more significant than the limitation items. In some areas, the slope rating is much more significant than the soil limitation rating. In such cases, it is suggested that a weighting system be used. It might be determined locally that the values for productivity rating be multiplied by a factor of 4, the values for species rating be multiplied by a factor of 3, and the values for slope rating be multiplied by a factor of 2. This weighting would indicate that production is four times as important, that species value is three times as important, and that slope is twice as important as soil limitations. Other weighting factors may be used; the above is only an example.

601.31 Forest Land Rating Elements (Table 4)

A. Table 4 shows the rating elements used in the land evaluation for forest land. Chart 1A—Productivity Rating and Chart 1B—Species Rating show ratings of production. Chart 1C—Steepness of Slope Rating and Chart 1D—Soil Limitation Rating show limitation ratings with regard to management items.

(1) *Chart 1A—Productivity Rating.*

(i) The local land evaluation committee should review the list of indicator species important to the forestry industry in the planning area. Some planning areas may have only one indicator species; others may have two, three, or more indicator species.

Table 4.—Forest Land Rating Elements
(Hanover County, Virginia)

Chart 1A
Productivity Rating

Culmination of mean annual increment [1] (cu ft/acre)	Rating
>180	1.0
160-179	0.9
140-159	0.8
120-139	0.7
100-119	0.6
80-99	0.5
60-79	0.4
40-59	0.3
20-39	0.2
<20	

[1] Use site index from SCS-Soils 5 Form and convert to C.M.A.I. for indicator species.

Chart 1B
Species Rating

Indicator tree species [1]		Rating
Loblolly pine	1.0	Most desirable
Yellow-poplar	0.9	
Shortleaf pine	0.8	
Northern red oak	0.7	
White oak	0.6	Medium desirable
Sweetgum	0.4	
Virginia pine	0.3	Least desirable

[1] Examples:
In the West, Douglas fir might be most desirable, hemlock might be medium desirable, etc.
In the South, loblolly pine might be most desirable, and upland hardwoods might be less desirable. (The species listed in this example were selected in Hanover County, Virginia.)

Chart 1C
Steepness of Slope Rating

Slope percent [1]	Rating [2]
0-15 (0-7)	1.0
15-25 (7-15)	0.8
25-35 (15-25)	0.6
35-50 (>25)	0.4
50 and above (NA)	0.1
(NA)	

[1] Slope ranges in parentheses modified for Coastal Plain and Piedmont areas of Hanover County, Virginia.
[2] Values in parentheses selected for use in Hanover County,Virginia.

Chart 1D
Soil Limitation Rating

Soil characteristic [1]	Rating
No limitations	1.0
Fragmental or skeletal	NA
Sandy (aeric subgroups)	0.5
Clayey (sandy)	0.4
Stoniness or rockiness (aquults/toxic)	0.2
Excessive wetness (ponding)	0.1
Other—shallow (droughty)	0.1-1.0 (0.1)

[1] Characteristics in parentheses used in Hanover County, Virginia.

(ii) A range of productivity for the indicator species should be arrayed in 10 increments. The productivity should be measured in cubic feet/acre/year, board feet, cubic meters, etc. Such productivity data, derived from site index values, can be supplied by NRCS or local foresters or found in interpretive tables such as those in the *National Forestry Handbook*. Site index values can be obtained from the Soil Data Mart. The range of productivity shown on chart 1A of table 4 can be used "as is" for all indicator species. Locally, if desired, the array can be restructured to reflect a range of productivity that occurs in the planning area. The highest productivity class in the array should be rated 1.0. The ratings assigned to the other classes are relative values determined by dividing the average productivity of each class proposed by the highest average productivity. For example:

Highest average for any class		=	180
	180/180	=	1.0
Class average = 140	140/180	=	0.8
Class average = 120	120/180	=	0.7

(2) *Chart 1B—Species Rating.*

(i) This chart arrays the indicator tree species in a planning area in order of decreasing value to the major wood product of the area, for example, sawlogs or pulpwood. The most valuable indicator species is always assigned a rating of 1.0. The ratings assigned to other indicator species are relative values determined as follows: The most valuable indicator species, x, has a mill value of $100.00 and is assigned a rating of 1.0. Indicator species y has a mill value of $80.00; it is assigned a rating of 80/100 or 0.8. Indicator species z has a mill value of $50.00; it is assigned a rating of 50/100 or 0.5.

(ii) In some cases, more than one indicator species in a planning area may have the same rating. The number of indicator species listed may range from 1 to 10, but seldom should it exceed 10.

(3) *Chart 1C—Steepness of Slope Rating.*

(i) Chart 1C arrays slope classes in the planning area in order of increasing limitation to forest management. A rating of 1.0 is assigned to the slope class with the least limitation to management. Ratings assigned other slope classes should be relative to the lowest slope class in terms of cost of management. A 0 to 15 percent slope could be rated 1.0 and a 35 to 50 percent slope could be rated 0.5 because it costs 50 percent more to harvest trees on it (1.0 x 0.50 = 0.5, and 1.0 - 0.5 = 0.5).

(ii) If desired, rather than using slope classes, ratings from the Soil Data Mart for equipment limitations may be used. If so, a rating of 1.0 is assigned to a slight limitation and lesser ratings are assigned to moderate and severe limitations. Example: A severe rating might be determined to be 30 percent more costly than a slight rating, so a value of 0.7 is assigned to the severe rating (1.0 x 0.30 = 0.3, and 1.0 - 0.3 = 0.7).

(4) *Chart 1D—Soil Limitation Rating.*

(i) The local committee should determine other soil characteristics that limit management activities or make them more costly. A rating of 1.0 is assigned to "no limitations." Lesser ratings are assigned to soil limitations judged to be limiting.

(ii) Some soil characteristics that might limit management activities are shown on chart 1D. Other kinds of features may be limiting in some areas; if so, they should be evaluated and rated.

B. The elements and ratings illustrated in table 4 are to be used as guides. The items shown in the table may be satisfactory in some areas and not in others. Classes to be rated and ratings assigned should be applicable to conditions in the planning area.

C. Important: Table 4 with elements and ratings assigned should be kept in local files to document the land evaluation.

601.32 Forest Land Relative Value Rating (Table 5)

A. The purpose of table 5 is to array all of the soils in the planning area and show for each soil the ratings used in developing the relative value.

(1) *Column 1—Soil mapping symbol.*
Enter for each soil (mapping unit) the approved map symbol. For areas with soil surveys this should be the map symbol in the Soil Data Mart or Web soil survey.

(2) *Column 2—Soil series.*
Enter the series name of the approved map unit, e.g., Cecil, Verdigris, etc. Also, enter a phase name, if necessary, to properly identify the soil, for example, Hayesville, STV (very stony).

(3) *Column 3—Productivity rating.*
Convert site index information for each soil to productivity in cubic feet/acre/year (or other, approved measure) using appropriate tables for the indicator species. Determine from chart 1A of table 4 the rating assigned to the productivity class and enter it in column 3.

(4) *Column 4—Indicator species rating.*
Determine the rating of the indicator species from chart 1B of table 4 and enter it in column 4.

(5) *Column 5—Slope percentage.*
Enter in column 5 the approved slope range of each mapping unit from the Soil Data Mart.

(6) *Column 6—Steepness of slope rating.*
Determine the appropriate rating for each mapping unit from chart 1C of table 4 and enter it in column 6.

(7) *Column 7—Soil limitation.*
Using chart 1D of table 4, enter the kind of limitation being rated, e.g., stoniness, wetness, etc. If the soil has none of the limitations being rated, enter a dash or the word "None."

(8) *Column 8—Soil limitation rating.*
If a given soil has no limitations, enter a rating of 1.0 in column 8. If the soil has limitations, determine the appropriate rating from chart 1D of table 4 and enter it in column 8. If more than one limitation exists, enter the rating for the most limiting feature.

(9) *Column 9—Composite value.*
Add the ratings recorded in columns 3, 4, 6, and 8. The highest composite value in this system (without weighting any of the factors) is 4. Weighting any of the factors would change the total possible composite value.

(10) *Column 10—Relative value.*
The relative value for each soil is determined by dividing the composite value (column 9) by the highest composite value developed, i.e., 4.0, 3.7, etc., and multiplying the quotient by 100 to produce a whole number. For example:

Table 5.—Forest Land Relative Value Rating
Hanover County, Virginia

Soil mapping symbol	Soil series	Productivity rating	Indicator species rating	Slope (%)	Steepness of slope rating	Soil limitation	Soil limitation rating	Composite value (add columns 3, 4, 6, 8)	Relative value [2] (composite value x 100) 3.7
1	2	3	4	5	6	7	8	9	10
1B	Abell	0.7	1.0	2-7	1.0	None	1.0	3.7	100
3B	Appling	0.6	1.0	2-7	1.0	None	1.0	3.6	97
8	Augusta	0.7	1.0	0-2	1.0	Aeric subgroup	0.5	3.2	86
10C	Bourne	0.5	1.0	7-15	0.8	Droughty	0.1	2.4	65
18	Coxville	0.7	1.0	0-2	1.0	Aquults	0.2	2.9	78
29	Forestdale	0.4	Sweetgum 0.4	0-2	1.0	Aqualfs (ponding)	0.1	1.9	48
45B	Mayodan-Creedmoor	0.6	1.0	2-7	1.0	Clayey	0.4	3.0	81
51B2	Pacolet	0.6	1.0	2-7	1.0	None	1.0	3.6	97
75C3	Wedowee	0.5	1.0	7-15	0.8	Clayey	0.4	2.7	73
69D [1]	Udults	0.7	1.0	15-25	0.6	None	1.0	2.3	56

[1] Noncommercial site.

[2] The highest composite value developed in Hanover County was 3.7.

Composite value of 4.0 ÷ 4 = 1; 1 x 100 = 100
Composite value of 3.6 ÷ 4 = 0.9; 0.9 x 100 = 90
Composite value of 2.4 ÷ 4 = 0.6; 0.6 x 100 = 60

B. Table 5 should be kept in local files to document the land evaluation of forest land.

601.33 Forest Land Group Value Rating (Table 6)

A. Table 6 provides a guide to arraying the soils in a planning area for planning purposes. The relative value ranges given in table 6 are guides only and should be modified, if necessary, to reflect the array of values developed in table 5.

(1) *Column 1—Group.*
This column lists the groups needed in the land evaluation for forest land. In some cases, fewer than 10 groups may be needed to reflect significant differences in suitability of soils for forest use in a planning area.

(2) *Columns 2 and 3—Soil mapping unit and soil series.*
List all of the soil mapping units and soil series for each group developed. One or more pages may be needed for some groups in planning areas having a large number of soils.

(3) *Column 4—Relative value.*
Record the relative value for all the soils in each group.

Table 6.—Forest Land Group Value Rating
Summary of Forest Land Groups
(Hanover County, Virginia)

Group	Soil mapping unit	Soil series	Relative value (percent)	Relative value range [1] (percent)	Group relative value	Acres	Percent of area
1	2	3	4	5	6	7	8
1	1B	Abell	100	91 to 100 (95 to 100)	100	109,580	36.4
	3B	Appling	97				
2	27C	Fluvanna	92	81 to 90 (89 to 94)	92	41,310	13.7
	35C	Kempsville	89				
3	8	Augusta	86	71 to 80 (83 to 88)	86	27,925	9.3
	42	Kenansville	84				
4	45B	Mayodan-Creedmoor	81	61 to 70 (77 to 82)	80	31,665	10.5
	18	Coxville	78				
5	75C3	Wedowee	73	51 to 60 (71 to 76)	74	54,030	17.9
	17B	Colfax	73				
6	10C	Bourne	65	41 to 50 (65 to 70)	68	19,035	6.3
	58C	Pinkston-Mayodan	68				
7	43	Lenoir	63	31 to 40 (59 to 64)	62	4,900	1.6
	58D	Pinkston-Mayodan	62				
8	69D	Udults	56	21 to 30 (0 to 58)	29	8,710	2.9
	29	Forestdale	48				
9	Groups 9 and 10 are not used in Hanover County, Virginia.						
10							
	Water					4,285	1.4
	Total					301,440	100.0

[1] Ranges subject to change to fit local need. Ranges in parentheses are used in Hanover County, Virginia. Group 8 in Hanover County consists of noncommercial soils.

(4) *Column 5—Relative value range.*
Record the range in relative values for all of the soils in each group. The relative value range for any one group should not overlap the range shown for an adjacent group.

(5) *Column 6—Group relative value.*

(i) Group 1 should always consist of the best soils in a planning area and be assigned a relative value of 100. Therefore, the relative value recorded in column 6 for group 1 will be 100. The relative value for groups 2 through 10 should be the average of the relative value range in column 5. For example:

Agric. group	Rel. value range	Group rel. value
1	100	100
3	80-90	85
5	55-65	60

(ii) The group relative value is the "value" used in conjunction with the site assessment "value" in applying a LESA system. Development of the 10 groups of soils significant for forest industry consideration is by itself a useful tool for planners.

(6) *Column 7—Acres.*
Tabulate and record the acreage of all soils in each group.

(7) *Column 8—Percent of area.*
Determine and record the percent of area for each group developed.

B. Completion of table 6 completes the land evaluation for forest land. (See part 601.21 for application of land evaluation relative values).

Subpart E—Land Evaluation Procedures for Rangeland

601.40 Introduction

A. A land evaluation procedure for rangeland is currently being developed within NRCS. This procedure will evaluate the following characteristics:

(1) *Potential productivity*.—The amount of dry material produced, taken from yield data recorded in the Soil Data Mart.

(2) *Potential plant community*.—The quality of the vegetation produced by the plant combination used to rate the potential productivity, based on the needs of specific grazing animals.

(3) *Erosion potential*.—Potential for either wind or water erosion.

(4) *Ecological status*.—Ecological status of the present plant community.

B. When completed, the procedure will be introduced as a supplement to this handbook.

Part 602—Site Assessment

602.0 Introduction

A. This section of the LESA Handbook provides background and guidance in developing the site assessment part of the LESA system (see exhibit 605.7).

B. The LESA site assessment technique provides a system for identifying important factors, other than soils, that affect the economic viability of a site for agricultural use. Each factor selected is stratified into a range of possible values in accordance with local concerns, objectives, and policies (see the Farmland Protection Policy Act).

C. Agricultural economic viability of a site cannot be measured in isolation from the existing and impending land use needs of the surrounding area. Factors other than the value of the land for crop production must be measured.

D. Site assessment is not mathematically precise. The numbers used are general guidelines that should be modified to suit the unique set of land use values that apply in each community. The criteria to be considered also may vary. However, the objective remains the same—to guide governmental decision makers in a comprehensive consideration of land use questions. The decision should be fair (and equitable) in the eyes of a majority of the citizens; responsive to local, area-wide, and even national needs; and within the bounds of legislative and legal authority. Assisting land use decision makers in meeting these criteria constitutes a significant contribution to the protection of important agricultural lands.

602.1 Level of Government Involved and Objectives

The first steps in developing a site assessment procedure are the following:

A. The level of government at which the system will be applied must be determined, and that level of government should design the system.

(1) In most of the United States, LESA will be developed at the county level, since in most States the county is the unit of government that controls land use outside cities, villages, and towns.

(2) In States in which land use decisions are made at township and village levels with assistance from county planners, a countywide LESA system can be designed for adoption by townships and villages within the county.

(3) Consider developing a LESA system for each township and village in States in which land use decisions are made by townships and village governments with little or no input from county government.

(4) Statewide LESA systems may be needed to—

(i) Implement statewide agricultural land protection policies;

(ii) Aid in statewide programs for purchase or transfer of development rights;

(iii) Locate projects of statewide importance; and

(iv) Assist in implementing Federal and State farmland protection policies in areas where local units of government have not chosen their own system of agricultural land protection.

B. The purpose of site assessment must be determined. The local committee should clearly define its goals and objectives at the outset. Some possible goals are listed below.

(1) *Assessing agricultural economic viability of given sites.* Site assessment for this purpose should include consideration of factors that support agriculture, including investments. The lack of urban support systems should also indicate agricultural economic viability.

(2) *Assessing alternative sites.* Site assessment can be used to determine which of several alternative sites proposed for conversion will, if converted, have the least impact on agricultural activities.

(i) One system will be adequate to assist in assessing either agricultural economic viability or alternative sites.

(ii) The same system can also be used to determine whether local, State, or Federal funds should or should not be used to fund projects that convert agricultural lands.

(3) *Planning, regulating land use, and establishing protective districts.* Where protection of agricultural land is the goal, local government may need the LESA system to assist in reviewing plans and zoning. The existence of urban support services and the need for additional land for uses being considered may be important factors.

(4) *Acquiring development rights.* Site assessment for purchase or transfer of development rights may involve consideration of factors other than those noted above. The procedure may need to identify key farms in the local agricultural industry that are subject to conversion. It may identify farms that are large enough to support commercial farming and are likely to stay in farming. The site assessment may also be designed to identify sites that do not have development rights (such as those on flood plains, in wetlands, or under easements) so as to avoid purchase of rights where none exist.

602.2 Data Needed

The local committee or work group should assemble information to assist in developing the site assessment part of the LESA system. The information should include—

A. A comprehensive plan for the community;

B. Maps showing topography, population distribution, natural resource conditions, etc. of existing conditions and trends;

C. Current land use data;

D. Land use regulations;

E. Farmland protection and other pertinent policies applicable to the planning area;

F. Sewerage, water, and transportation facilities, existing and proposed;

G. Case files involving local agricultural land protection decisions; and

H. Other pertinent data.

602.3 Selecting Factors

A. Site assessment factors included in a LESA system should be those determined by local people to be important in making decisions about protecting agricultural land.

B. Factors selected by local areas may differ to reflect local values and to implement local policy.

C. Where agricultural land protection is already being considered in local land use decisions, some site assessment factors already exist to help guide decisions. In most cases these factors have not been placed in a formal list or assigned values or weights. However, local officials can use them in deciding to protect or not protect a given agricultural site.

(1) In selecting factors, review existing plans, policy, and guidelines to identify any site factors already in use.
(2) Review case files of decisions to protect or not protect a given agricultural site. Identify the factors considered in making the decision.
(3) The local committee or work group should review the factors identified in (1) and (2) above. The committee should identify any additional factors to be considered.
(4) Draft a list of factors selected for inclusion in the local system. The list may contain as few as six or as many as forty factors.

D. The factors selected should assist local decision makers in meeting the objectives previously determined by the local committee.

E. The following factors have been used in several committees in the LESA site assessment procedure. Local committees may identify other factors. Any of the listed factors may or may not be needed or used in the design of any local LESA system.

(1) *Land use/agricultural.*
  (i) Percentage of area in agricultural use within (__) miles.
  (ii) Percentage of site farmed in (__) of the last (__) years.
  (iii) Land use adjacent to site.
(2) *Agricultural economic viability.*
  (i) Size of farm.
  (ii) Agricultural support system (infrastructure).
  (iii) Land ownership.
  (iv) Onsite investments (barns, storage, conservation measures, etc.).
  (v) Impact of proposed conversion on retention of other farmland and the agricultural infrastructure.
  (vi) Conservation plan.
(3) *Land use regulations and tax concessions.*
  (i) Zoning for site.
  (ii) Zoning for area around site.
  (iii) Use of agricultural value assessment or other tax benefits.
  (iv) Agricultural districts—right-to-farm legislation.
(4) *Alternatives to proposed use.*
  (i) Unique siting needs for proposed use.
  (ii) Suitability of site for proposed use.
  (iii) Availability of less agriculturally productive lands with similar attributes for proposed use.
  (iv) Number of undeveloped and suitable alternative sites.
  (v) Need for additional land for proposed use.
(5) *Impact of proposed use.*
  (i) Compatibility of proposed use with surrounding existing land uses.
  (ii) Impact on flooding.
  (iii) Impact on wetlands.
  (iv) Impact on historical areas.
  (v) Impact on recreation and open spaces.
  (vi) Impact on cultural features.
  (vii) Impact on unique vegetation.
  (viii) Impact on water quality.
(6) *Compatibility with comprehensive development plans.*
  (i) Local, municipal, and county.

(ii) Regional.
(iii) Economic/social importance of proposed use to the community.

(7) *Urban infrastructure.*
(i) Distance to urban area.
(ii) Central water-distribution system (within ___ miles).
(iii) Central sanitary sewerage system (within ___ miles).
(iv) Investment for urban development.
(v) Transportation.
(vi) Distance to other urban infrastructure (job centers, schools, shopping, etc.).
(vii) Emergency services.

602.4 Determining Values and Limits for Factors

A. It is necessary to stratify each site assessment factor and assign values and limits to each possible condition.

B. In most systems, maximum points are assigned when onsite conditions support continuation of agricultural use.

C. It is recommended that each factor be stratified into conditions rated from 0 to 10. Zero would represent the lowest value of the particular factor and 10 would represent its best or highest value. For example, for the factor "percent of area in agriculture":

95 to 100	percent of area in agriculture	=	10 points
75 to 95	percent of area in agriculture	=	8 points
50 to 75	percent of area in agriculture	=	6 points
25 to 50	percent of area in agriculture	=	4 points
10 to 25	percent of area in agriculture	=	2 points
0 to 10	percent of area in agriculture	=	0 points

D. The local committee or work group should assign the point values for each factor to reflect local values and conditions. For example, if the best condition in a local area is "50 to 75 percent of area in agriculture," the committee should assign this condition 10 points. Conditions of other percentages of area in agriculture would have fewer points assigned.

E. The local committee should document the conditions under which points are assigned. Documentation should be detailed enough to permit users to clearly understand the reason for assigning a given number of points to a given set of conditions. In many cases, existing plans, policy, or guidelines may be cited to support point values assigned.

602.5 Explanation of Selected Factors

A. *Percentage of area in agriculture.* This factor increases in value as the amount of land in agricultural uses increases. Areas that are all agricultural are more viable for agriculture than areas that are 50 percent urban and 50 percent agricultural. The area to be considered should be determined by local planners and could range from ¼ mile to 10 square miles or could be an entire farm area, valley, etc.
Example:

(10)	–	95 percent of area in agriculture
---	–	50 percent of area in agriculture
(0)	–	10 percent of area in agriculture

B. *Land use adjacent to site.* If all the land adjacent to a site is in agricultural use, the site is more viable for agriculture than if the land surrounding it is urban.
Example:

(10) – All sides of site in agriculture
--- – One side of site adjacent to nonagricultural land
--- – Two sides of site adjacent to nonagricultural land
--- – Three sides of site adjacent to nonagricultural land
(0) – Site surrounded by nonagricultural land

C. *Size of farm.* In some areas, equipment size and crops grown present problems in farming small fields or farm units. If this item is used, local planners need to determine the feasible farm size. A farm unit at or above the optimum size level should be assigned a value of 10, and the value should decrease as the size of the site assessed decreases.
Example:

(10) – 120 acres or more
--- – 80-120 acres
--- – 40-80 acres
--- – 20-40 acres
--- – 5-20 acres
(0) – Less than 5 acres

D. *Agricultural support system.* Where agriculture and its support systems are decreasing, the long-term agricultural outlook may be poor. Where agriculture is very strong and the support systems are improving, the agricultural outlook should be excellent. Where the support system is strong, assign a value of 10, and where the support system has started to disintegrate, use a lower value.
Example:

(10) – Support services present
--- – Some limitation on support services
(0) – Severe limitation on support services

E. *Zoning.* Sites and surroundings zoned for "exclusive agricultural use," as distinct from "agricultural/low-density residential," are most valuable.

(10) – Site and all surrounding sides zoned for exclusive agricultural uses
--- – Site and one side zoned for nonagricultural use
--- – Site and two sides zoned for nonagricultural use
--- – Site and three sides zoned for nonagricultural use
(0) – Site zoned on all sides for nonagricultural use

F. *Availability of less productive land.* Where there is a large amount of land with limitations for agriculture, but suitable for urban use, there is no need to use better farmland. The value of a site for agriculture should increase when substantial amounts of less productive land are available for urban growth according to the comprehensive plan.
Example:

(10) – Large amount of less productive land available
--- – Medium amount available
(0) – None available

G. *Need for additional land.* If large amounts of urban land within the area are vacant and available for urban use, assign a high value. If there is little or no urban land vacant, assign a lower value.

Values are based on realistic projections of urban growth. This factor promotes the concept of infilling.
Example:

(10) – Vacant buildable land available
(0) – Little vacant land remaining

H. *Compatibility with comprehensive development plans.* If the site is in an area planned for agriculture and the local government strongly adheres to its comprehensive plan, assign a high value.
Example:

(10) – Proposed use is compatible with the comprehensive plan
(0) – Proposed use is incompatible with the comprehensive plan

I. *Distance to urban area.* A site adjacent to a city or urban area is less viable for agriculture than a site located many miles from the nearest urban area. Larger cities justify a wider range in the distance factor. The distance and value assignment should be modified to meet local conditions.
Example:

(10) – More than 2 miles
--- – 1 mile
--- – ½ mile
(0) – Adjacent

J. *Central water-distribution system.* A site with municipal water in sufficient quantity is less viable for agriculture than a site far removed from a municipal water supply.
Example:

(10) – No water within 1 mile
--- – Water within 2,000 feet
(0) – Water at site

K. *Central sanitary sewerage system.* If a municipal sanitary sewer line of sufficient capacity is available at a site, the site is less viable for agriculture than a site located several miles away from the line with no extensions planned.
Example:

(10) – No sewer line within 1 mile
--- – Sewer line within 2,000 feet
(0) – Sewer line adjacent to site

L. *Investment for urban development.* If the public has invested money over a period of time to provide services and support systems for a given site, assign a low value for agriculture. If individuals have invested funds in a site with reason to believe that the site would be used for urban development, assign a low value.
Examples:

(10) – No such investment
--- – Medium investment
(0) – High investment

M. *Transportation.* The availability of public transportation and adequate roads should be considered in site assessment. Areas served by public transportation are less viable for agriculture than sites located several miles from the nearest public transportation and on an unimproved road.
Example:

(10) – Inadequate for planned use
(0) – Adequate for planned use

N. *Compatibility of proposed use with surrounding existing land uses.* If the proposed use of the site is not compatible with the existing agricultural uses of the surrounding area, assign a value of 10. An incompatible use would be the construction of a residence next to a poultry farm. Decrease the value as compatibility increases. A compatible use of a site would be the construction of a food-processing plant in the center of a large vegetable-growing area. Example:

(10) – Inadequate
(0) – Adequate

O. Any other factors used should be explained in a similar manner.

602.6 Determining Weight of Factors

A. After approving the selected site factors and their assigned array of points, the local committee should consider the relative importance (weight) of each factor. Without adjustment for importance, each factor has a weight of 1, i.e., 10 x 1 = 10.

B. Weights ranging from 1 to 10 should be considered for each site factor selected. The most important factor, from a local standpoint, should be assigned the highest weight, not to exceed 10. Other factors should be assigned weights depending on their relative importance in terms of all of the factors selected.

C. The weight of each factor is multiplied by the maximum points for that factor. The weights must then be adjusted so that the total maximum number of points for all factors equals no more than 200. (A total of 160 is preferable [see the Farmland Protection Policy Act]). For example:

Factor	Max. points per factor	Times assigned weight	Weight assigned points	Adjusted weight	Adjusted maximum points
1	2	3	4	5	6
1) Percentage of area in agriculture	10	x 10 =	100	2.1	21
2) Percentage of land adjacent to site in agriculture	10	x 7 =	70	1.5	15
3) Percentage of land commercially farmed	10	x 5 =	50	1.1	11
4) Size of site	10	x 2 =	20	0.4	4
5) Zoning for site	10	x 9 =	90	1.9	19
6) Distance to urban area	10	x 8 =	80	1.7	17
7) Availability of ag. support system	10	x 3 =	30	0.6	6
8) Compatibility with comprehensive plan	10	x 10 =	100	2.1	21
9) Transportation	10	x 6 =	60	1.3	13
10) Availability of central sewage system	10	x 4 =	40	0.8	8
11) Soil suitability for onsite sewage disposal	10	x 5 =	50	1.0	10
12) Impact on historical/cultural feature	10	x 1 =	10	0.2	2

13) Environmental impacts	10	x 8 =	80	1.7	17
14) Compatibility with adjacent land uses	10	x 7 =	70	1.5	15
15) Availability of zoned land for planned use	10	x 6 =	60	1.3	13
16) Compatibility with municipal plan	10	x 4 =	40	0.8	8
Maximum total points			**950**		**200**

(1) Column 1 lists the site assessment factors selected by a local committee for a LESA system.

(2) Column 2 shows the maximum points assigned for each factor.

(3) Column 3 shows the weight assigned to each factor. In the example above, factors 1 and 8 were judged to be the most important; thus, they were assigned a weight of 10. The other factors were rated according to their relative importance.

(4) Column 4 shows the product of the points for each factor (column 2) times the weight assigned each factor (column 3).

(i) In the example above, the sum of these values, the total maximum points for site assessment, is 950. The maximum relative value for the land evaluation part of LESA is 100. Thus, without adjustment, the ratio of maximum site assessment points to maximum land evaluation points would be 950:100 or 9.5:1. This relationship would heavily emphasize site assessment at the expense of land evaluation.

(ii) In LESA systems evaluated to date, a ratio of 2:1, i.e., 2 for site assessment and 1 for land evaluation, has given good results. A weight adjustment must be made to obtain a 2:1 ratio in the example.

(5) Column 5 shows the adjusted weights needed to produce a maximum point total of 200. The adjusted weights are determined by dividing 200 by 950 to produce an adjustment factor of 0.21, then multiplying the original assigned weight of each site assessment factor by 0.21; e.g., 0.21 x 7 = 1.5 for factors 2 and 14. The adjusted weight values retain the relative importance assigned to each factor but limit the maximum points to 200 for the site assessment part of the system.

(6) Column 6 shows the adjusted maximum points for each factor when the maximum number of points per factor (column 2) is multiplied by the adjusted weight (column 5). The total adjusted maximum number of points for this system now becomes 200.

D. The committee guiding the development of a LESA system must consider the relative importance of site assessment and land evaluation in terms of total values to determine the desired ratio between them.

(1) The designer of a local system should assign point values and weights to factors without regard to the total points or the ratio of site assessment values to land evaluation values. The desired ratio can be achieved by adjusting the weights as noted above.

(2) Regardless of the total values of the system, for best results the ratio of site assessment values to land evaluation values should be about 2:1. A ratio of 1.6:1 is preferable (see the Farmland Protection Policy Act).

(3) A LESA system will work with land evaluation points making up as much as 50 percent of the total value, but as a general rule, avoid placing this much emphasis on the land evaluation part of the system. Otherwise, the system will tend to protect land that should not be protected.

(4) The final ratio should be field tested to ensure that results meet the intended objective.

(5) Certain site assessment factors, when found in combination with certain others, may have more effect than the total of their assigned points would indicate. For example, sites on flood plains may have all of the needed urban support systems, but agriculture may be the best land use since urban flooding would result if the area were converted to urban uses.

E. The design of the site assessment part of LESA is completed when site factors, values, and weights are approved by the local committee.

Part 603—Application of the LESA System

603.0 Introduction

There are a number of farmland protection programs. The inclusion of any protection program in this handbook should not be interpreted to support it over any other program.

603.1 Determining Site Economic Viability

A. As previously stated, before applying the LESA system, planners and the local committee must decide the relative weight that each part of the system should be assigned (see part 602.6).

B. Work through the following steps in using LESA to determine site viability (see table 2 of exhibit 605.7).

   (1) Determine the relative value(s) from the land evaluation procedure for the site in question. For a small site, use an average relative value (see part 601.21).
   (2) Determine the total site assessment points for the site, which should be in the range of 0 to 200.
   (3) Add the land evaluation points to the site assessment points. The total should be in the range of 0 to 300. It represents the agricultural economic viability of the site in question and can be used to compare sites.

C. Guidelines for decisions should be established. For example, in a system designed with a maximum value of 300 points, the local LESA committee may recommend that—

   (1) Sites having fewer than 200 points receive low protection efforts;
   (2) Sites having 200 to 225 points receive medium protection efforts;
   (3) Sites having 225 to 250 points receive high protection efforts; and
   (4) Sites having more than 250 points receive very high protection efforts.

D. Such a recommendation does not mean that a site having fewer than 200 points will never be protected or that a site having more than 250 points will always be protected. The point system developed should serve as a tool to assist planning and decision making to achieve local objectives.

E. Selection of 200 points as a cutoff point in the example above would protect sites where—

   (1) The best soil (100 points) is available, but only one-half of the site assessment factors are favorable (100 points); or
   (2) Most of the site assessment factors are favorable (175-200 points), but the soil is of low value (0-25 points).
   (3) In either case, the site has limited prospect for long-term use for farmland.

F. Sites with some high predetermined point value should merit a strong protection effort to maintain a viable agricultural industry.

603.2 Alternative Site Selection

The LESA system can be used for site comparison where it is essential to convert some agricultural land to a nonagricultural use. The total points assigned to one site can be compared with the total points determined for any number of other sites. All other things being equal, converting the site with the lowest total point value would have the least impact on the agricultural industry. The sites with the highest values should receive more protection than those with the lowest values. Any proposed conversion should consider the impact on adjacent agricultural areas and the local agricultural industry.

603.3 Production Units

A. The land evaluation part of the LESA system can be used to determine the value of one acre of land compared to another acre of land. The use of relative values takes into consideration the cost of overcoming soil limitations to achieve a specified yield.

B. The loss, or protection, of each acre of land has some significance as far as the production capacity of an area is concerned. Losing an acre of highly productive land may be as important as losing 5 acres of less productive land. Continuing loss of the most productive land in an area can have a significant impact on the agricultural industry in the area.

C. A production unit is defined as the amount of land necessary to produce the highest yield of a specified indicator crop in the planning area. In an area where the highest yield is 160 bushels of corn per acre, a production unit for soils whose yield is 160 bushels of corn per acre is 1 acre.

(1) In the LESA system, soils that are in agricultural group 1 (with a relative value of 100) have one production unit each. Thus, for this purpose, a relative value of 100 is equal to 1. Soils in an agricultural group with a relative value of 50 would have 0.5 production unit each. In this example, it would take 2 acres of soil in the latter group to equal 1 acre of soil in agricultural group 1.

(2) In measuring agricultural land lost or protected, it may be most meaningful to measure the land in terms of production units as well as acres. One should be able to determine both the number of acres affected and the production value. For example:

Summary of Land Conversions

Ag. group	Rel. value	Acres		Production units
1	100 ÷ 100	200	=	200
3	82 ÷ 100	200	=	164
5	66 ÷ 100	200	=	132
7	50 ÷ 100	200	=	100
		800		596

In the table above, the loss of 200 acres of soil in agricultural group 1 is two times as significant, in terms of production units, as the loss of 200 acres of soil in agricultural group 7.

(1) To measure the impact that the loss or conversion of a given site may have on an area in terms of lost productive capacity—

(i) Estimate the total production units in a planning area.

(ii) Determine the total number of production units needed to support the industry.

(iii) Measure the loss from conversion of a given site and its effect on the agricultural industry. For example:

Ag. group	Rel. value		Total acres in group		Total production units	Loss by conversion (proposed or act.)	Remaining prod. units
1	100 ÷ 100	x	4,000	=	4,000	2,000	2,000
2	94 ÷ 100	x	3,000	=	2,820	1,410	1,410
3	82 ÷ 100	x	800	=	656	---	656
4	72 ÷ 100	x	2,000	=	1,440	---	1,440
5	66 ÷ 100	x	900	=	594	---	594
6	63 ÷ 100	x	1,000	=	630	---	630
7	56 ÷ 100	x	900	=	504	---	504
8	47 ÷ 100	x	900	=	423	---	423

9	41 ÷ 100	x	900	=	369	---	369
10	0		700		0	---	0
	Total		15,100		11,436	3,410	8,026

In this example, if 10,000 production units are needed as a base level to sustain the industry, the proposed conversion would seriously jeopardize the industry in the area. The loss of 2,000 acres (relative value of 100) and 1,500 acres (relative value of 94), for a total of 3,410 production units, amounted to the loss of 30 percent of the production units in the area. (In this case, loss of 23 percent of the land area caused a 30 percent loss of productive capacity.)

(4) Production units can also be used to measure the productive value of a given site relative to other sites. (Production units will only measure the ability of a site to produce directly from the land.)

(5) Production units can also be used to direct State or local policy as it relates to value of farm units. For example, State policy might direct that a certain number of production units are necessary to qualify for agricultural programs, i.e., farmland protection programs, agricultural tax programs, etc. The following table shows the number of acres needed to meet a government policy requiring 60 production units for inclusion in an agricultural protection program.

Ag. group	Rel. value	Acres required/60 production units
1	100	60
3	82	73
5	66	91
7	56	107
9	41	146

In the example, 60 acres of soils in agricultural group 1 would qualify for the program. In agricultural group 3, 73 acres would be needed, and in agricultural group 9, 146 acres would be needed to be equivalent to 60 acres in agricultural group 1.

(6) Production units may also be used as the basis for purchase or transfer of development rights (see part 603.6).

603.4 Determining Size of Sites to Meet Income Requirements or Gross Income from Given Acres

A. Government policies require that farms meet a minimum acreage or gross income to qualify for certain programs. The land evaluation part of LESA can be used to determine what is a reasonable income from a given number of acres.

B. In considering income requirements, an indicator crop for the area must be used along with a selected base value per unit of crop, for example corn (grain) at $3.00 per bushel. All farms in the area must be measured by the selected standard. (If a standard is not set, a crop that gives the highest gross income per acre could be selected in order to qualify a smaller farm unit.) For example: A local unit of government requires that a farm produce $24,000 gross income to qualify for agricultural value assessment. To determine the acreage required to gross $24,000, divide 24,000 by the product of the average adjusted yield for each agricultural group and the determined selling price, e.g., corn (grain) at $3.00 per bushel. Average adjusted yield values can be obtained from worksheet 3 of the cropland land evaluation model (see part 601.14).

Ag. group	Dollars required Indicator crop yield x price/bu	Required acres
1	24,000 ÷ (160 x 3.00)	50
3	24,000 ÷ (130 x 3.00)	61
5	24,000 ÷ (105 x 3.00)	76
7	24,000 ÷ (90 x 3.00)	89
9	24,000 ÷ (65 x 3.00)	123

The example illustrates that the system can be used to determine the smallest farm unit that can be created in an agricultural-zoned area based on the productivity of the land itself if a given gross income is specified. In this case, 50 acres is the smallest farm unit that would be recognized.

603.5 Agricultural Value Assessment

A. The land evaluation part of the LESA system can be used to identify groups of soils for agricultural value assessment. The value of each group is determined relative to the value of the best soils, i.e., those in agricultural group 1. Each agricultural group in the system is used to identify soils to be assessed at a given level.

B. Some State programs already use individual land evaluation systems to determine agricultural value assessment level. The most commonly used system is the land capability classification system. The LESA system incorporates this system in its design and produces more refined classes than the capability classification alone.

C. In developing a statewide system, some adjustment may be necessary for a special situation. It is possible to grow some high-value crops on relatively low-value soils, but in general the soils best suited to growing a specified indicator crop will be best suited for growing other crops. In some special situations, the land evaluation may have to be adjusted to account for differences in elevation or climate (see part 601.20).

603.6 Acquisition of Development Rights

A. Details of programs for acquisition of development rights are covered in many other documents. Included in this section are some highlights of how the LESA system may be used in such programs.

B. The land evaluation part of LESA should be useful in all agricultural land protection programs. The site assessment part of LESA may have to be adjusted, depending on the program objectives. A LESA system designed to compare alternative sites or promote overall planning will not provide the answers needed for acquisition of development rights.

(1) Agricultural lands that are subject to conversion to nonagricultural use may get the highest number of points for inclusion in a program for acquisition of development rights. A LESA site assessment, however, gives the highest number of points to a site that is located some distance from the city and is therefore less subject to conversion.

(2) Agricultural lands that are subject to flooding, contain easements, or are wetlands will receive a high point value in most LESA systems. The same lands may receive a low point value in a program for acquisition of development rights.

C. Most LESA systems are designed to have land evaluation amount to about one-third of the total value of the system. For purchase or transfer of development rights, one may want the land

evaluation part to be equal to about one-half of the total value. This is a determination to be made by the local committee after adequate field testing.

D. In designing a site assessment system for acquisition of development rights, the following points should be considered.

(1) *Goals.* Develop a plan based on a statewide LESA system. Such a plan might consider both short-term and long-term goals.

(2) *Value of land for agriculture.* The land evaluation part of the system indicates the level of productivity a farm or site should reach. In fact, the farm may produce more or less income than is indicated by the land evaluation. Concerns about existing productivity or level of management can be considered in site assessment under agricultural economic viability and onsite improvement.

(3) *Agricultural economic viability of site (farm).* The site assessment part of the system measures onsite improvements and other factors that influence whether a farm is viable and stays in agricultural production. It would be pointless to acquire development rights on a farm only to see the land removed from agricultural use for other reasons. Factors that may be considered include—

(i) Number of production units onsite and on other sites where development rights have been purchased (Will the production units support a full-time farmer?);
(ii) On-farm improvements that may eliminate soil limitations;
(iii) Extent of farm improvements needed for the type of farm enterprise at the site; and
(iv) Income from processing crops grown on the land, e.g., corn and hay crops processed through a dairy herd (income from the operation of the dairy over and above the crops produced should be considered here).

(4) *Market for products.* It may be more important to acquire land to produce products used locally than to produce products used elsewhere. The following questions should be considered.

(i) Is additional production needed?
(ii) Are products for local markets?
(iii) Are products for State markets?
(iv) Are products for national use?
(v) Are products for export?

(5) *Existing rights and easements.* In some cases, few if any development rights are available for sale. It should not be necessary to acquire rights in cases where easements have already taken development rights or where lands are not suited for development because of soil and water condition. No development rights should exist on lands in certain categories, including—

(i) Flood plains;
(ii) Wetlands;
(iii) Land subject to utility easements;
(iv) Land subject to agreement as part of a use-value tax system; and
(v) Land subject to scenic easements, etc.

(6) *Probability of conversion to nonagricultural use.* Land that is far away from areas being converted to nonagricultural use may not need the protection provided by acquisition of development rights. However, development rights to such land may cost less than development rights to areas closer to town. Land with either soil or water limitations for development may not need protection. Factors to consider in probability of land being converted include—

(i) Estate settlements in which land must be sold;
(ii) Active negotiations for land sales;
(iii) Listing of farmland for sale by real estate agents;

(iv) Sale and conversion of adjacent lands to nonagricultural use;
(v) High farmland costs that prohibit local farmers from expanding farm operations; and
(vi) Flood plains, wetlands, easements, etc.

(7) *Effect of loss of land on the area agricultural industry.* In some cases, the loss of one or two large or otherwise important farms can profoundly affect the agricultural industry of the entire area. Some questions to consider include the following:
(i) Does this farm produce or process much of the area's agricultural products?
(ii) Will loss of this land adversely affect other farmers in the area?
(iii) What is the effect on the total production units needed to sustain the local agricultural industry, including support infrastructure?

(8) *Land use regulations and plans.* Land use plans and regulations should be considered in deciding to acquire development rights. Land that is planned for agriculture and already included in an agricultural protection district may not need further protection by acquisition of development rights if local people do not expect changes in current plans and regulations. Land currently zoned exclusively for agriculture should be acquired at agricultural value costs with the expectation of continuing farming. One should not expect such land to show speculative increases over the true agricultural value of the land. Factors to consider include—
(i) Zoning for site;
(ii) Zoning for area;
(iii) Land use plans for site and area;
(iv) Agricultural districts; and
(v) Existing easement for a use-value tax program.

(9) *Compatibility of agriculture with other land uses in area.* It may be desirable to acquire development rights to help carry out objectives other than agriculture. Appropriate consideration should be given to the value of the site for—
(i) Historical purposes;
(ii) Cultural purposes;
(iii) Open space or recreation;
(iv) Watershed protection; and
(v) Wetland protection.

(10) *Infrastructure.* There are two dominant types of infrastructure—that which supports agriculture and that which supports urban development. Acquisition of development rights in an area where the public has invested in urban infrastructure wastes the public's investments. Areas where public money has been invested in soil and water conservation agricultural production programs should be considered for farmland protection. In considering infrastructure, add points for funds invested for agricultural infrastructure and add additional points for absence of investment for urban infrastructure. Factors to consider include—
(i) Sewer and water services;
(ii) Schools;
(iii) Public transportation services;
(iv) Emergency services;
(v) Farm-to-market roads;
(vi) Farm services, i.e., dealers, suppliers, etc.;
(vii) Agricultural processors, factories, etc.; and
(viii) Agricultural storage facilities.

(11) *Value of a production unit.* Determine the maximum value of one production unit, for example, $2,200. The value might be $2,200 per acre for a 60-acre farm on which all of the land was being farmed and the soils had a relative value of 100. The value might be

only $1,100 per acre if the farm was 120 acres but only one-half of the area was farmed on soil with a relative value of 100. If the relative value was 50 and only one-half of the land was used for cropland, the maximum value would be $550 per acre.

E. In designing a site assessment system for acquisition of development rights, use the following procedure.

(1) List the factors important to the unit of government that will evaluate the development rights.
(2) List conditions under which 0 to 10 points will be assigned for each factor.
(3) Weight each factor according to its relative importance. (Note that some factors may be important enough singly to base an entire decision on; e.g., where no rights exist because of flood plain zoning, the decision should be that no development rights exist.)

F. Part 603 refers to putting the land evaluation and site assessment systems together and setting cutoff points.

Part 604—Glossary

Conservation practices. Measures used to meet specific needs in soil and water conservation programs and for which standards and specifications have been developed. Definitions, standards, and specifications are included in the *National Handbook of Conservation Practices*.

Cropland. Land used to produce adapted crops for harvest, alone or in rotation with grasses and legumes. Includes row crops, small grain crops, hay crops, nursery crops, orchard crops, and other, similar specialty crops.

Documentation. The recording of data, procedures, and rationales for decisions.

Farmland soil map units. Soil map units with component(s) of prime farmland are 1) *prime* where 50 percent or more of the component(s) in the map unit is prime; 2) *of statewide importance* where less than 50 percent of the component(s) in the map unit is prime but a combination of lands of prime or statewide importance is 50 percent or more of the map unit; and 3) *of local importance* where less than 50 percent of the component(s) in the map unit is of prime or statewide importance but the total of land of prime, statewide, or local importance is 50 percent or more of the map unit. All other soil map units should be shown as not important farmland unless they are unique.

Forest land. Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. The minimum area that can be classified as forest land is 1 acre, and it must be at least 100 feet wide. (Use 10 percent tree canopy cover to separate forest land from rangeland in the transition vegetation types.)

Land capability class. See exhibit 605.2.

Land evaluation. Synonymous with land classification; the arrangement of land units into various categories based on the properties of the land or its suitability for some particular purpose.

Major land resource area. A group of geographically associated land resource units. A land resource unit is an area of several thousand acres that is characterized by particular patterns of soil, climate, vegetation, water resources, land use, and type of farming. For details see *Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin* (U.S. Department of Agriculture, Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 296).

Map units (kinds). Soils differ in the size and shape of their areas, in their degree of contrast with adjacent soils, and in their geographic relationships due to soil formation or land use. Soil surveys use four kinds of map units to distinguish the different relationships: consociations, complexes, associations, and undifferentiated groups.

Rangeland. Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. Includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. Also includes areas seeded to native or adapted introduced species that are managed like native vegetation.

Site assessment (LESA). The process of evaluating a specific site, tax parcel, or area of land for a specified land use. Factors other than the soil itself that affect the site's use for the specified purpose are identified and assessed.

Soil complex. See Map units.

Soil potential. See exhibit 605.2 and the *National Soil Survey Handbook*.

Soil series. The basic unit of soil classification. As a subdivision of a family, its consists of soils that are essentially alike in all major profile characteristics except the texture of the A horizon.

Soil survey. The systematic examination, description, classification, and mapping of soils in an area. Soil surveys are classified according to the kind and intensity of field examination.

Part 605—Exhibits

605.0 Farmland Protection Policy Act

USDA
Environmental Compliance Library
Farmland Protection Policy Act

Subtitle I—Farmland Protection Policy Act

Section 1 Short Title

This subtitle may be cited as the "Farmland Protection Policy Act .

Section 2 [7 USC 4201] Findings, Purpose, and Definitions

(a) Congress fnds that—

(1) the Nation's farmland is a unique natural resource and provides food and fiber necessary for the continued welfare of the people of the United States;

(2) each year, a large amount of the Nation's farmland is irrevocably converted from actual or potential agricultural use to nonagricultural use;

(3) continued decrease in the Nation's farmland base may threaten the ability of the United States to produce food and fiber in sufficient quantities to meet domestic needs and the demands of our export markets;

(4) the extensive use of farmland for nonagricultural purposes undermines the economic base of many rural areas;

(5) Federal actions, in many cases, result in the conversion of farmland to nonagricultural uses where alternative actions would be preferred;

(6) the Department of Agriculture is the agency primarily responsible for the implementation of Federal policy with respect to tJnited States farmland, assuring the maintenance of the agricultural production capacity of the United States, and has the personnel and other resources needed to implement national farmland protection policy; and

(7) the Department of Agriculture and other Federal agencies should take steps to assure that the actions of the Federal Government do not cause United States farmland to be irreversibly converted to nonagricultural uses in cases in which other national interesb do not override the importance of the protection of farmland nor otherwise outweigh the benefits of maintaining farmland resources.

(b) The purpose of this subtitle is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.

(c) As used in this subtitle—

(1) the term "farmland" includes all land defined as follows:

(A) prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary. Prime farmland includes land that possesses the above characteristics but is being used currently to produce live stock and timber. It does not include land already in or committed to urban development or water storage;

(B) unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops, as determined by the Secretary. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables; and

(C) farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food feed, fiber, forage, or oilseed crops, as determined by the appropriate State or unit of local government agency or agencies, and that the Secretary determines should be considered as farmland for the purposes of this subtitle;

(2) the term "State means any of the fifty States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or any territory or possession of the United States;

(3) the term "unit of local government" means the government a county, municipality, town, township, village, or other unit of general government below the State level, or a combination of units of local government acting through an areawide agency under State law or an agreement for the formulation of regional development policies and plans;

(4) the term "Federal program" means those activities or responsibilities of a department, agency, independent commission, or other unit of the Federal Government that involve

(A) undertaking, financing, or assisting construction or improvement projects; or

(B) acquiring, managing, or disposinfl of Federal lands and facilities. The term "Federal program" does not include construction or improvement projects that on the effective date of this subtitle are beyond the planning stage and are in either the active design or construction state; and

(5) the term "Secretary" means the Secretary of Agriculture.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341)

Section 3 [7 USC 4202] Farmland Protection Policy

(a) The Department of Agriculture, in cooperation with other departments, agencies, independent commissions, and other units of the Federal Government, shall develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses.

(b) Departments, agencies, independent commissions, and other units of the Federal Government shall use the criteria established subsection (a) of this section, to identify the quantity of farmland actually converted by Federal programs, to identify and take into account the adverse effects of Federal programs on the preservation of farmland; consider alternative actions, as appropriate, that could lessen such adverse effects; and assure that such Federal programs, to the extent practicable, are compatible with State, unit of local government, and private programs and policies to protect farmland.

(c) The Department of Agriculture may make available to States, units of local government, individuals, organizations, and other units of the Federal Government information useful in restoring, maintaining, and improving the quantity and quality of farmland.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341. Pub. L. 101-624, Sec 1454, Nov. 28, 1990, 104 Stat. 3614)

Section 4 [7 USC 4203] Existing Policies and Procedures

(a) Each department, agency, independent commission,or other unit of the Federal Government, with the assistance of the Department of Agriculture, shall review current provisions of law, administrative rules and regulations, and policies and procedures applicable to it to determine whether any provision thereof will prevent such unit of the Federal Government from taking appropriate action to comply fully with the provisions of this subtitle.

(b) Each department, agency, independent commission, or other unit of the Federal Government, with the assistance of the Department of Agriculture, shall, as appropriate, develop proposals for action to bring its programs, authorities, and administrative activities into conformity with the purpose and policy of this subtitle.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341)

Section 5 [7 USC 4204] Technical Assistance

The Secretary is encouraged to provide technical assistance to any State or unit of local government, or any nonprofit organization, as determined by the Secretary, that desires to develop programs or policies to limit the conversion of productive farmland to nonagricultural uses.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341)

Section 6 [7 USC 4205] Farmland Resource Information

(a) The Secretary, through existing agencies or interagency groups, and in cooperation with the cooperative extension services of the States, shall design and implement educational programs and materials emphasizing the importance of productive farmland to the Nation's well-being and distribute educational materials through communications media, schools, groups, and other Federal agencies.

(b) The Secretary shall designate one or more farmland information centers to serve as central depositories and distribution points for information on farmland issues, policies, programs, technical principles, and innovative actions or proposals by local and State governments.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341)

Section 7 [7 USC 4206] Grants, Contracts

The Secretary may carry out the purposes of this subtitle, with existing facilities and funds otherwise available through the use of grants, contracts, or such other means as the Secretary deems appropriate.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341)

Section 8 [7 USC 4207] Report

On January 1, 1987, and at the beginning of each subsequent year, the Secretary of Agriculture shall report to the Committee on Agriculture, Nutrition, and Forestry of the Senate and the Committee on Agriculture of the House of Representatives on the progress made in implementing the provisions of this subtitle. such report shall include information on -

(1) the effects, if any, of Federal programs, authorities, and administrative activities with respect to the protection of United States farmland; and

(2) the results of the reviews of existing policies and procedures required under Section 4(a) of this subtitle.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341, Pub. L. 99-198, Sec. 1255, Dec.23, 1985, 99 Stat. 1518)

Section 9 [7 USC 4208] Statement of Limitation

(a) This subtitle does not authorize the Federal Government in any way to regulate the use of provate or non-Federal land, or in any way affect the property rights of owners of such land.

(b) None of the provisions or other requirements of this subtitle shall apply to the acquisition or use of farmland for national defense purposes during a national emergency.

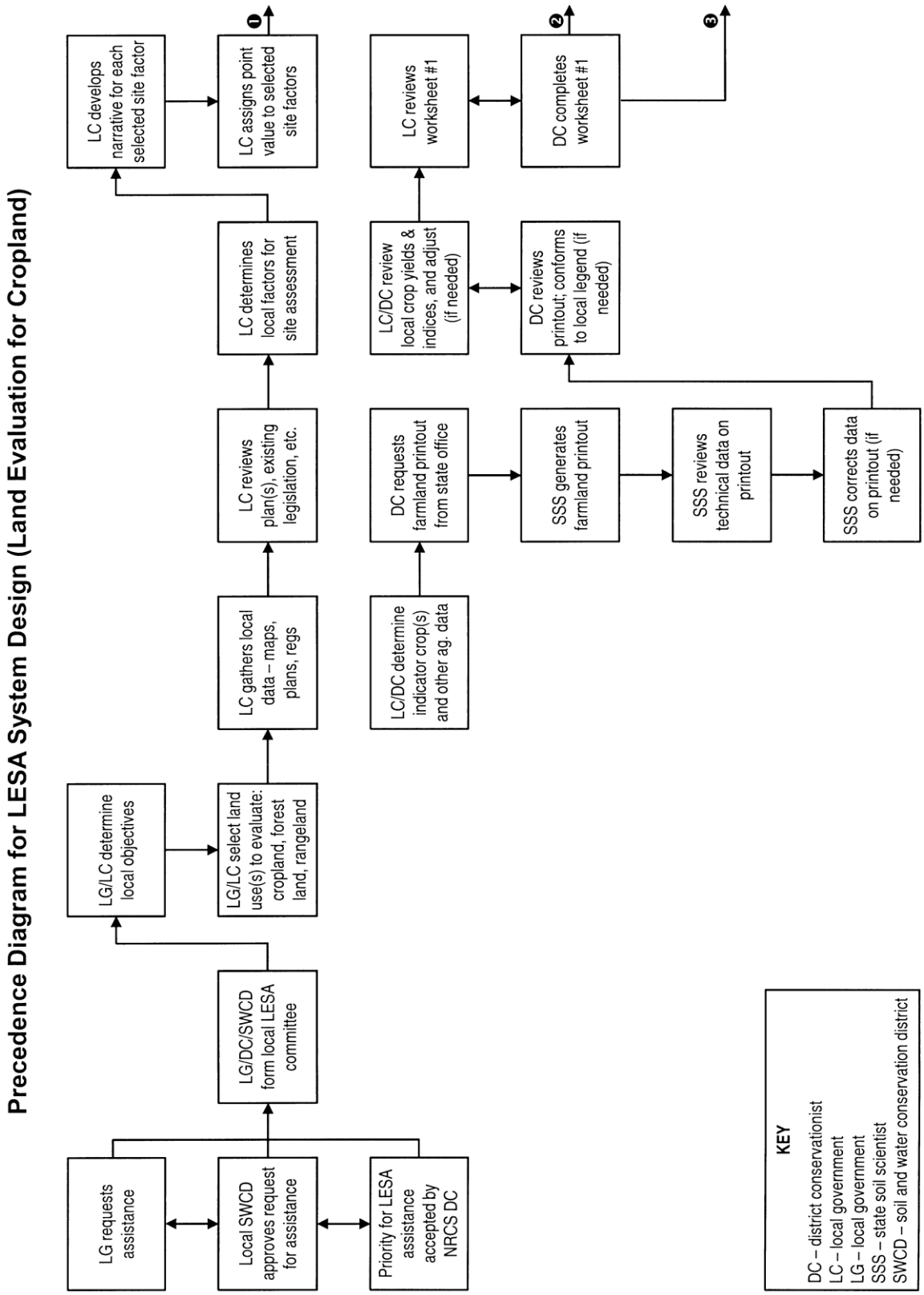
SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341, Pub. L. 101-624, Sec. 2502, Nov. 28, 1990, 104 Stat. 4066)

Section 10 [7 USC 4209] Prohibition

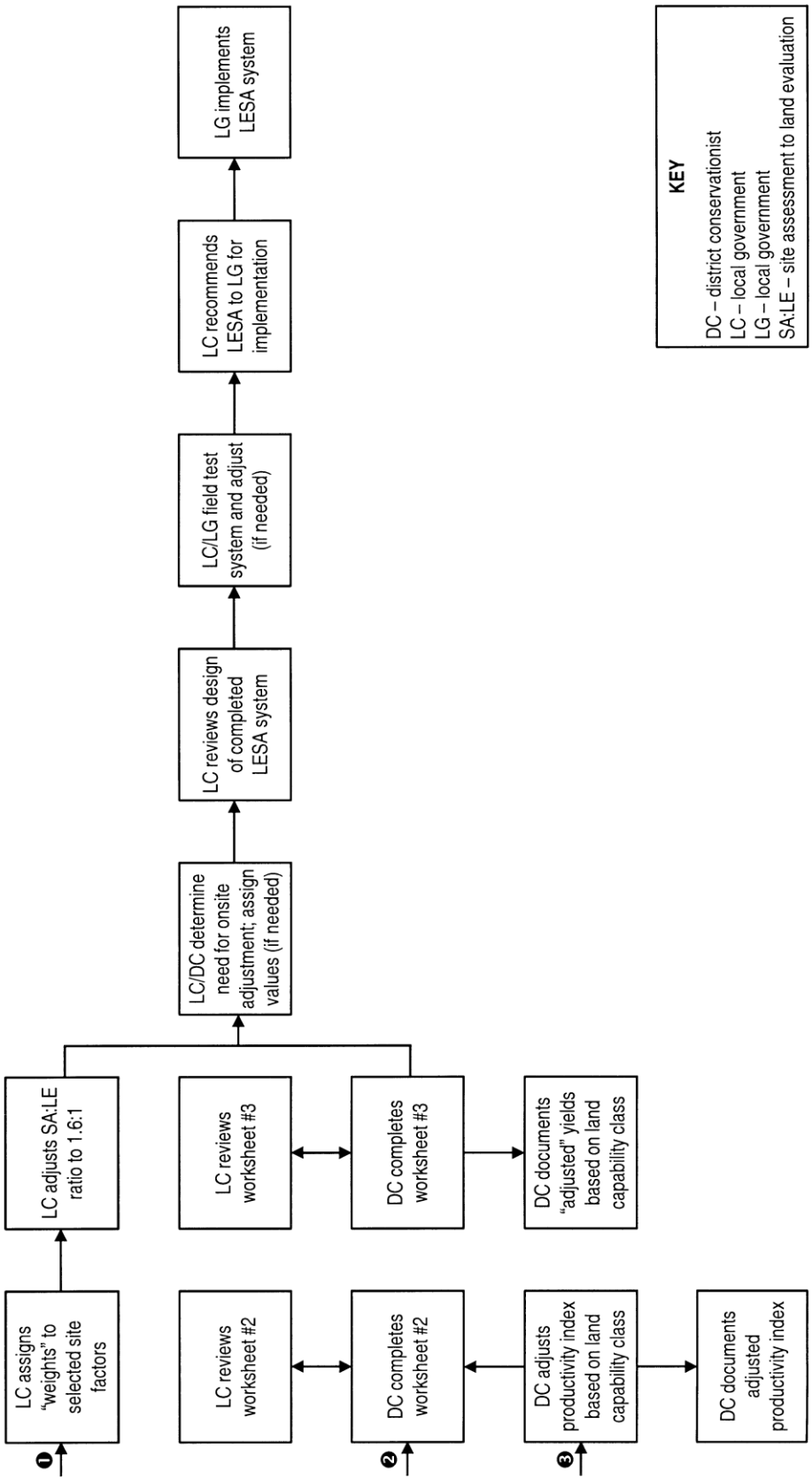
This subtiitle shall not be deemed to provide a basis for any action, either legal or equitable, by any person or class of persons challenging a Federal project, program, or other activity that may affect farmland : *Provided,* That the Governor of an affected State where a State policy or program exists to protect farmland may bring an action in the Federal district court of the district where a Federal program is proposed to enforce the requirements of Section 3 of this subtitle and regulations issued pursuant thereto.

SOURCE (Pub. L. 97-98 Subtitle I, Dec. 22, 1981, 95 Stat. 1341, Pub. L. 99-198, Sec. 1255, Dec.23, 1985, 99 Stat. 1518)

605.1 Precedence Diagram



Precedence Diagram for LESA System Design (Land Evaluation for Cropland), cont.



605.2 Soil Survey Interpretations

(A) Land capability classification.

(a) Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive land-forming that would change slope, depth, or other characteristics of the soils; it does not take in consideration possible but unlikely major reclamation projects; and it does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

(b) In the capability system, all kinds of soils are grouped at three levels: capability class, subclass, and unit. The capability classes and subclasses are defined in the following paragraphs. A soil survey area may not have soils of all classes.

(c) Capability classes, the broadest groups, are designated by numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

(1) Class 1 soils have few limitations that restrict their use.

(2) Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

(3) Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

(4) Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

(5) Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

(6) Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

(7) Class 7 soils have very severe limitations that make them unsuitable for cultivation.

(8) Class 8 soils and landforms have limitations that nearly preclude their use for commercial crop production.

(d) Capability subclasses are soil groups within one class; they are designated by adding a small letter *e, w, s,* or *c* to the class numeral, for example 2e. The letter *e* means that the main limitation is risk of erosion, unless close-growing plant cover is maintained; *w* means that water in or on the soil interferes with plant growth or cultivation (in some soils, the wetness can be partly corrected by artificial drainage); *s* means that the soil is limited mainly because of inherent soil properties; and *c,* used in only some parts of the United States, means that the chief limitation is climate that is too cold or too dry. Class 1 has no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, forest land, wildlife habitat, or recreation.

(B) Soil productivity.

(a) Besides their direct use by farmers and others, predicted yields give a measure of soil productivity. The combined effect of all growth factors is reflected in the crop even though the scientist is unable to explain all the interrelationships. Clearly, any precise

statement about soil productivity must be in terms of a specific kind of soil, a specific kind of crop or combination of crops, and a specific set of management practices.

(b) Soil productivity is perhaps more an economic than a soil science concept. It is the capacity of a soil to produce a specified plant or sequence of plants under a physically defined set of management practices. It is measured in terms of inputs of production factors in relation to outputs or yields. Thus, soil productivity is not itself an inherent quality of the soil. All the chemical, physical, and biological properties of a soil, together with the associated climate, determine its response to management inputs of labor and materials. Modern soil surveys predict, for locally grown crops, yields that are possible to achieve under specified high-level management. Differences in yields of a specific crop on different soils provide a measure of comparison among the soils.

(C) Soil potential ratings.

(a) Soil potential ratings are classes that indicate the relative quality of a soil, compared with other soils in the area, for a particular crop. Considered are predicted yields, the relative cost of applying modern technology to minimize the effect of any soil limitation, and the adverse effects of continuing limitations, if any, on social, economic, or environmental values.

(b) The classes developed for soil potential ratings are based on a soil potential index developed for each soil. The soil potential index (SPI) is a numerical rating of a soil's relative suitability or quality for a specified crop or use. The SPI can be expressed by the equation:

$$SPI = P - (CM + CL)$$

where P = index of performance or yield as a locally established standard
CM = index of costs of corrective measures to overcome or minimize the effects of soil limitations
CL = index of costs resulting from continuing limitations

Soil potentials are developed by personnel of the Natural Resources Conservation Service for various land uses or individual crops.

(D) Important farmland.

(a) Important farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods.

(b) The categories for important farmland are prime farmland, unique farmland, and lands of statewide and local importance.

605.3 Secretary's Memorandum 9500-3

USDA Environmental Compliance
Land Use Policy
Departmental Regulation 9500-3

DEPARTMENTAL REGULATION

Number: 9500-3

SUBJECT:
Date: March 22, 1983

Land Use Policy
OPI: Land Use Staff
Soil Conservation Service

Section

1. PURPOSE

The Nation's farmlands, forest lands, rangelands, flood plains, and wetlands are unique natural resources providing food, fiber, wood, and water necessary for the continued welfare of the people of the United States and protection from floods. Each year, large amounts of these lands are converted to other uses. Continued conversion of the Nation's farmlands, forest lands, and rangelands may impair the ability of the United States to produce sufficient food, fiber, and wood to meet domestic needs and the demands of export markets. Continued conversion of the Nation's wetlands may reduce the availability of adequate supplies of suitable-quality water, indigenous wildlife species, and the productive capacity of the Nation's fisheries. Continued encroachments on flood plains decrease the natural flood-control capacity of these land areas, create needs for expensive manmade flood-control measures and disaster-relief activities, and endanger both lives and property.

Land use allocation decisions are matters of concern to USDA. Decisions concerning land use arise from needs to accommodate needed growth and development; prevent unwarranted and costly sprawl; avoid unwarranted conversion of farm, range, and forest lands and wetlands from existing uses and unwarranted encroachment on flood plains;

maintain and enhance agricultural and forest production capabilities; maintain wildlife; fish, and seafood habitat; provide or improve community services and facilities; assure appropriate environmental quality; and assure adequate supplies of suitable-quality water. These needs are highly interdependent and often compete with each other for the limited supply of available land and water.

It is Departmental policy to promote land use objectives responsive to current and long-term economic, social, and environmental needs. This policy recognizes the rights and responsibilities of State and local governments for regulating the uses of land under their jurisdiction. It also reflects the Department's responsibility to (a) assure that the United States retains a farm, range, and forest land base sufficient to produce adequate supplies, at reasonable production costs, of high-quality food, fiber, wood, and other agricultural products that may be needed, (b) assist individual landholders and State and local governments in defining and meeting needs for growth and development in such ways that the most productive farm, range, and forest lands are protected from unwarranted conversion to other uses; and (c) assure appropriate levels of environmental quality.

In accordance with the authority contained in 7 U.S.C. 1010 and 7 U.S.C. 2204 and consistent with 7 CFR 2.19 (f) and provisions of the Farmland Protection Policy Act, Subtitle I, Title XV, P.L. 97-98, the Department sets forth this statement of policy on land use.

2. CANCELLATIONS

This regulation supersedes Secretary's Memorandum 9500-2 dated March 10, 1982.

3. POLICY

Federal agencies. in implementing programs, make decisions that affect current and potential uses of lands. The Department will:

a. Promote and support planning procedures that allow landholders, interest groups, and State and local governments to have input at all appropriate stages of the decision making process for public projects, programs, or activities; that recognize the rights and responsibilities of landholders in making private land use decisions; and that recognize the responsibility of governments in influencing how land may be used to meet public needs.

b. Assure that programs of the agencies within the Department discourage the unwarranted conversion to other uses of prime and unique farmlands, farmlands of statewide or local importance, and prime rangelands, as defined in Appendix A; the unwarranted alteration of wetlands or flood plains; or the unwarranted expansion of the peripheral boundaries of existing settlements.

c. Manage both its land use-related programs and USDA-administered land in such manner as to (1) demonstrate leadership in meeting short- and long-term needs for growth and development, while assuring adequate supplies of needed food, fiber, and forest products; (2) assure appropriate levels of environmental quality and adequate supplies of water; and (3) discourage unwarranted expansion of peripheral boundaries of existing settlements. Whenever practicable, management of USDA-administered lands shall be coordinated with the management of adjacent private and other public lands.

d. Conduct multidisciplinary land use research and education programs responsive to identified State, local, and national needs and, when requested, assist State and local governments, citizens groups, and individual landholders in determining alternative land use values, thereby enabling local officials to make judicious choices to meet growth and development needs and to protect the community's farmland forest-related economic base.

e. Assist landowners and State and Federal agencies in the reclamation of abandoned surface-mined lands. This reclamation will help eliminate safety, health, and environmental problems.

f. Assist in planning for the extraction of coal and other nonrenewable resources in such manner as to facilitate restoration. This restoration would reestablish or enhance food, fiber, or forest productivity or contribute to other beneficial uses of the land as mining is completed in defined areas or sites.

g. Advocate among Federal agencies:

(1) The retention of important farmlands, rangelands, forest lands, and wetlands, whenever proposed conversions to other uses (a) are caused or encouraged by actions or programs of a Federal agency or (b) require licensing or approval by a Federal agency, unless other needs clearly override the benefits derived from retention of such lands; and (2) Actions that reduce the risk of flood loss and soil erosion; that minimize impacts of floods on human safety, health, and welfare; that preserve natural flood-control and other beneficial functions and values of wetlands and flood plains; and that reduce future need for expensive manmade flood-control systems, disaster-relief assistance, or Federal rehabilitation assistance in the event of flooding.

4. ABBREVIATIONS

USDA - U.S. Department of Agriculture
NRE - Natural Resources and Environment Committee

5. DEFINITIONS

Complete definitions for the terms "farmlands," "forest lands," "rangelands," wetlands," and flood plains" are found in appendix A.

6. RESPONSIBILITIES

a. The Office of the Secretary is responsible for (1) encouraging, assisting, and coordinating efforts of other Federal departments and agencies to implement; policies and procedures supportive of the objectives of this regulation; (2) resolving issues and acting on commendations raised to the Secretary's Policy and Coordination Council by the Departmental committees; and (3) raising unresolved issues and recommending actions to the appropriate Cabinet Council.

b. The NRE Committee, created under the Secretary's memorandum dated July 22, 1981, will provide department-wide leadership for the implementation of this policy statement. In implementing this policy. the NRE Committee will:

(1) Recommend Departmental guidelines to the Secretary and schedule reviews of each agency's procedures for implementation;

(2) Monitor implementation of this policy;

(3) Encourage, support, and provide guidance to State- and local- level USDA committees in implementing this policy;

(4) Coordinate the work of USDA agencies in carrying out the provisions of this regulation; and

(5) Advise the Secretary annually as to progress and problems encountered.

c. Each USDA agency will review and make the necessary administrative changes in existing and proposed rules, regulations, guides, practices or policies and propose needed legislative changes to bring agency programs into compliance with the provisions of this regulation.

d. Each USDA agency having programs that will be affected by this regulation shall develop implementing procedures, consistent with guidelines provided by the NRE Committee, and shall provide to all offices of the agency copies of the policy statement, Departmental guidelines, and agency procedures to implement this policy.

e. USDA agencies will encourage State and local governments and individual landholders to retain important farmlands, rangelands, forest lands, and wetlands and to avoid encroachments on flood plains when practicable alternatives exist to meet

developmental needs. Appropriate agencies will assist State and local governments, citizens groups, and individual landholders in identifying options and determining alternative land use values as the basis for making judicious choices in meeting growth and development needs.

f. USDA agencies will encourage other Federal, State, and local government agencies to exchange information on plans or projects that may impact on important farmlands, rangelands, forest lands, wetlands, or flood plains and to involve appropriate USDA agencies early in the planning process. USDA agencies will participate in a timely manner at appropriate stages in the planning process on Federal or federally assisted projects or activities when requested. Where opportunity for such participation is not forthcoming, the Department may intercede, consistent with policy contained in this regulation, at appropriate stages in the decision making process through review and comments on plans, as provided for in authorized administrative review procedures for such projects, activities, or actions.

g. When land held either in public or private ownership will be directly affected by USDA actions, the implementing agency will notify the affected landholders at the earliest time practicable of the proposed action and provide such landholders an opportunity to review the elements of the action and to comment on the action's feasibility and alternatives to it.

h. Agencies of USDA will assure that their actions, investments, and programs on nonfederal lands will conform, to the extent practicable, with the uses permitted under land use regulations adopted by State or local governments.

i. When land use regulations or decisions are inconsistent with USDA policies and procedures for the protection of important farmlands, rangelands, forest lands, wetlands, or flood plains, USDA agencies shall not assist in actions that would convert these lands to other uses or encroach upon flood plains, unless (1) there is a demonstrated, significant need for the project, program, or facility, and (2) there are no practicable alternative actions or sites that would avoid the conversion of these lands or, if conversion is unavoidable, reduce the number of acres to be converted or encroached upon directly and indirectly.

APPENDIX A
DEFINITIONS

The following definitions apply to this Departmental Regulation.

1. IMPORTANT FARMLANDS [1]

a. Prime Farmlands [2]

(1) General Criteria. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to produce, economically, sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding. Examples of soils that qualify as prime farmland are Palouse silt loam, O- to 7-percent slopes; Brookston silty clay loam, drained; and Tama silty clay loam, O- to 5-percent slopes.

(2) Specific Criteria. Prime farmlands must meet all the following criteria. Terms used in this section are defined in these USDA publications: "Soil Taxonomy, Agriculture Handbook 436," "Soil Survey Manual, Agriculture Handbook 18," "Rainfall-Erosion Losses from Cropland, Agriculture Handbook 282," "Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss, Agriculture Handbook 346," and "Saline and Alkali Soils, Agriculture Handbook 60."

(a) The soils have:

1 Aquic, udic, ustic, or xeric moisture regimes and sufficient available water capacity within a depth of 40 inches, or in the root zone (root zone is the part of the soil that is penetrated by plant roots) if the root zone is less than 40 inches deep, to produce the commonly grown cultivated crops (cultivated crops include but are not limited to grain, forage, fiber, oilseed, sugar beets, sugarcane, vegetables, tobacco, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10, or

[1] 7CFR 657.5
[2] 7CFR 657.5

2 Xeric or ustic moisture regimes in which the available water capacity is limited, but the area has a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; or

3 Acidic or torric moisture regimes, and the area has a developed irrigation water supply that is dependable and of adequate quality; and

(b) The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic (pergelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches, have a mean annual temperature higher than 32 degrees Fahrenheit. In addition, the mean summer temperature at this depth in soils with a 0 horizon is higher than 47 degrees Fahrenheit; in soils that have no O horizon, the mean summer temperature is higher than 59 degrees Fahrenheit; and

(c) The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches deep; and

(d) The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and

(e) The soils can be managed so that in all horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches deep, during part of each year the conductivity of the saturation extract is less than 4 mmhoc/cm and the exchangeable sodium percentage is less than 15; and

(f) The soils are not flooded frequently during the growing season (less often than once in 2 years); and

(g) The product of K (erodibility factor) times the percent slope is less than 2.0, and the product of I (soils erodibility) times C (climatic factor) does not exceed 60; and

(h) The soils have a permeability rate of at least 0.06 inch per hour in the upper 20 inches, and the mean annual soil temperature at a depth of 20 inches is less than 59 degrees Fahrenheit or higher; and

(i) Less than 10 percent of the surface layer (upper 6 inches in these soils consists of rock fragments coarser than 3 inches.

b. Unique Farmland [3]

(1) General Criteria. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce, economically, sustained high-quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables.

(2) Specific Characteristics. Unique farmland is used for a specific high-value-value food or fiber crop. It has a moisture supply that is adequate for the specific crop; the supply is from stored moisture, precipitation, or a developed irrigation system. It combines favorable factors of soil quality, growing season, temperature, humidity, air drainage, elevation, aspect, or other conditions, such as nearness to market, that favor the growth of a specific food or fiber crop.

c. Additional Farmland of Statewide Importance. This is land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. In some States, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by State law.

d. Additional Farmland of Local Importance. In some local areas, there is concern for certain additional farmlands for the production of food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned.

2. PRIME FOREST LANDS [4]

Because of the multiple use of forested lands, several categories e.g., timber, wildlife, and recreation, may be developed. For purposes of this regulation only, the following timberland definitions will apply.

a. Prime Timberland. Prime timberland is land that has soil capable of growing wood at the rate of 85 cubic feet or more/acre/year (at culmination of mean annual increment) in natural stands and is not in urban or built-up land uses or water. Generally speaking, this is

[3] 7 CFR 657.5
[4] Prime Forest Land definition and Criterea, U.S. Forest Service, May 26, 1977.

land currently in forest, but does not exclude qualifying lands that could realistically be returned to forest. Delineation of these lands will be in accordance with national criteria.

b. Unique Timberland. Unique timberlands are lands that do not qualify as prime timberland on the basis of producing less than 85 cubic feet/acre/year, but are growing sustained yields of specific high-value species or species capable of producing specialized wood products under a silvicultural system that maintains soil productivity and protects water quality. Delineation of these lands will be in accordance with national criteria.

c. Timberland of Statewide Importance. This is land, in addition to prime and unique timberlands, that is of statewide importance for the growing of wood. Criteria for defining and delineating these lands are to be determined by State forestry planning committees or appropriate State organizations.

d. Timberlands of Local Importance. In some local areas, there is concern for certain additional forest lands for the growing of wood, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by a local agency or agencies concerned.

3. WETLANDS

Wetlands are those areas that are inundated by surface or ground water with a frequency sufficient to support and, under normal circumstances, do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds.

4. FLOODPLAINS

The term "flood plain" means the lowland and relatively flat areas adjoining inland and coastal waters, including floodprone areas of offshore islands, including, at a minimum, those that are subject
to a l-percent or greater chance of flooding in any given year.

5. PRIME RANGELAND

Prime rangeland is rangeland which, because of its soil, climate, topography, vegetation, and location, has the highest quality or value for grazing animals. The (potential) natural vegetation s palatable, nutritious, and available to the kinds of herbivores common to the area.

605.4 McHenry County Agricultural Land Evaluation and Site Assessment System, Pilot Implementation Program

MCHENRY COUNTY AGRICULTURAL LANDS
EVALUATION AND SITE ASSESSMENT SYSTEM
Pilot Implementation Program
August 7, 1981

NOTE:

This exhibit is for information purposes only.

Each unit of government must choose its own site assessment factors and—

1. Determine the range of conditions under which points will be assigned for each factor;
2. Determine the weight (level of importance) to be assigned to each factor; and
3. Test and implement its LESA system.

Local units of government may elect to use only a few of the factors used by McHenry County, Illinois. Factors should be chosen based on State and local laws, policies, needs, and other conditions, most of which are not likely to be the same as those in McHenry County.

Prepared by the
McHenry County Department of Planning
and the
McHenry County Soil and Water Conservation District
in cooperation with the
U.S. Department of Agriculture, Soil Conservation Service

AGRICULTURAL LAND EVALUATION AND SITE ASSESSMENT SYSTEM

The U.S. Department of Agriculture (USDA) has created a pilot implementation program to evaluate the viability of land for agriculture. This program emphasizes both the physical characteristics of the land, such as soils and slope, and urban-growth factors, such as compatibility of surrounding uses and consistency with land use plans. The pilot program is designed to provide background information and guidance from USDA and allow considerable flexibility for local concerns.

McHenry County is proud to be one of the 12 counties selected by USDA to initiate this pilot program. It is hoped by the County Planning Staff that the program will facilitate decision making by local officials, ensure consistency from case to case, and be technically defensible.

The evaluation and assessment system is divided into two parts. First, the agricultural land evaluation system is determined by soil characteristics, capabilities, and productivity. The Soil Conservation Service (SCS), currently the Natural Resources Conservation Service (NRCS), has generated information to determine value groups that reflect agricultural viability. The second part of the system has been generated by the McHenry County Department of Planning in conjunction with SCS. This system assigns values to several determinants that affect decisions about land use conversions. The combination of these two parts results in a nonbiased evaluation and assessment system.

AGRICULTURAL LAND EVALUATION

The process of evaluating the soil included a number of steps. (Refer to worksheets 1, 2, and 3 in this exhibit.)

First, the soils were grouped according to land capability classification and, at the same time, it was noted whether the unit was prime or not. The productivity was recorded as an index on a scale of 100. The size of each mapping unit was also recorded.

The soils were then regrouped to those having similar productivity and management characteristics. Three trials were run to determine a 10-group base before one was settled on. Group 1 is the best group with the highest productivity, and it contains only prime soils. Group 10 is the lowest category, has the lowest value for agriculture, and contains no prime soils.

The next step analyzed the relative value of each group based on a set list of conditions. The best group was assigned a value of one. The indicator crop for McHenry County was corn, which was multiplied by the selling price and divided into the dollars required, equaling the required acres. A ratio was set up between the minimum acres required and the required acres to determine the value factors.

Agricultural Evaluation Worksheet 1
List of Soils and Evaluations

County and State: McHenry County, Illinois
Indicator crop(s): Corn
Minimum required AWC without irrigation: 4 inches
Minimum required AWC with irrigation: _____
Irrigation water available: Yes ____ No X

MLRA: 95B
Climatic C factor: 0.15
Temperature regime: Mesic
Moisture regime: Udic

Map symbol	Soil name	Slope	Land capability class and subclass	Important farmland determination	Productivity index of soil potentials (local)	Productivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agricultural group
1	2	3	4	5	6	7	8	9	10
23B	Blount	1 to 4	2e	Prime	68			0.32	1
25D2	Hennepin	5 to 12	4e	Not prime	35			0.04	1
25D3	Hennepin	5 to 12	6e	Not prime	29			0.03	1
25F3	Hennepin	12 to 30	7e	Not prime	23			1.41	1
27B	Miami	1 to 4	2e	Prime	77			2.58	2
27C2	Miami	4 to 7	2e	Not prime	74			0.76	2
27C3	Miami	4 to 7	3e	Not prime	68			0.65	2
27D2	Miami	7 to 12	3e	Not prime	71			<0.01	2
27D3	Miami	7 to 12	4e	Not prime	68			0.01	3
27E2	Miami	12 to 18	6e	Not prime	68			<0.01	3
55B	Sidell	1 to 4	2e	Prime	87			0.02	3
55C2	Sidell	4 to 7	2e	Prime	84			0.04	3
56B	Dana	1 to 4	2e	Prime	90			0.16	3
57B	Montmorenci	1 to 4	2e	Prime	81			0.48	3
57C2	Montmorenci	4 to 7	2e	Prime	77			0.11	3
57C3	Montmorenci	4 to 7	3e	Not prime	71			0.03	3
59	Lisbon		1	Prime	100			1.58	3
60B	LaRose	2 to 4	2e	Prime	81			0.05	3
60C2	LaRose	4 to 7	2e	Prime	77			0.50	3
60C3	LaRose	4 to 7	3e	Not prime	71			0.01	6
60D2	LaRose	7 to 12	3e	Not prime	74			0.10	7
60C3	LaRose	7 to 12	4e	Not prime	68			0.03	7
60E3	LaRose	12 to 18	6e	Not prime	66			0.01	7
62	Herbert		1	Prime	87			0.45	7
67	Harpster		2w	Prime	87			1.00	7
W67	Harpster		5w	Not prime	0			0.54	7
76	Otter		2w	Prime	90			2.26	7
W76	Otter		5w	Not prime	0			0.06	7
79A	Dakota	0 to 2	2s	Prime	71			1.50	6
79B	Dakota	2 to 4	2e	Prime	71			0.50	6
79C2	Dakota	4 to 7	3e	Prime	68			0.10	7
79D2	Dakota	7 to 12	3e	Not prime	66			0.09	8
82	Millington		2w	Prime	84			0.50	4
W82	Millington		5w	Not prime	0			0.69	10
87B	Dickinson	1 to 4	3e	Prime	68			0.10	7
87C2	Dickinson	4 to 7	3e	Prime	66			0.16	7
87D2	Dickinson	7 to 12	3e	Not prime	66			0.10	7
93D2	Rodman	7 to 12	6s	Not prime	29			0.70	10
93F3	Rodman	12 to 30	7s	Not prime	23			1.41	10
97	Houghton		3w	Not prime	74			0.30	8

Agricultural Evaluation Worksheet 1—Continued

Map sym-bol	Soil name	Slope	Land capability class and subclass	Important farmland deter-mination	Produc-tivity index of soil potentials (local)	Produc-tivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agri-cultural group
1	2	3	4	5	6	7	8	9	10
W97	Houghton		5w	Not prime	0			0.15	10
102	LaHogue		1	Prime	84			0.91	2
103	Houghton		3w	Not prime	81			2.00	8
W103	Houghton		5w	Not prime	0			1.93	10
104	Virgil		1	Prime	90			0.62	1
125	Selma		2w	Prime	87			0.40	3
W125	Selma		5w	Not prime	0			0.28	10
132	Starks		2w	Prime	81			0.52	4
134A	Camden	0 to 2	1	Prime	77			0.62	2
134B	Camden	2 to 4	2e	Prime	77			1.02	5
134C2	Camden	4 to 7	2e	Not prime	74			0.13	8
134C3	Camden	4 to 7	3e	Not prime	68			0.04	8
134D2	Camden	7 to 12	3e	Not prime	71			0.13	8
134D3	Camden	7 to 12	4e	Not prime	66			0.06	9
137B	Camden	2 to 4	2e	Prime	68			0.01	6
137C2	Camden	4 to 7	3e	Not prime	66			0.24	8
137D2	Camden	7 to 12	3e	Not prime	66			0.24	8
137E3	Camden	12 to 25	6e	Not prime	52			0.01	10
144B	Alvin	1 to 4	2e	Prime	68			0.01	6
144C2	Alvin	4 to 7	3e	Prime	66			0.06	7
144D2	Alvin	7 to 12	3e	Not prime	66			0.08	8
144E3	Alvin	12 to 25	6e	Not prime	52			0.01	10
145B	Saybrook	1 to 4	2e	Prime	87			3.00	3
145C2	Saybrook	4 to 7	2e	Prime	87			0.60	3
145D2	Saybrook	7 to 12	3e	Not prime	84			0.01	8
146B	Elliot	1 to 4	2e	Prime	84			0.70	4
146C	Elliot	4 to 7	2e	Prime	81			0.07	4
148A	Proctor	0 to 2	1	Prime	90			1.87	3
148B	Proctor	2 to 4	2e	Prime	90			1.87	3
148C2	Proctor	4 to 7	2e	Prime	87			0.14	3
148D3	Proctor	7 to 12	4e	Not prime	77			0.07	9
149	Brenton		1e	Prime	98			3.80	1
150B	Onarga	1 to 4	2e	Prime	71			0.10	6
150C2	Onarga	4 to 7	3e	Prime	68			0.10	7
150D2	Onarga	7 to 15	3e	Not prime	66			0.04	8
152	Drummer		2w	Prime	98			10.92	2
W152	Drummer		5w	Not prime	0			<0.01	10
156	Ridgeville		2e	Prime	77			0.23	5
191	Knight		2w	Prime	77			0.10	5
W191	Knight		5w		0			<0.01	10
194B	Morley	2 to 4	2e	Prime	68			0.01	6
194C2	Morley	4 to 7	3e	Not prime	66			0.34	8
194D2	Morley	7 to 12	3e	Not prime	66			0.15	8
194D3	Morley	7 to 12	4e	Not prime	58			0.16	9
194E	Morley	12 to 25	4e	Not prime	58			<0.01	10
194E2	Morley	12 to 25	4e	Not prime	55			0.03	10
194E3	Morley	12 to 25	6e	Not prime	52			0.03	10
197	Troxel		1	Prime	90			0.48	1
198	Elburn		1	Prime	100			1.54	1

Agricultural Evaluation Worksheet 1—Continued

Map sym-bol	Soil name	Slope	Land capability class and subclass	Important farmland deter-mination	Produc-tivity index of soil potentials (local)	Produc-tivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agri-cultural group
1	2	3	4	5	6	7	8	9	10
205B	Metea	1 to 4	2e	Prime	68			0.10	6
205C2	Metea	4 to 7	3e	Prime	66			0.07	7
205D2	Metea	7 to 12	3e	Prime	66			0.05	7
205E	Metea	12 to 18	4e	Not prime	61			0.05	9
206	Thorp		2w	Prime	81			0.38	4
W206	Thorp		5w	Not prime	0			<0.01	10
210	Lena		2w	Not prime	77			1.27	8
W210	Lena		5w	Not prime	0			<0.01	10
219	Millbrook	1 to 4	1	Prime	90			1.81	1
223B	Varma	1 to 4	2e	Prime	81			0.05	4
223C2	Varma	4 to 7	2e	Prime	77			0.15	5
223C3	Varma	4 to 7	3e	Not prime	71			0.50	8
223D2	Varma	7 to 12	3e	Not prime	74			0.15	8
224C2	Strawn	3 to 7	2e	Not prime	66			0.87	8
224C3	Strawn	4 to 7	3e	Not prime	58			0.32	9
224D2	Strawn	7 to 12	3e	Not prime	66			0.55	9
224D3	Strawn	7 to 12	4e	Not prime	58			0.55	9
224E2	Strawn	12 to 25	4e	Not prime	55			0.36	10
228B	Nappanee	2 to 4	3e	Not prime	58			0.03	9
228C2	Nappanee	4 to 7	3e	Not prime	55			0.02	9
228C3	Nappanee	4 to 7	4e	Not prime	45			0.02	9
228D2	Nappanee	7 to 12	4e	Not prime	52			0.01	9
228D3	Nappanee	7 to 12	6e	Not prime	42			0.01	10
228E3	Nappanee	12 to 25	7e	Not prime	39			0.01	10
232	Ashum		2w	Prime	87			0.60	3
W232	Ashum		5w	Not prime	0			<0.01	10
240B	Plattville	1 to 4	2e	Prime	77			<0.01	5
240C	Plattville	4 to 9	2e	Prime	77			<0.01	5
265B	Lomax	1 to 4	2e	Prime	71			1.00	6
265C2	Lomax	4 to 7	3e	Prime	68			0.03	7
290A	Warsaw	0 to 2	2s	Prime	77			1.52	5
290B	Warsaw	2 to 4	2s	Prime	77			1.83	5
290C2	Warsaw	4 to 7	3e	Prime	74			0.12	7
290C3	Warsaw	4 to 7	4e	Not prime	68			0.08	9
290D2	Warsaw	7 to 12	3e	Not prime	71			0.03	8
290D3	Warsaw	7 to 12	4e	Not prime	68			0.03	9
290E2	Warsaw	12 to 18	6e	Not prime	68			0.03	10
291B	Xenia	1 to 4	2e	Prime	81			1.00	4
291C2	Xenia	4 to 7	2e	Prime	77			0.11	8
291C3	Xenia	4 to 7	3e	Not prime	71			0.10	8
292	Wallkill		3w	Prime	81			0.04	7
W292	Wallkill		5w	Not prime	0			<0.01	10
296	Washtenaw		2w	Prime	84			0.09	7
W296	Washtenaw		5w	Not prime				<0.01	10
297A	Ringwood	0 to 2	3w	Prime	84			0.82	1
297B	Ringwood	2 to 4	2e	Prime	84			3.88	4
297C2	Ringwood	4 to 7	2e	Prime	81			0.29	4
297C3	Ringwood	4 to 7	3e	Not prime	74			0.16	8
298B	Beecher	1 to 4	2w	Prime	74			0.11	5

Agricultural Evaluation Worksheet 1—Continued

Map sym-bol	Soil name	Slope	Land capability class and subclass	Important farmland deter-mination	Produc-tivity index of soil potentials (local)	Produc-tivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agri-cultural group
1	2	3	4	5	6	7	8	9	10
299B	McHenry	1 to 4	2e	Prime	74			0.71	5
299C2	McHenry	4 to 7	2e	Not prime	71			0.17	8
299D2	McHenry	7 to 12	3e	Not prime	68			0.01	8
310B	McHenry	1 to 4	2e	Prime	74			2.80	5
310C2	McHenry	4 to 7	2e	Not prime	71			0.75	8
310C3	McHenry	4 to 7	3e	Not prime	66			0.19	8
310D	McHenry	7 to 12	3e	Not prime	71			0.02	8
310D2	McHenry	7 to 12	3e	Not prime	68			0.10	8
310D3	McHenry	7 to 12	4e	Not prime	66			0.10	9
318B	Lorenzo	1 to 4	3s	Not prime	58			0.99	9
318C2	Lorenzo	4 to 7	3s	Not prime	55			0.49	9
318C3	Lorenzo	4 to 7	4e	Not prime	45			0.05	9
318D2	Lorenzo	7 to 12	4e	Not prime	52			0.02	9
318D3	Lorenzo	7 to 12	6e	Not prime	45			0.02	10
318E3	Lorenzo	12 to 25	7e	Not prime	39			0.02	10
322B	Russell	1 to 4	2e	Prime	81			0.03	4
322C2	Russell	4 to 7	2e	Prime	77			0.20	8
322C3	Russell	4 to 7	3e	Not prime	71			0.16	8
322D2	Russell	7 to 12	3e	Not prime	74			0.03	8
322D3	Russell	7 to 12	4e	Not prime	68			0.04	9
322E2	Russell	12 to 18	4e	Not prime	68			0.04	9
323B	Casco	1 to 4	3e	Prime	58			0.44	8
323C2	Casco	4 to 7	3e	Not prime	55			0.92	9
323C3	Casco	4 to 7	4e	Not prime	45			0.35	9
323D	Casco	7 to 12	4e	Not prime	55			0.12	9
323D2	Casco	7 to 12	4e	Not prime	52			0.13	9
323D3	Casco	7 to 12	6e	Not prime	45			0.50	10
323E2	Casco	12 to 25	7e	Not prime	39			0.15	10
325A	Dresden	0 to 2	2s	Prime	71			0.26	6
325B	Dresden	2 to 4	2e	Prime	71			0.61	6
325C2	Dresden	4 to 7	3e	Prime	68			0.08	7
327A	Fox	0 to 2	2s	Prime	68			0.13	6
327B	Fox	2 to 4	2e	Prime	68			2.40	6
327C2	Fox	4 to 7	3e	Not prime	66			1.00	8
327D	Fox	7 to 12	3e	Not prime	66			0.04	8
327D2	Fox	7 to 12	3e	Not prime	66			0.30	8
327E3	Fox	12 to 25	6e	Not prime	52			0.17	10
329	Will		2w	Prime	77			0.92	5
W329	Will		5w	Not prime	0			<0.01	10
330	Peotone		3w	Prime	77			0.45	7
W330	Peotone		5w	Not prime	0			<0.01	10
342	Matherton		2s	Prime	77			0.12	5
343	Kane		2s	Prime	81			1.06	4
344A	Harvard	0 to 2	1	Prime	84			0.40	2
344B	Harvard	2 to 4	2e	Prime	84			0.40	4
344C2	Harvard	4 to 7	2e	Prime	81			0.19	4
346B	Dowagiac	1 to 4	2e	Prime	68			0.15	6
346C2	Dowagiac	4 to 7	3e	Prime	66			0.05	7
347	Canisteo		2w	Prime	84			1.92	4

Agricultural Evaluation Worksheet 1—Continued

Map sym-bol	Soil name	Slope	Land capability class and subclass	Important farmland deter-mination	Produc-tivity index of soil potentials (local)	Produc-tivity index of soil potentials (NASIS)	Map unit acres	Map unit percent	Agri-cultural group
1	2	3	4	5	6	7	8	9	10
W347	Canisteo		5w	Not prime	0			<0.01	10
348B	Wingate	1 to 4	2e	Prime	84			0.16	4
348C2	Wingate	4 to 7	2e	Not prime	81			0.10	4
353	Toronto		1	Prime	97			0.18	2
358	Burned muck		3w	Not prime	0			0.03	10
W358	Burned muck		5w	Not prime	0			3.65	10
361B	Kidder	1 to 7	2e	Prime	68			0.05	6
361C2	Kidder	4 to 7	3e	Prime	66			2.59	7
361C3	Kidder	4 to 7	4e	Not prime	58			0.08	9
361D	Kidder	7 to 12	3e	Not prime	66			0.10	8
361D2	Kidder	7 to 12	3e	Not prime	66			0.69	8
361D3	Kidder	7 to 12	4e	Not prime	58			0.36	9
361E3	Kidder	12 to 25	6e	Not prime	52			0.70	10
363B	Griswold	2 to 4	2e	Prime	77			0.16	5
363C2	Griswold	4 to 7	3e	Prime	74			0.70	7
363C3	Griswold	4 to 7	4e	Not prime	68			0.10	9
363D2	Griswold	7 to 12	3e	Not prime	74			0.13	8
364	Orion		2w	Prime	84			1.79	4

Agricultural Evaluation Worksheet 2
Design of Land Evaluation
(McHenry County, Illinois)

Agri-cultural group	Land capability class and subclass	Important farmland determination	Soil potential or productivity index	Percent-age of total area	Acres	Quotient of relative yield
1	**2**	**3**	**4**	**5**	**6**	**7**
1	1	Prime	90-100	11.45	44,774	1.00
2	1	Prime	<89	14.10	55,137	0.94
	2	Prime	>95			
3	2	Prime	87-94	10.05	39,300	0.82
4	2	Prime	80-86	10.94	42,780	0.72
5	2	Prime	72-79	12.76	49,897	0.66
6	2	Prime	>71	7.15	27,959	0.65
7	3	Prime	58-64	4.89	19,122	0.56
8	2	Statewide importance	66-81	12.79	50,014	0.47
	3		≥66			
9	3	Statewide importance	≤65	5.13	20, 060	0.41
	4		45-77			
10	4-7	None	0	11.05	43,210	0

Agricultural Evaluation Worksheet 3
Determining Relative Value
(McHenry County, Illinois)

Agri-cultural group	Adjusted yield for the group divided by the highest adjusted yield	Quotient of relative yield	Times 100	Relative value
1	**2**	**3**	**4**	**5**
1	160/160	1.00	x 100	100
2	150/160	0.94	x 100	94
3	130/160	0.81	x 100	81
4	115/160	0.72	x 100	72
5	105/160	0.66	x 100	66
6	100/160	0.65	x 100	65
7	90/160	0.56	x 100	56
8	75/160	0.47	x 100	47
9	65/160	0.41	x 100	41
10	0/160	0.00	x 100	0

SITE ASSESSMENT FACTORS
McHenry County, Illinois

The McHenry County Department of Planning determined the factors, their weights, and the point-value distribution which best reflected the goals and objectives for the county. (See the Site Assessment Factors table at the end of this exhibit.) These factors should be considered when a change to an urban land use is proposed in an existing agricultural area. The 16 site assessment factors are grouped into six major areas of consideration. These categories include:

I. Agricultural Land Use
II. Zoning
III. Compatibility/Impact of Uses
IV. Urban and Rural Infrastructure
V. Land Use Feasibility
VI. Adopted Plans

Following is a list of factors to be considered and an explanation of the rationale or intent behind each factor.

I. Agricultural Land Use

Factor A. Percent of Land in Agricultural Uses Within 1.5 Miles of Site (Weight 2.1)

	Point Value
90% or more	10
75% - 89%	9
50% - 74%	6
25% - 49%	3
Less than 25%	0

Explanation: This factor is a major indicator of the agricultural character of an area. It, therefore, has the maximum weight of 2.1. Areas in the county that are dominated by agricultural uses are generally more viable for farm purposes. The definition of "agricultural uses" should be interpreted to mean all agricultural and related uses that can be considered to be part of the farm operation. This would include farmlands, farm residences, barns, outbuildings, pasture lands, and drainage areas. The 1.5-mile area of consideration was selected for two reasons. First, in McHenry County, a 1.5-mile radius is a reasonable and manageable area when analyzing the land use and overall characteristics of the area. Second, the State of Illinois has set 1.5 miles as the jurisdictional boundary for municipal planning.

(Note: Explanations such as shown above should be drafted for each site assessment factor selected.)

Factor B. Percent of Land in Agricultural Uses Adjacent to Site (Weight 1.5)

	Point Value
90% or more	10
75% - 89%	9
50% - 74%	6
25% - 49%	3
Less than 25%	0

Explanation: Although this factor is similar to Factor A above, it is narrower in focus and, therefore, the weight is reduced. The term "agricultural land uses" is defined as all uses related to the farm operation, as in Factor A above.

Factor C. Percent of Site Under Consideration in Agricultural Uses (Weight 1.1)

	Point Value
75% - 100%	10
50% - 74%	7
25% - 49%	4
Less than 25%	0

Explanation: This factor is yet a narrower view of agricultural land uses than Factors A and B above; therefore, the weight is less than that of Factor B. However, this factor is necessary to determine current agricultural use of the property. Also, this factor may provide a clue to the site's suitability to sustain a farm operation. Again, the term "agricultural land uses" will mean the same as in Factors A and B.

II. Zoning

Factor D. Percent of Land Zoned for Agriculture Within 1.5 Miles of the Site (Weight 1.8)

	Point Value
90% or more	10
75% - 89%	9
50% - 74%	6
25% - 49%	3
Less than 25%	0

Explanation: The weight of this factor is high since zoning regulations carry police power and a larger area is considered. It should be noted that in McHenry County there exist rural residences and old subdivisions in the agricultural zone. Due to this situation, the factor did not justify the maximum weight of 1.8.

Factor E. Availability of Zoned Land for Proposed Use (Weight 1.3)

	Point Value
Undeveloped land zoned for proposed use is available and site is beyond the jurisdictional boundary for municipal planning and within sole jurisdiction of the county	10
No land is available which is zoned for proposed use (this value can only be assigned when site is within municipal 1.5-mile planning area)	0

Explanation: This factor addresses the question of need for a proposed zoning change. To ensure that the question of need for an urban land use is not considered in rural and agricultural areas, the 1.5-mile jurisdictional boundary for municipal planning was an added requirement to receive the zero point value (.00) in favor of urban development. The size and intensity of a proposed use will determine the area of consideration for this factor. For example, the area of consideration will be less for a proposed neighborhood store than for a proposed shopping center.

III. Compatibility/Impact of Uses

Factor F. Distance From City or Village (Weight 1.7)

	Point Value
More than 1.5 miles	10
1.5 miles or less	9
1 mile or less	8
0.5 mile or less	3
0.25 mile or less	0

Explanation: This factor is consistent with the growth strategy stated in the county's land use plan. The strategy encourages urban development closer to existing urban areas. Because urban uses are generally considered to be incompatible with agricultural pursuits, the impact on agricultural and rural areas will be minimized when development occurs near established urban areas.

Factor G. Environmental Impact of Proposed Use (Weight 1.7)

	Point Value
Negative impact	10
Little or no impact with special design or protective measures	5
Little or no impact	---

Explanation: Historically, in McHenry County, it has been shown that urban development is best suited to areas that have the least negative impact on the environment. This factor takes into account those engineering or design practices that reduce the impact. Environmentally sensitive areas such as flood plains, wetlands, open spaces, and ground-water recharge areas will be the major areas of concern in McHenry County.

Factor H. Compatibility of Proposed Use With Surrounding Area (Weight 1.5)

	Point Value
Not compatible	10
Somewhat compatible but not totally	3
Totally compatible	0

Explanation: As in any land use change, compatibility with surrounding land uses must be determined. It becomes difficult to determine whether some uses (e.g., industrial and commercial) are totally compatible. Also, the density or intensity of similar uses (e.g., 1-acre-lot residential and 3-acre-lot residential) become a gray area in terms of compatibility. For these reasons, a point value for "somewhat compatible" was included in this factor. The term "surrounding area" in this instance will depend on the size of the proposed land use change. The area that would be directly influenced by the proposed land use change will be considered the "surrounding area." Each land use change will have a different area of influence based on the size and intensity of the proposed use.

Factor I. Impact on Unique Historical or Cultural Features (Weight 0.2)

	Point Value
Negative impact	10
No impact	0

Explanation: Situations may arise when a land use change will adversely affect unique historical or cultural areas. It is for these instances that this factor should be considered. This factor is weighted low because it does not necessarily relate to the preservation of farmland.

IV. Urban and Rural Infrastructure

Factor J. Transportation Accessibility (Weight 1.3)

	Point Value
Limited transportation; access predominantly by rural township roads	10
Access to major highway beyond 1.5-mile jurisdictional boundary for municipal planning	7
Access to major highway within jurisdictional boundary for municipal planning	3
Access to full range of transportation modes (bus, rail, major highway)	0

Explanation: Access to transportation is a consideration in the location of all types of uses. The location of industrial, commercial, and residential uses around existing municipalities results in a more efficient movement of goods and people. The location of urban uses along rural roads may necessitate the upgrading and widening of rural roads, which results in a further loss of farmland. Traffic on rural roads leads to transportation-access problems for agricultural purposes. The intent of this factor is to recognize that different types of transportation access are required for different types of land use.

Factor K. Availability of Central Sanitary Sewer With Capacity (Weight 0.8)

	Point Value
No sewer line within 1.5 miles	10
Sewer line within 0.5 mile	5
Sewer line within 0.25 mile	0

Explanation: The availability of a public sewer system indicates a good possibility for development. In McHenry County, sewer systems are usually within incorporated areas. This factor increases the potential for development to these serviced areas and reduces the potential for development in rural areas with less facilities.

Factor L. Agricultural Support System or Service (Weight 0.6)

	Point Value
Support system present	10
Some limitations to the support system	6
Severe limitations to the support system	1

Explanation: McHenry County has a good distribution of agricultural support systems and services. This would include but not be limited to farm implement dealers, grain elevators, farm supplies, etc. This factor is weighted low because any farm in the county is relatively close to farm-support systems and services. No area in the county is so limited that farming becomes impossible.

V. Land Use Feasibility

Factor M. Suitability of Soils for Onsite Waste Disposal (Weight 1.1)

	Point Value
Soil limitations restrict the use of septic system	10
Limitations to the soil can be overcome by special management or design	7
Few or no limitations	0

Explanation: Development in unincorporated McHenry County will generally utilize onsite waste disposal systems. If soil conditions will not support a septic system or if special design is necessary to overcome problems associated with the parcel, the suitability of the site for urban development is reduced. A weight of 1.1 was assigned to this factor because it does not directly relate to agriculture.

Factor N. Size of Site for a Feasible Farm Operation (Weight 0.4)

	Point Value
100 or more acres	10
40-99 acres	9
20-39 acres	5
5-19 acres	3
Less than 5 acres	0

Explanation: This factor acknowledges that large parcels are necessary for efficient farming practices. The weight, however, is low because of other agricultural pursuits, such as truck farming, which may require considerably less land. Smaller parcels of land with prime agricultural soils may be leased to larger farm operations adjacent to the parcel, thereby preventing an "entering wedge" of incompatible land uses.

VI. Adopted Plans

Factor O. Consistency of Proposed Use With County Land Use Plan (Weight 2.1)

	Point Value
Incompatible with plan	10
Compatible with intent of plan but not with plan map	2
Totally compatible	0

Explanation: This factor is one of the most important considerations because it is the one factor which involves a comprehensive analysis of the entire county. The adopted plan has both a text that states official policy and a map that interprets the policy in graphic form. Consistency with the intent of the plan should be determined when a land use change is proposed. The land use map does not always reflect every possible use that would be consistent with the policy in the plan.

Factor P. Consistency With Municipal Plan (Weight 0.8)

	Point Value
Inconsistent with municipal plan, or parcel is beyond 1.5-mile jurisdictional boundary for municipal planning	10
Within 1.5-mile municipal planning area, but no plan recorded	5
Consistent with municipal plan	0

Explanation: To ensure the cooperation between municipalities and McHenry County, the county's land use plan considered the municipal plan recorded at that time. A continuation of this cooperation is reflected in this factor. The weight is relatively low because municipal plans, for the most part, do not include agricultural areas. If the parcel is within two municipal planning areas, the plan from the nearest municipality shall be considered.

INSTRUCTIONS FOR CALCULATIONS

The following are instructions for calculating the total agricultural land evaluation and site assessment for the property in question. The calculations will be recorded on the Site Assessment Factors table located at the end of this exhibit.

Weight. The weights of both the agricultural land evaluation and the site assessment factors have been predetermined and are shown in column 2 of the table.

Agricultural Evaluation Factors. To establish the agricultural point value (APV) of the given parcel, there are seven steps to be followed. They are as follows:

1. Determine the soils by mapping unit on the parcel.
2. Locate the value group of each soil in worksheet 1, column 10, of this exhibit.
3. Total the number of acres in each value group.
4. Determine the percentage of each value group:

   $$\frac{\text{Number of Acres in Value Group}}{\text{Total Number of Acres in Parcel}}$$
5. The percentages for each value group found in step 4 are then multiplied by the agricultural point value found on worksheet 2, column 7, of this exhibit.
   Example: Value Group 5 = APV 66 x (%)
6. Total all figures established in step 5.
   Example: Value Group 3 = APV 82 x (%) = Y
   Value Group 5 = APV 66 x (%) = Z
   TOTAL = Y + Z
7. The sum total of all figures established in step 6 is then multiplied by a weight of 5.

NOTE: Although the weight for the agricultural evaluation factor is less than several site assessment factors, the maximum agricultural point value is greater than the maximum point values possible under the site assessment factors.

Site Assessment Factors. The site assessment factor values are determined by multiplying the weight of each factor in column 2 of the Site Assessment Factors table by the point value assigned to each factor in column 1. The point value is determined by analyzing each site assessment factor and establishing the category that best suits the property in question.

Total Points Accrued. Add all factor values established in column 3 to arrive at the site assessment subtotal. Then add to that the agricultural evaluation subtotal to arrive at the total points accrued. The higher the total points accrued for a parcel, the more agriculturally viable the given parcel will be.

Total Points Possible. The total points possible for any given parcel is determined by multiplying the weight of each factor, including agricultural evaluation and site assessment factors, by the maximum point value of each factor. The total points possible for any given parcel is 200 and has been noted in the table.

HOW TO ASSESS SITE WHERE PROPOSED FARMLANDS ARE TO BE CONVERTED

1. Determine the average relative value of the land from the land evaluation part of the LESA system.
2. Based on local plans, land use information, and site inspections, assess the site for each factor shown in the site assessment part of the LESA system.
3. Multiply the assigned value of the site for each factor by the assigned weight for the factor (columns 1 and 2).
4. Add the totals for column 5 (site #1) and column 7 (site #2). This is the site assessment subtotal.
5. Add the agricultural land value to the site assessment subtotal for the total points for each site.
6. The total maximum points for any site is 300. The land evaluation is assigned a maximum of 100 points, and the site assessment is assigned a maximum of 200 points.
7. In most cases, the site should be protected for agriculture when the points exceed 200. The following can be used:

   0 - 200 = Low rating for protection
   200 - 225 = Medium rating for protection
   225 - 250 = High rating for protection
   250 - 300 = Very high rating for protection

   The higher the total points accrued for a site, the more agriculturally viable the given site will be. *Note:* Local officials can use the system to guide and support decisions to protect farmland.
8. When considering a number of sites for a nonagricultural use, selection of the site with the lowest total points will usually protect the best farmland located in the most viable areas.

Examples

Site Number One

A 75-acre grain farm located 6 miles from a city with a population of 25,000 is proposed for 75 1-acre lots. Eighty percent of the area within 1.5 miles of the site is in agriculture. One side of the site is in urban use. Seventy percent of the 75-acre site is in agricultural use at the present time. This site and 80 percent of the area within 1.5 miles of the site is zoned agricultural. Only one-half of the approved lots within the area have been developed. Development of this site will impact the other farms in the area. One farm next to this site is used for dairy. The agricultural infrastructure is strong in the area, and no urban infrastructure exists. Forty percent of the soils on this site are rated as not suitable for onsite septic disposal. Both the county and the local municipal plans indicate that this area should remain in agriculture. The relative value of this site for cropland production is 92.

Site Number Two

A 75-acre grain farm located next to a city with a population of 25,000 is proposed for a 200-lot subdivision. Twenty-five percent of the area within 1.5 miles of the site is in agriculture, and urban development exists on three sides of this site. Seventy percent of the 75-acre site is used for agriculture at the present time. This site and 75 percent of the area within 1.5 miles is zoned for nonagricultural use. The county plan and the municipal plan indicate this to be an urban growth area. Central water and sanitary sewer systems exist at the edge of this site, and the local municipality will extend services to the site. There are a number of undeveloped, approved lots in the area, but most of them are 4 to 6 miles away from the city. The development of this site will impact one other grain farm. Most of the agricultural infrastructure has been lost or changed to support the urban landowner. The relative value of this site for cropland production is 92.

Site Assessment Factors
(McHenry County, Illinois)

Site assessment factors			Max. points	Assigned weight	Total max. points x weight	Site #1 points assigned	Points x weight	Site #2 points assigned	Points x weight
			1*	2**	3	4***	5	6***	7
I.		Agricultural Land Use							
	A.	Percent of land in agricultural uses (within 1½ miles)	10	2.1	21	9	18.9	3	6.3
	B.	Percent of land in agricultural uses adjacent to site	10	1.5	15	8	12	3	4.5
	C.	Percent of site in agricultural uses	10	1.1	11	7	7.7	7	7.7
II.		Zoning							
	D.	Percentage of land zoned for agriculture (within 1½ miles)	10	1.8	18	8	14.4	3	5.4
	E.	Availability of zoned land	10	1.3	13	10	13.0	3	
III.		Compatibility/Impact of Uses							
	F.	Distance from city or village	10	1.7	17	10	17.0	0	0
	G.	Environmental impact	10	1.7	17	10	17.0	4	6.8
	H.	Compatibility with surrounding area	10	1.5	15	10	15.0	0	0
	I.	Impact on historical or cultural features	10	0.2	2	10	2.0	0	0
IV.		Urban and Rural Infrastructure							
	J.	Transportation accessibility	10	1.3	13	10	13.0	0	0
	K.	Availability of central sewage	10	0.8	8	10	8.0	0	0
	L.	Agricultural support system	10	0.6	6	10	6.0	2	1.2
V.		Land Use Feasibility							
	M.	Soil suitability for onsite disposal	10	1.1	11	5	5.5	0	0
	N.	Size of site	10	0.4	4	9	3.2	9	3.6
VI.		Adopted Plans							
	O.	Consistency with county plan	10	2.1	21	10	21	0	0
	P.	Consistency with municipal plan	10	0.8	8	10	8	0	0
SITE ASSESSMENT SUBTOTAL					200		181		39.4
AGRICULTURE EVALUATION SUBTOTAL					100		92		92
TOTAL POINTS ACCRUED							273.7		131.4
TOTAL POSSIBLE POINTS					300		300		300

* This column indicates the maximum points per factor.

** The weights adjusted represent the relative importance of that factor as compared with all other factors. The weights are adjusted to produce a maximum of 200 points for the site assessment part of LESA.

*** This column indicates the points assigned for the site being considered.

605.5 Computer-Assisted Checks for Coordination of Prime Farmland, Capability Classification, and Productivity Ratings

Background

Farmland criteria have been programmed to produce tables that should help States and national technical centers coordinate soil map units that qualify as prime farmland, evaluate placement of soil map units into the land capability classification system, and develop productivity ratings.

Many of the same soil and environmental characteristics that are prime farmland criteria are used to place soils into the land capability classification system and also influence soil productivity ratings. The prime farmland criteria are used as the basis for the farmland criteria table.

For coordination purposes, it is useful to look at all the soils within a major land resource area (MLRA). MLRAs should have rather uniform geomorphology, climate, water resources, natural vegetation, and land uses. Thus, many environmental differences are suppressed and differences among soils become more apparent.

The computer can automatically produce farmland criteria tables of all the soils within an MLRA. Tables can also be prepared for counties, but a list of series names used in the county must accompany the request.

Data Needed on MLRA or County

For evaluation of the soils within an MLRA or county, certain environmental information must be gathered on that MLRA or county:

1. Select an "indicator crop" that represents the single most common cultivated crop in the MLRA or county. If two crops are of equal importance, the crop that is judged to be most indicative of the productivity of the soil is selected. If the crop selected does not adequately represent the MLRA or county because it is not commonly grown on enough of the soils, then a second crop may be selected. Currently, however, an additional set of tables must be generated with the second crop given as an indicator crop.
2. Determine the minimum available water capacity (AWC) within 40 inches needed to produce the nonirrigated indicator crop in 7 or more years out of 10. This value depends on the rainfall amount and distribution during the year, the amount of evapotranspiration, and the crop (its water consumption and depth of moisture extraction).
3. In areas with soil moisture regimes drier than udic, determine the minimum AWC within 40 inches required to produce good yields of irrigated crops. This value takes into account irrigation efficiency, common irrigation practices, and availability of irrigation water.
4. Determine the temperature regime most representative of the MLRA or county, e.g., hyperthermic, thermic, mesic, frigid, cryic, or their "iso" equivalents.
5. Determine the dominant moisture regime of the soils in the MLRA or county, e.g., udic, ustic, xeric, aridic, torric.
6. Give the C factor (wind velocity-soil surface moisture) used in the wind erosion equation. A range in C factors is commonly needed for each MLRA.
7. Is water of suitable quality and quantity available for irrigation in this MLRA or county?

All of these environmental data are listed in the headnote of the table.

Evaluating Soils for Prime Farmland

Each soil in an MLRA or county is evaluated on the basis of certain soil properties in the Soil Data Mart and environmental data from the MLRA or county. These data are compared by computer to the prime farmland criteria printed in the *Federal Register* on January 31, 1978. The results of the computer evaluation are printed in the "prime farmland" column. This column can be compared with the list of prime farmland map units and the differences resolved.

Evaluating Placement of Soils into the Capability Classification System

The Prime Farmland Criteria table is printed so that soils in land capability class 1 are listed first and those in class 8 last and soils are arranged alphabetically within a capability subgroup. Exhibit 605.6 provides an example of this table.

Productivity Ratings

The yields of indicator crop and the crop yield index are useful in checking the rating of soils into productivity classes.

Evaluation Procedure

The explanation of the general procedure for producing each major column of the Prime Farmland Criteria table follows:

Column 1. Soil name

a. For MLRAs, the Soil Data Mart is searched for the MLRA number being evaluated and it lists the soil series.
b. For counties, a list of the series used in the county is furnished.

Column 2. Land capability class and subclass

This is printed directly from the Soil Data Mart for nonirrigated (NIR) or irrigated (IRR) soils.

Column 3. Indicator crop yield in units/acre

The indicator crop is given for each MLRA or county. The yield is given in units/acre (usually bushels) for NIR or IRR soils.

Column 4. Indicator crop yield, index

The yield index is the yield of the soil phase divided by the highest yield in the population (MLRA or county) multiplied by 100.

Column 5. pH within 40 inches

The range in pH is listed to a depth of 40 inches or to a limiting layer, whichever is shallower. This range must be between 4.5 and 8.4 for the soil to qualify as prime farmland.

Column 6. Salinity within 40 inches

The soil qualifies for prime farmland (other criteria being met) if the salinity within a depth of 40 inches is less than 4 mmhos/cm.

Column 7. Sodic (yes or no)

The computer scans the classification and critical phase criteria for natric, halic, or alkali great groups or phases and enters a Y for yes or an N for no.

The soil qualifies as prime farmland (other criteria being met) if not sodic.

Column 8. Depth to pan or rock

The depth in inches to a cemented pan or bedrock is listed. This information is useful but is not a prime farmland criterion except as it influences AWC.

Column 9. Depth to water table

The depth in feet to a seasonal high water table is listed. The information is useful but is not a prime farmland criterion except as it influences wetness characteristics.

Column 10. AWC within 40 inches

This range in available water capacity (AWC) is calculated from the Soil Data Mart to a depth of 40 inches or to a limiting layer, whichever is shallower. The mean of this range is compared to the minimum AWC needed to produce the indicator crop for the MLRA or county in 7 years out of 10.

If the AWC of the soil exceeds this minimum and the moisture regime of the MLRA or county is aquic, udic, ustic, or xeric, the soil qualifies as prime farmland (other criteria being met).

In xeric or ustic moisture regimes, if the AWC is less than the minimum required for nonirrigated crops (but more than the minimum required for good yields of irrigated crops), the soil qualifies as prime farmland *where irrigated* (other criteria being met).

In aridic or torric moisture regimes, if the AWC is more than the minimum required for irrigated crops, the soil qualifies as prime farmland *where irrigated* (other criteria being met).

Column 11. Wet (yes or no)

The Y for yes or N for no is derived from the classification of the soil. The soil is considered wet (Y) if it (1) is in an aquic suborder or (2) is a Histosol (Folist excluded) or an Alboll.

If not wet (N), the soil qualifies as prime farmland (other criteria being met). If wet (Y) and in capability class 1, 2, 3, or 4, the soil qualifies as prime farmland *where drained* (other criteria being met). If wet (Y) and in capability class 5, 6, 7, or 8, the soil would not be prime farmland.

Column 12. Flood frequency

The flooding frequency is listed in this column from the Soil Data Mart. If the frequency is frequent, the soil is not prime farmland. All other entries (none, rare, occasional) qualify the soil for prime farmland (other criteria being met).

Column 13. Water erosion K

The K factor is listed in this column as information. It is used in calculating the value in column 14.

Column 14. Water erosion 2/K

This figure is the maximum slope that qualifies as prime farmland. It is derived from the criterion that K (soil erodibility factor) x slope is less than 2. The computer program compares this number with the mean of the slope in column 1. If the slope percentage in this column is equal to or greater than the mean of the slope percentage in column 1, then the soil qualifies as prime farmland (other criteria being met).

Column 15. Wind erosion 60/I

This is the C (wind velocity-soil moisture) factor, expressed as a decimal number, used in the wind erosion equation. It is derived from the criterion that C x I (soil erodibility) does not exceed 60. Thus 60/I is the C factor above which the soil has a wind erosion problem. The computer program compares this number with the C factor (or the mean of the range) given for the county or MLRA. If the value in column 15 is equal to or greater than the C for the county or MLRA, the soil qualifies as prime farmland (other criteria being met). If a range is given for the county or MLRA and the value in column 15 falls within that range, "some no" will be printed in the prime farmland column.

Column 16. Permeability, slowest within 20 inches

The computer program enters the slowest permeability within a depth of 20 inches. If this value is equal to or greater than 0.06 inch/hour, the soil qualifies as prime farmland (other criteria being met) in all temperature regimes except thermic and hyperthermic. The computer program uses the temperature regime given for the county or MLRA listed in the headnote. In thermic and hyperthermic temperature regimes, permeability is not a criterion and the soils with permeability 0.06 are prime farmland (other criteria being met) unless the state conservationist makes a local exception. Soils meeting the prime farmland criteria in thermic and hyperthermic temperature regimes and having permeability of 0.06 inch/hour are marked with an asterisk in this column. (The footnote states that permeability is not a criterion in this temperature regime unless the state conservationist makes a local deviation.)

Column 17. Fraction > 3 inches on soil surface (volume percent)

This value is calculated from the SOILS-5 data. The conversion is made from a weight basis to a volume basis.

$$\%>3 \text{ inches by vol} = \left[\frac{1.5\%>3 \text{ inches by weight}}{2.7\ (100 - \%>3 \text{ inches by wt} + 1.5\%>3 \text{ inches by wt}}\right] 100$$

where: 1.5 is the assumed bulk density of the soil + coarse fragments
2.7 is the assumed bulk density of the coarse fragments

If the mean of the range in this column is less than 10 percent, the soil qualifies as prime farmland (other criteria being met).

Column 18. Prime farmland

This is the computer approximation based on the criteria discussed above.

The kinds of entry are:

No = not prime farmland
Yes = the soil qualifies as prime farmland

Where irrigated = the soil is in an area dominated by xeric, ustic, aridic, or torric moisture regimes; the soil qualifies as prime farmland except the available water capacity (AWC) in the upper 40 inches of soil is lower than the AWC required to produce the indicator crop 7 years out of 10; and the area has a developed irrigation water supply that is dependable and of adequate quality.

Where drained = the soil qualifies except for wetness characteristics; the soil is prime farmland only where drained.

Some no = the soil in part of the MLRA or county does not qualify for prime farmland because of the range in C factor.

Generating Prime Farmland Criteria Table

The Prime Farmland Criteria table is set up so that it is directly accessible from the NASIS interpretive reports. A table can be requested for a county, a soil survey, or an MLRA.

Farmland Soil Map Units

Soil map units with component(s) of prime farmland are 1) prime where 50 percent or more of the component(s) in the soil map unit is prime; 2) of statewide importance where less than 50 percent of the component(s) in the soil map unit is prime, but a combination of lands of prime and statewide importance are 50 percent or more of the soil map unit; and 3) of local importance where less than 50 percent of the soil component(s) in the soil map unit is of prime and statewide importance but the total of prime, statewide, and local importance is 50 percent or more of the soil map unit. All other soil map

units should be shown as not important farmland soil map units unless they meet the criteria for statewide or local importance as defined by State or local units of government or are unique.

605.6 Computer Printout of Prime Farmland Criteria Table

Prime Farmland Criteria Arranged by Land Capability Class and Subclass, Part I
(De Kalb County, Illinois)

(A pound sign beside a data element indicates a property that causes the soil not to be prime. It may be in more than one column. Data are for dryland corn-indicator crop)

Map symbol	Soil name	Slope (percent)	Land capability (NIRR)	Index crop (bushels/acre) (NIRR)	Productivity index (NIRR)	pH	Salinity within 40 inches (mmhos/cm)	Sodic	Depth to pan/rock (inches)	Depth to water table (feet)
1			2	3	4	5	6	7	8	9
59A	Lisbon	0-2	1	173	0.97	5.6-8.4	0-0	N	>60	1.0-2.0
148A	Proctor	0-2	1	166	0.93	5.1-7.8	0-0	N	>60	>6.0
154A	Flanagan	0-2	1	175	0.98	5.6-7.3	0-0	N	>60	1.0-2.0
171A	Catlin	0-2	1	168	0.94	5.1-7.3	0-0	N	>60	2.0-4.0
193A	Mayville	0-2	1	134	0.75	5.1-8.4	0-0	N	>60	2.0-4.0
198A	Elburn	0-2	1	178	1.00	5.6-7.8	0-0	N	>60	1.0-2.0
233A	Birkbeck	0-2	1	151	0.85	5.1-7.3	0-0	N	>60	2.0-4.0
348A	Wingate	0-2	1	148	0.83	5.1-7.8	0-0	N	>60	2.0-4.0
512A	Danabrook	0-2	1	168	0.94	5.1-7.8	0-0	N	>60	2.0-4.0
662A	Barony	0-2	1	155	0.87	5.1-7.8	0-0	N	>60	2.0-4.0
663A	Clare	0-2	1	164	0.92	5.1-7.8	0-0	N	>60	2.0-4.0
667A	Kaneville	0-2	1	161	0.90	5.6-7.8	0-0	N	>60	2.0-4.0
668A	Somonauk	0-2	1	147	0.83	5.1-7.8	0-0	N	>60	2.0-4.0
679A	Blackberry	0-2	1	177	0.99	5.1-7.3	0-0	N	>60	2.0-4.0
715A	Arrowsmith	0-2	1	171	0.96	6.1-8.4	0-0	N	>60	1.0-2.0
791A	Rush	0-2	1	159	0.89	4.5-7.3	0-0	N	>60	>6.0
792A	Bowes	0-2	1	159	0.89	5.1-7.3	0-0	N	>60	>6.0
148B	Proctor	2-5	2e	164	0.92	5.1-7.8	0-0	N	>60	>6.0
171B	Catlin	2-5	2e	166	0.93	5.1-7.3	0-0	N	>60	2.0-4.0
193B	Mayville	2-5	2e	133	0.75	5.1-8.4	0-0	N	>60	2.0-4.0
221B2	Parr	2-5	2e	137	0.77	5.6-8.4	0-0	N	>60	2.0-4.0
233B	Birkbeck	2-5	2e	149	0.84	4.5-7.3	0-0	N	>60	2.0-4.0
325B	Dresden	2-4	2e	141	0.79	5.6-8.4	0-0	N	>60	>6.0
325C2	Dresden	4-6	2e	133	0.75	5.6-8.4	0-0	N	>60	>6.0
327B	Fox	2-4	2e	133	0.75	5.1-8.4	0-0	N	>60	>6.0
344B	Harvard	2-5	2e	152	0.85	5.1-7.8	0-0	N	>60	>6.0
348B	Wingate	2-5	2e	148	0.83	5.1-7.8	0-0	N	>60	2.0-4.0
512B	Danabrook	2-5	2e	166	0.93	5.1-7.8	0-0	N	>60	2.0-4.0
527B	Kidami	2-4	2e	141	0.79	5.1-8.4	0-0	N	>60	2.0-4.0
527C2	Kidami	4-6	2e	133	0.75	5.1-8.4	0-0	N	>60	2.0-4.0
656B	Octagon	2-4	2e	142	0.80	5.6-8.4	0-0	N	>60	2.0-4.0
656C2	Octagon	4-6	2e	134	0.75	5.6-8.4	0-0	N	>60	2.0-4.0

Prime Farmland Criteria Arranged by Land Capability Class and Subclass, Part I—Continued (De Kalb County, Illinois)

Map symbol	Soil name	Slope (percent)	Land capability (NIRR)	Index crop (bushels/acre) (NIRR)	Productivity index (NIRR)	pH	Salinity within 40 inches (mmhos/cm)	Sodic	Depth to pan/rock (inches)	Depth to water table (feet)
1			2	3	4	5	6	7	8	9
662B	Barony	2-5	2e	153	0.86	5.1-7.8	0-0	N	>60	2.0-4.0
663B	Clare	2-5	2e	162	0.91	5.1-7.8	0-0	N	>60	2.0-4.0
667B	Kaneville	2-5	2e	159	0.89	5.6-7.8	0-0	N	>60	2.0-4.0
668B	Somonauk	2-5	2e	146	0.82	5.1-7.8	0-0	N	>60	2.0-4.0
679B	Blackberry	2-5	2e	150	0.84	5.1-7.3	0-0	N	>60	2.0-4.0
791B	Rush	2-4	2e	157	0.88	4.5-7.3	0-0	N	>60	>6.0
792B	Bowes	2-4	2e	157	0.88	5.1-7.8	0-0	N	>60	>6.0
802B	Orthents, loamy	1-6	2e	93	0.52	5.6-8.4	0-0	N	>60	4.0-5.0
325A	Dresden	0-2	2s	142	0.80	5.6-8.4	0-0	N	>60	>6.0
67A	Harpster	0-2	2w	164	0.92	7.4-8.4	0-0	N	>60	0.0-1.0
330A	Peotone	0-2	2w	148	0.83	5.6-7.8	0-0	N	>60	0.0-1.0
488A	Hooppole	0-2	2w	147	0.83	7.4-8.4	0-0	N	>60	0.0-1.0
712A	Spaulding	0-2	2w	165	0.93	7.4-8.4	0-0	N	>60	0.0-1.0
62A	Herbert	0-2	2w	161	0.90	5.6-8.4	0-0	N	>60	0.0-2.0
68A	Sable	0-2	2w	173	0.97	5.6-7.8	0-0	N	>60	0.0-1.0
104A	Virgil	0-2	2w	164	0.92	5.1-7.8	0-0	N	>60	0.0-2.0
152A	Drummer	0-2	2w	173	0.97	5.6-7.8	0-0	N	>60	0.0-1.0
206A	Thorp	0-2	2w	153	0.86	5.1-7.8	0-0	N	>60	0.0-1.0
219A	Millbrook	0-2	2w	159	0.89	5.1-7.8	0-0	N	>60	0.0-2.0
236A	Sabina	0-2	2w	151	0.85	4.5-7.3	0-0	N	>60	0.0-2.0
356A	Elpaso	0-2	2w	176	0.99	5.6-7.8	0-0	N	>60	0.0-1.0
60C2	La Rose	5-10	3e	133	0.75	6.1-8.4	0-0	N	>60	>6.0
193C2	Mayville	5-10	3e	125	0.70	5.1-8.4	0-0	N	>60	2.0-4.0
221C2	Parr	5-10	3e	134	0.75	5.6-8.4	0-0	N	>60	2.0-4.0
318D2	Lorenzo	6-12	3e	114	0.64	5.6-8.4	0-0	N	>60	>6.0
348C2	Wingate	5-10	3e	139	0.78	5.1-7.8	0-0	N	>60	2.0-4.0
512C2	Danabrook	5-10	3e	156	0.88	5.1-7.8	0-0	N	>60	2.0-4.0
527D2	Kidami	6-12	3e	131	0.74	5.1-8.4	0-0	N	>60	2.0-4.0
662C2	Barony	5-10	3e	144	0.81	5.1-7.8	0-0	N	>60	2.0-4.0
667C2	Kaneville	5-10	3e	150	0.84	5.6-7.8	0-0	N	>60	2.0-4.0
103A	Houghton	0-2	3w	158	0.89	5.1-7.3	0-0	N	>60	0.0-1.0
3076A	Otter	0-2	3w	168	0.94	6.1-7.8	0-0	N	>60	0.0-1.0
3776A	Comfrey	0-2	3w	149	0.84	6.1-8.4	0-0	N	>60	0.0-1.0
60D2	La Rose	10-18	4e	124	0.70	6.1-8.4	0-0	N	>60	>6.0
830	Orthents, landfill	2-7	7e		0.00			N	>60	>6.0
865	Pits, gravel		8		0.00			N	>60	>6.0
W	Water		8		0.00			N	>60	>6.0

Prime Farmland Criteria Arranged by Land Capability Class and Subclass, Part II
(De Kalb County, Illinois)

(A pound sign beside a data element indicates a property that causes the soil not to be prime. Data are for dryland corn-indicator crop)

Map symbol	Soil name	Slope (percent)	Available water capacity	Wet	Growing season flood frequency	Kw	Maximum slope (2/K)	Wind 60/I	Permeability (slowest within 20 inches)	Fraction >3 inches on soil surface	Prime farmland
1			10	11	12	13	14	15	16	17	18
59A	Lisbon	0-2	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
148A	Proctor	0-2	7.6	N	None	0.28	7.1	1.25	0.6	0-0	Yes
154A	Flanagan	0-2	6.4	N	None	0.28	7.1	1.25	0.2	0-0	Yes
171A	Catlin	0-2	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
193A	Mayville	0-2	6.9	N	None	0.43	4.7	1.07	0.6	0-0	Yes
198A	Elburn	0-2	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
233A	Birkbeck	0-2	8.3	N	None	0.43	4.7	1.07	0.6	0-0	Yes
348A	Wingate	0-2	7.8	N	None	0.37	5.4	1.25	0.6	0-0	Yes
512A	Danabrook	0-2	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
662A	Barony	0-2	7.4	N	None	0.37	5.4	1.25	0.6	0-0	Yes
663A	Clare	0-2	7.7	N	None	0.28	7.1	1.25	0.6	0-0	Yes
667A	Kaneville	0-2	7.9	N	None	0.37	5.4	1.25	0.6	0-0	Yes
668A	Somonauk	0-2	7.6	N	None	0.43	4.7	1.25	0.6	0-0	Yes
679A	Blackberry	0-2	7.9	N	None	0.28	7.1	1.25	0.6	0-0	Yes
715A	Arrowsmith	0-2	8.2	N	None	0.28	7.1	1.25	0.6	0-0	Yes
791A	Rush	0-2	7.8	N	None	0.43	4.7	1.07	0.6	0-0	Yes
792A	Bowes	0-2	8.1	N	None	0.37	5.4	1.25	0.6	0-0	Yes
148B	Proctor	2-5	7.6	N	None	0.28	7.1	1.25	0.6	0-0	Yes
171B	Catlin	2-5	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
193B	Mayville	2-5	7.1	N	None	0.43	4.7	1.07	0.6	0-0	Yes
221B2	Parr	2-5	6.8	N	None	0.24	8.3	1.07	0.6	0-0	Yes
233B	Birkbeck	2-5	7.2	N	None	0.43	4.7	1.07	0.6	0-0	Yes
325B	Dresden	2-4	6.0	N	None	0.28	7.1	1.25	0.6	0-0	Yes
325C2	Dresden	4-6	5.8	N	None	0.28	7.1	1.25	0.6	0-0	Yes
327B	Fox	2-4	5.6	N	None	0.32	6.3	1.07	0.6	0-0	Yes
344B	Harvard	2-5	7.4	N	None	0.37	5.4	1.25	0.6	0-0	Yes
348B	Wingate	2-5	7.7	N	None	0.37	5.4	1.25	0.6	0-0	Yes
512B	Danabrook	2-5	7.9	N	None	0.28	7.1	1.25	0.6	0-0	Yes
527B	Kidami	2-4	7.1	N	None	0.32	6.3	1.07	0.6	0-0	Yes
527C2	Kidami	4-6	7.1	N	None	0.32	6.3	1.07	0.6	0-0	Yes
656B	Octagon	2-4	6.2	N	None	0.28	7.1	1.25	0.6	0-0	Yes
656C2	Octagon	4-6	6.4	N	None	0.28	7.1	1.25	0.6	0-0	Yes
662B	Barony	2-5	7.4	N	None	0.37	5.4	1.25	0.6	0-0	Yes
663B	Clare	2-5	7.9	N	None	0.28	7.1	1.25	0.6	0-0	Yes
667B	Kaneville	2-5	7.9	N	None	0.37	5.4	1.25	0.6	0-0	Yes
668B	Somonauk	2-5	7.3	N	None	0.43	4.7	1.07	0.6	0-0	Yes

Prime Farmland Criteria Arranged by Land Capability Class and Subclass, Part II—Continued
(De Kalb County, Illinois)

Map symbol	Soil name	Slope (percent)	Available water capacity	Wet	Growing season flood frequency	Kw	Maximum slope (2/K)	Wind 60/I	Permeability (slowest within 20 inches)	Fraction >3 inches on soil surface	Prime farmland
1			10	11	12	13	14	15	16	17	18
679B	Blackberry	2-5	8.1	N	None	0.28	7.1	1.25	0.6	0-0	Yes
791B	Rush	2-4	7.8	N	None	0.43	4.7	1.07	0.6	0-0	Yes
792B	Bowes	2-4	7.7	N	None	0.37	5.4	1.25	0.6	0-0	Yes
802B	Orthents, loamy	1-6	7.2	N	None	0.43	4.7	1.25	0.2	0-3	No
325A	Dresden	0-2	6.3	N	None	0.28	7.1	1.25	0.6	0-0	Yes
67A	Harpster	0-2	7.9	Y#	None	0.24	8.3	0.70#	0.6	0-0	No
330A	Peotone	0-2	7.1	Y#	None	0.24	8.3	0.70#	0.2	0-0	No
488A	Hooppole	0-2	7.5	Y#	None	0.24	8.3	0.70#	0.6	0-0	No
712A	Spaulding	0-2	8.5	Y#	None	0.24	8.3	0.70#	0.6	0-0	No
62A	Herbert	0-2	7.3	Y#	None	0.37	5.4	1.25	0.6	0-0	Yes, where drained
68A	Sable	0-2	8.0	Y#	None	0.24	8.3	1.25	0.6	0-0	Yes, where drained
104A	Virgil	0-2	8.0	Y#	None	0.37	5.4	1.25	0.6	0-0	Yes, where drained
152A	Drummer	0-2	8.9	Y#	None	0.24	8.3	1.25	0.6	0-0	Yes, where drained
206A	Thorp	0-2	6.9	Y#	None	0.28	7.1	1.25	0.06	0-0	Yes, where drained
219A	Millbrook	0-2	7.6	Y#	None	0.37	5.4	1.25	0.6	0-0	Yes, where drained
236A	Sabina	0-2	7.0	Y#	None	0.43	4.7	1.07	0.2	0-0	Yes, where drained
356A	Elpaso	0-2	8.8	Y#	None	0.24	8.3	1.25	0.6	0-0	Yes, where drained
60C2	La Rose	5-10	5.5	N	None	0.28	7.1#	1.25	0.6	0-0	No
193C2	Mayville	5-10	7.1	N	None	0.43	4.7#	1.07	0.6	0-0	No
221C2	Parr	5-10	6.6	N	None	0.28	7.1#	1.07	0.6	0-0	No
318D2	Lorenzo	6-12	3.8#	N	None	0.28	7.1#	1.25	0.6	0-3	No
348C2	Wingate	5-10	7.5	N	None	0.37	5.4#	1.25	0.6	0-0	No
512C2	Danabrook	5-10	7.6	N	None	0.37	5.4#	1.25	0.6	0-0	No
527D2	Kidami	6-12	6.8	N	None	0.32	6.3#	1.07	0.6	0-0	No
662C2	Barony	5-10	7.3	N	None	0.37	5.4#	1.25	0.6	0-0	No
667C2	Kaneville	5-10	7.9	N	None	0.37	5.4#	1.25	0.6	0-0	No
103A	Houghton	0-2	15.7	Y#	None			0.45#	0.2	0-0	No
3076A	Otter	0-2	8.7	Y#	Frequent#	0.32	6.3	1.25	0.6	0-0	Yes, where drained and protected from flooding
3776A	Comfrey	0-2	7.5	Y#	Frequent#	0.32	6.3	1.25	0.6	0-0	Yes, where drained and protected from flooding
60D2	La Rose	10-18	5.4	N	None	0.28	7.1#	1.25	0.6	0-0	No
830	Orthents, landfill	2-7		N	None			1.25			No
865	Pits, gravel			N	None						No
W	Water			N							No

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Farmland Protection: Knowing What to Protect

By Steve Aradas, Ron Darden, Sue Pfluger, Lloyd Wright, and Warren Zitzmann

Farmland has gained a strong advocate: the federal government. The Farmland Protection Policy Act, passed last December, changes an old federal tendency to push for conversion of agricultural land. The law also encourages local and state governments to help save this valuable resource.

Criteria for guiding federal actions and for obtaining voluntary state and local involvement are expected to be issued this summer.

As part of the total federal farmland protection program, the U.S. Soil Conservation Service, in cooperation with the states and local communities, has developed a system called Agricultural Land Evaluation and Site Assessment (LESA). Local governments can use LESA to determine which lands should be set aside for agriculture-and how to rate a specific site to justify retention of an agricultural use. LESA can also be used to:

- Decide the minimum parcel size for subdivision in farm areas;
- Plan sewer, water, and transportation projects; and
- Develop guidelines for conversion of farmland to nonagricultural uses.

LESA is divided into two parts. In the first, farmland is evaluated for quality. In the second, particular sites are assessed for their economic and social viability as farmland. The Soil Conservation Service has developed computer programs that will help with land evaluation; local planning agencies should do the site assessments.

Evaluating farmland

To evaluate the land, several elements must be assessed: land capability, soil productivity, soil potential, and the factors that determine "important farmland." An SCS computer program includes these criteria. Thus, although the land rating system is national in scope, technically defensible decisions can be made locally.

The first step in evaluation under this scheme is to choose which category the land fits in: cropland, forest land, or rangeland. The soils are then classified, depending on how they fit these rating systems:

- Land capability classification. A U.S. Department of Agriculture (USDA) system of classifying soils according to their potential for field crops or pasture. Seven classes and four subclasses indicate the limitations of each type of soil. This system is the most widely used land-rating scheme in farmland protection.
- Important farmland. A USDA rating system that places land in one of four groups: prime farmland, unique farmland, land of statewide importance, and land of local importance.
- Soil productivity. A method of rating soil according to expected crop yields under specified management practices.
- Soil potential. An alternative to the soil productivity method. It indicates the relative quality of a soil for a particular use compared with other soils in a given locale.

Here's where local responsibility comes into play. The local rating system should use only three of the four national criteria: land capability, important farmland, and either soil productivity or soil potential. In locales where soil potentials have been determined, this information is preferable.

Based on information from the Soil Conservation Service computer printouts and from soils reports, the soils in a given area are ranked into approximately 10 agricultural groups, depending on what is considered poor or good in a particular locale. Each group should include six to 15 percent of the land in each locale.

Next, the relative value of each agricultural group must be determined. Soils with the highest yields and the fewest limitations will have the highest relative value as farmland.

Relative value is calculated by adjusting the average yield of each group, based on the soil limitations in the land capability classification. The first group with the highest adjusted yield always takes a relative value of 100.

The adjusted yield for the first group then is divided into the lower groups to develop a relative value for all groups. In many cases, the lowest one or two groups will have no relative value whatsoever.

Site assessments

Having rated farmland values, the planning agency must be prepared to apply these values to sites that are proposed for conversion to nonagricultural uses. Here, the second part of LESA applies.

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LESA's site assessment system is designed to protect farmland that is located within an economically viable agricultural area and has the greatest potential for continuing production. Several factors can be considered:

- Land use, including the percentage of land used for commercial farming within a given number of miles; percentage of the site commercially farmed in two of the last 10 years; and land uses adjacent to the site;
- Agricultural viability, including the size of the farm, infrastructure, land ownership, on-site investment (barns, for example), and the possible impact of conversion on other farmland;
- Land-use regulations and tax incentives, including zoning on the site and around it and the existence of agricultural districts;
- Alternative locations for the proposed use, including availability of less productive lands that could be substituted;
- The compatibility of the proposed use; that is, whether it will create flooding problems or have an impact on wetlands, historic areas, open space, culture, or unique vegetation;
- Compability of the conversion with comprehensive development plans;
- Urban infrastructure, including the distance to an urban area; the distance to water and sewer systems; and the distance to jobs, schools, and shopping.

All appropriate factors are then broken down into intervals that indicate all the possible traits that any site may display. Each interval is assigned a point value. As the site comes under scrutiny, its traits are rated for each local factor (or local standard). See Table 1.

Next, the point value is multiplied by the factor's weight and totaled for all factors. The result is a measure that indicates the site's relative importance within the community's overall land-use and farmland goals.

Last, the site assessment figure is combined with the relative value derived from the land evaluation. The sum is then compared to locally predetermined ranges that are designed to indicate when a site should be saved for agriculture or converted.

LESA's pilot programs

LESA has been tested. To avoid costly mistakes, the Soil Conservation Service set up a pilot program in 12 counties in six states. In each county, an SCS district conservationist teamed up with the county planner to devise an appropriate assessment. (The examples in Tables 1 and 2 reflect the experience of one of those pilot programs-McHenry County, Illinois.) At this point, local farmland protection groups report that only minor questions must be cleared up in each locale before LESA can work smoothly.

Among those questions: Who supplies the information, particularly for the site assessment, the point system, the factors, and the weights of each factor? How is the information displayed? How precise must it be?

Further, what is meant by terms such as agricultural use, compatible, suitable, adjacent? Which nonagricultural uses are compatible with farmland uses? How important to the evaluation of the land's productivity are the structures located on it? And how important a role should lot lines play?

Once these questions are settled, LESA can help almost any community save valuable farmland.

Using the LESA System

To assess sites where farmland is being proposed for conversion, follow these steps:

- Determine the average relative value of the land by using the land evaluation part of the LESA system.
- Based on local plans, land-use information, and site inspections, assess the site for each factor shown in the site assessment part of LESA (Table 1).
- Using Table 2, multiply the value assigned to each factor by the weight assigned to the factor (columns 4 and 2 in the following example).
- Add the totals for columns 5 and 7. This number is the site assessment subtotal.
- Add the agricultural land value to the site assessment subtotal to get the total points for the site.
- A maximum of 300 points is possible for any site, a maximum of 100 points for the land evaluation, and a maximum of 200 for the site assessment.
- In most cases, the site should be protected for agriculture when the points exceed 200. From zero to 200 points, the site has a low rating for protection; from 200 to 225 points, it has a medium rating for protection; from 225 to 250 points, it has a high rating for protection; and from 250 to 300 points, it has a very high rating for protection.

Selecting the site with the lowest total points will usually protect the best farmland located in the most viable areas.

Site number one

Consider an example. Suppose a 75-acre grain farm, located six miles from a city of 25,000, is proposed for 75 one-acre lots. Eighty percent of the area within 1.5 miles of the site are used for agriculture. One side of the site is urban. Seventy percent of the 75-acre site is being used for agriculture. This site and 80 percent of the area within 1.5 miles of the site are zoned agricultural.

Only half of the approved lots within the area have been developed. Development of this site will affect the other farms in the area. One farm next to this site is used for dairy cattle. The agricultural infrastructure is strong, but

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The planning department in McHenry County, Illinois, figured out the factors, weights, and point values that best reflected the county's farmland protection goals within a 1.5-mile radius from the specific site. That distance was chosen both because it was considered a manageable area for analysis and because it was the boundary set by the state of Illinois for municipal planning. The agency settled on 16 site assessment factors, which it grouped into six categories. Table 1 shows those factors and their weights.

TABLE 1. McHENRY COUNTY'S SITE ASSESSMENT FACTORS

Site assessment factors	Assigned weight	Point value
Agricultural land use		
Land in agriculture (within 1.5 miles of site)	2.1	
90% or more		10
75-89%		9
50-74%		6
25-49%		3
Under 25%		0
Land in agriculture adjacent to site	1.5	
90% or more		10
75-89%		9
50-74%		6
25-49%		3
Under 25%		0
Percentage of site in agriculture	1.1	
75-100%		10
50-74%		7
25-49%		4
Under 25%		0
Zoning		
Land zoned agricultural (within 1.5 miles of site)	1.8	
90% or more		10
75-89%		9
50-74%		6
25-49%		3
Under 25%		0
Availability of zoned land for proposed use	1.3	
Land is outside jurisdiction		10
None available within jurisdiction		0
Compatibility/Impact of uses		
Distance from city/village	1.7	
Over 1.5 miles		10
1.5 miles or less		9
1 mile or less		7
.5 mile or less		3
.25 mile or less		0
Environmental impact of proposed use	1.7	
Negative impact		10
Little or none (with special design or protective measures)		5
Little or none		0
Compatibility with surrounding area	1.5	
Not compatible		10
Somewhat compatible		3
Totally compatible		0
Compatibility/Impact of uses (contd.)		
Impact on unique historic/cultural features	.2	
Negative impact		10
No impact		0
Urban and rural infrastructure		
Transportation accessibility	1.3	
Limited access (mostly rural township roads)		10
Access to major highway (outside jurisdiction)		7
Access to major highway (within jurisdiction)		3
Access to full range (bus, rail, major highway)		0
Availability of central sewer	.8	
None within 1.5 miles		10
Sewer line within .5 mile		5
Sewer line within .25 mile		0
Agricultural support system/service	.6	
Support system present		10
Some limitations to system		6
Severe limitations to system		1
Land use feasibility		
Soil suitability for on-site waste disposal	1.1	
Restricted use of septic systems		10
Special management required		7
Few or no limitations		0
Size of site feasible for farming	.4	
100 acres or more		10
40-99 acres		9
20-39 acres		5
5-19 acres		3
Under 5 acres		0
Adopted plans		
Consistency of proposed use with county land-use plan	2.1	
Incompatible with plan		10
Compatible with intent of plan, but not with plan map		2
Totally compatible		0
Consistency with municipal plan	.8	
Inconsistent with plan or parcel is outside jurisdiction		10
Within jurisdiction, but no plan recorded		5
Consistent with municipal plan		0

TABLE 2. McHENRY COUNTY'S POINT SYSTEM FOR ASSESSING FARMLAND CONVERSION

Site assessment factors McHenry County, Illinois	1 Max. points per factor	2 Assigned weight	3 Total max., points x weight	4 Site no. 1, points assigned	5 Points x weight	6 Siteno.2, points assigned	7 Points x weight
Agricultural land use							
Percent of land in agriculture (within 1.5 miles)	10	2.1*	21	9	18.9	3	6.3
Percent of land in agriculture adjacent to site	10	1.5	15	8	12	3	4.5
Percent of site in agriculture	10	1.1	11	7	7.7	7	7.7
Zoning							
Percent of land zoned agriculture (within 1.5 miles)	10	1.8	18	8	14.4	3	5.4
Availability of zoned land	10	1.3	13	10	13	3	3.9
Compatibility/Impact of uses							
Distance from city/village	10	1.7	17	10	17	0	0
Environmental impact	10	1.7	17	10	17	4	0
Compatibility with surrounding area	10	1.5	15	10	15	0	0
Impact on historic/cultural features	10	.2	2	10	2	0	0
Urban and rural infrastructures							
Transportation accessibility	10	1.3	13	10	13	0	0
Availability of central sewer	10	.8	8	10	8	0	0
Agricultural support system	10	.6	6	10	6	2	1.2
Land-use feasibility							
Soil suitability for on-site disposal	10	1.1	11	5	5.5	0	0
Size of site	10	.4	4	9	3.2	9	3.2
Adopted plans							
Consistency with county plan	10	2.1	21	10	21	0	0
Consistency with municipal plan	10	.8	8	10	8	0	0
Site assessment subtotal			200		181.7		32.2
Agland Evaluation subtotal			100		92		92
Total points accrued					273.7		124.2
Total points possible			300		300		300

*The weights assigned represent the relative importance of that factor as compared with all other factors; the weights are adjusted to produce a maximum of 200 points for the site assessment part of LESA.

no urban infrastructure exists. Forty percent of the soils on this site are rated as unsuitable for on-site septic disposal. Both the county and the local municipal plans indicate that this area should remain in agriculture. The relative value of this site for cropland is 92.

Site number two

Take another case. Suppose a 75-acre grain farm located next to a city of 25,000 is proposed for a 200-lot subdivision. Twenty-five percent of the area within 1.5 miles of the site is used for agriculture, and urban development exists on three sides. Seventy percent of the site is used for' agriculture. This site and 75 percent of the area within 1.5 miles are zoned for nonagricultural use.

The county plan and the municipal plan indicate this is an urban growth area. Central water and sanitary sewer systems exist at the edge of the site, and the local municipality will extend services to it. There are a number of undeveloped, approved lots in the area, but most of them are four to six miles away from the city. The development of this site will affect one other grain farm. Most of the agricultural infrastructure has been lost or changed to support the urban landowner. The relative value of this site for cropland is 92.

Thus, both sites have the same relative value as cropland. However, the site assessment factors clearly show that site number one should be retained as farmland. Site number two is a more likely candidate for conversion.