Planning Commission
21 May 2008

ITEM NO. 11 CPA-2004-02
Horizon 2020, Chapter 7: Industrial and Employment Related Land Use.

Michael Almon: I'm here representing the Sustainability Action Network, concerned with the sustainability of our food security and food system. As Gwen Klingenberg pointed out earlier, the future is going to encompass a lot about prime agriculture land. For pretty much every commodity in the world right now, the demand is outstripping the supply. And that, as you well know, applies to food as well.

It's going to be increasingly important with the phenomenon of Peak Oil and the cost of the oil inputs – pesticides, fuels, whatever – into agriculture, that much, much more of our food be grown regionally, and our soils are what's going to be able to make that happen.

As far as the approximate million acres of prime farmland that's lost each year in the United States, most of that, the lion's share, is urban fringe. That's due to sprawl, but it's also due to the fact that most cities are built near rivers, near the bottoms, near flood plains. That's also where the best soil is. So to say that the urban growth area should exempt our concern for the prime soils contradicts the very fact that the urban growth area is pretty much guaranteed to encompass the prime soils.

Likewise, those prime soils, as Ms. Thellman pointed out, the best prime soils – Class I and Class II – are the bottom lands. They are the flat soils that the [locational] criteria "Have minimal average slope" also applies to. So we have a built in conflict here.

I want to point out about these locational criteria. I'm opposed to removing the "prime soils" from the locational criteria as long as they're clearly defined with references to maps, as Ms. Clark pointed out. These criteria are not "negative" or "positive" criteria [as the Director of Planning called them]. That's faulty logic; that's expedient logic. These criteria, as are any criteria, are limits. They set the limits of where we want to put something and where we don't want to put something, pure and simple. They're not negative or positive.

"By highways" is saying you're not going to locate industrial sites fifteen miles from highways. By "adequate parcel size" says you're not going to locate industry on sites that are smaller than forty acres, and such and such. It's semantics whether you think of this as positive or negative. Obviously, "outside the regulatory floodplain", the way that's worded is negative phrasing. But it's just semantics.

So to eliminate from the locational criteria "prime agricultural lands" - and that needs to be defined very clearly – <u>because it's a negative criteria</u>, that's faulty logic. So when you review this whole thing, remember that these simply are limits, and the limits are logical limits. and all the developers need to know what the rules are when they walk into the game.

Commissioner Eichhorn: Thank you Michael. Any questions? Anyone else? I don't think we have anyone else. Alright, we'll close the public hearing.

Barbara A. Clark
Maggie's Farm
2050 E. 1550 Road
Lawrence, KS 66044

RECEIVED

JUL 03 2008

CITY MANAGERS OFFICE
LAWRENCE, KS

June 17, 2008

Re: Horizon 2020 – Chapter 7 – Industrial and Employment-Related Land Use

Lawrence City Commission
Mayor Dever, Commissioners; Hack, Amyx, Chestnut, and Highberger
6 E. 6th Street
Lawrence, KS 66044

Dear Mayor Dever, Commissioners Hack, Amyx, Chestnut, and Highberger:

As a member of Citizens for Responsible Planning I have been working towards objective, authoritative language to include in The Comprehensive Plan – Horizon 2020 – Chapter 7 that will value and preserve Nonirrigated Capability Class 1 & 2 Soils that are also classified as Prime Farmland by the United States Department of Agriculture / Natural Resources Conservation Service (USDA/NRCS). Many public discussions took place at Planning Commission meetings over the past several months. Planning Commissioners expressed interest in finding a way to include language within Chapter 7's locational criteria that would address preservation of these soils.

Discussion focused on the preservation of Nonirrigated Capability Class 1 and Class 2 Soils that are also identified as Prime Farmland by the USDA/NRCS. Combining these two classification categories creates a very limited group of soils defined on pages 37 & 38 of the attached report. They represent the rarest and finest agricultural soils of Douglas County.

The attached Custom Soil Resource Report of Douglas County, Kansas was obtained from the USDA/NRCS. This specific report focuses on the soils surrounding the Lawrence Municipal Airport. The most recently revised version of Horizon 2020 – Chapter 7 states: "The area around the Lawrence Municipal Airport best suited for industrial development generally lies southwest of the airport and North of I-70 and encompasses roughly 230 acres." This area in actuality is comprised of Nonirrigated Capability Class 1 and Class 2 Soils. (See map pg. 39 of attached report). This area has the largest contiguous extent of Capability Class 1 and Class 2 Soils in Douglas County.

To lend perspective, Douglas County has a total of 303, 808 acres. Nonirrigated Capability Class 1 Soils that are also classified as Prime Farmland comprise only 8419 acres. Nonirrigated Capability Class 2 Soils that are also classified as Prime Farmland comprise 25,141 acres. In total this is 11.05 % of all soils in Douglas County. These soils have the greatest potential for securing a local and regional food system for our community and region. Their greatest worth lies in maintaining their agricultural zoning.

I request that the City Commission refer Horizon 2020 – Chapter 7 back to the Planning Commission to allow for the continuance of discussion and development of an equitable chapter that addresses the needs of the community for industrial development and the preservation of Nonirrigated Capability Class 1 and Class 2 Soils. These two goals are not mutually exclusive. But, it is my opinion that ill-conceived industrial development that threatens to ruin our greatest agricultural asset be strongly questioned and objectively reviewed. There is no better format for this than the Planning Commission.

Respectfully submitted,

Barbara A. Clark

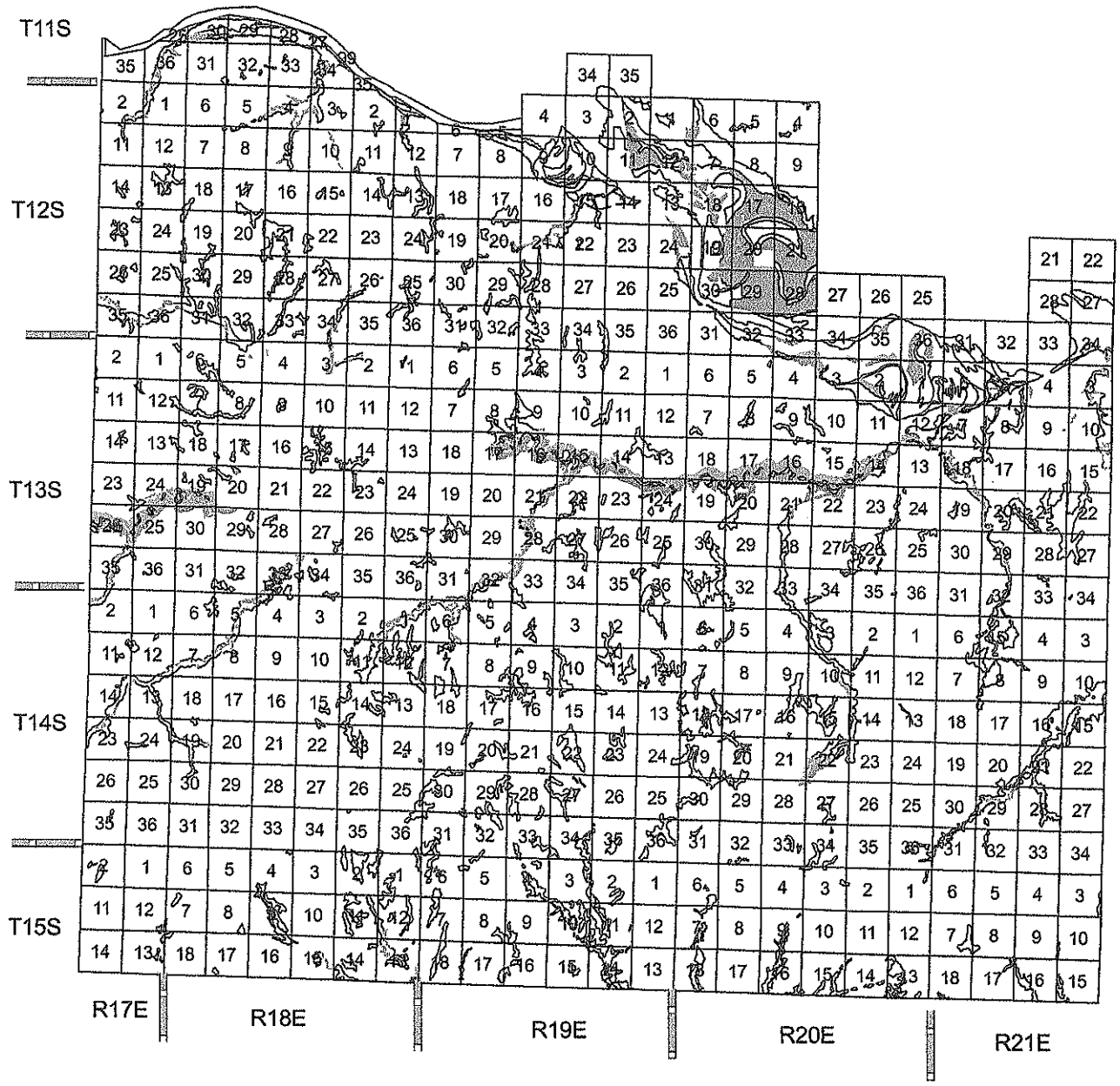
Barbara A. Clark

Attachments:

1. **Land Capability Class 1 and 2 in Douglas County, Kansas with Acreage and Proportionate Extent of the Soils: United States Department of Agriculture/Natural Resources Conservation Service**

2. **Custom Soil Resource Report for Douglas County, Kansas – Lawrence Airport area: United States Department of Agriculture/ Natural Resources Conservation Service**

Land Capability Class 1 and 2 in Douglas County, Kansas



Acreage and Proportionate Extent of the Soils

Douglas County, Kansas

Map symbol	Map unit name	Acres	Percent
7031	Eudora silt loam, occasionally flooded	567	0.2
7050	Kennebec silt loam, occasionally flooded	6,786	2.2
7106	Eudora-Bismarckgrove silt loams, rarely flooded	1,941	0.6
7123	Eudora silt loam, rarely flooded	681	0.2
7127	Eudora-Kimo complex, overwash, rarely flooded	3,449	1.1
7128	Eudora-Kimo complex, rarely flooded	62	*
7170	Reading silt loam, rarely flooded	4,093	1.3
7173	Reading silty clay loam, rarely flooded	204	*
7176	Rossville silt loam, very rarely flooded	1,238	0.4
7208	Muscotah silty clay loam, very rarely flooded	6	*
7213	Reading silt loam, moderately wet, very rarely flooded	772	0.3
7214	Eudora silt loam, very rarely flooded	180	*
7260	Gymer silt loam, 1 to 3 percent slopes	3,567	1.2
7301	Martin silty clay loam, 1 to 3 percent slopes	4,404	1.4
7500	Pawnee clay loam, 1 to 3 percent slopes	1,492	0.5
7530	Sharpsburg silt loam, 1 to 4 percent slopes	643	0.2
7852	Judson silt loam, rarely flooded	5	*
8160	Leanna silt loam, occasionally flooded	1,629	0.5
8201	Osage silty clay loam, occasionally flooded	4	*
8302	Verdigris silt loam, occasionally flooded	370	0.1
8501	Mason silt loam, rarely flooded	15	*
8621	Bates loam, 1 to 3 percent slopes	146	*
8911	Summit silty clay loam, 1 to 3 percent slopes	19	*
8961	Woodson silt loam, 0 to 1 percent slopes	1,287	0.4
Total		33,560	11.0

* Less than 0.1 percent.

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Douglas County, Kansas

Lawrence Airport area

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

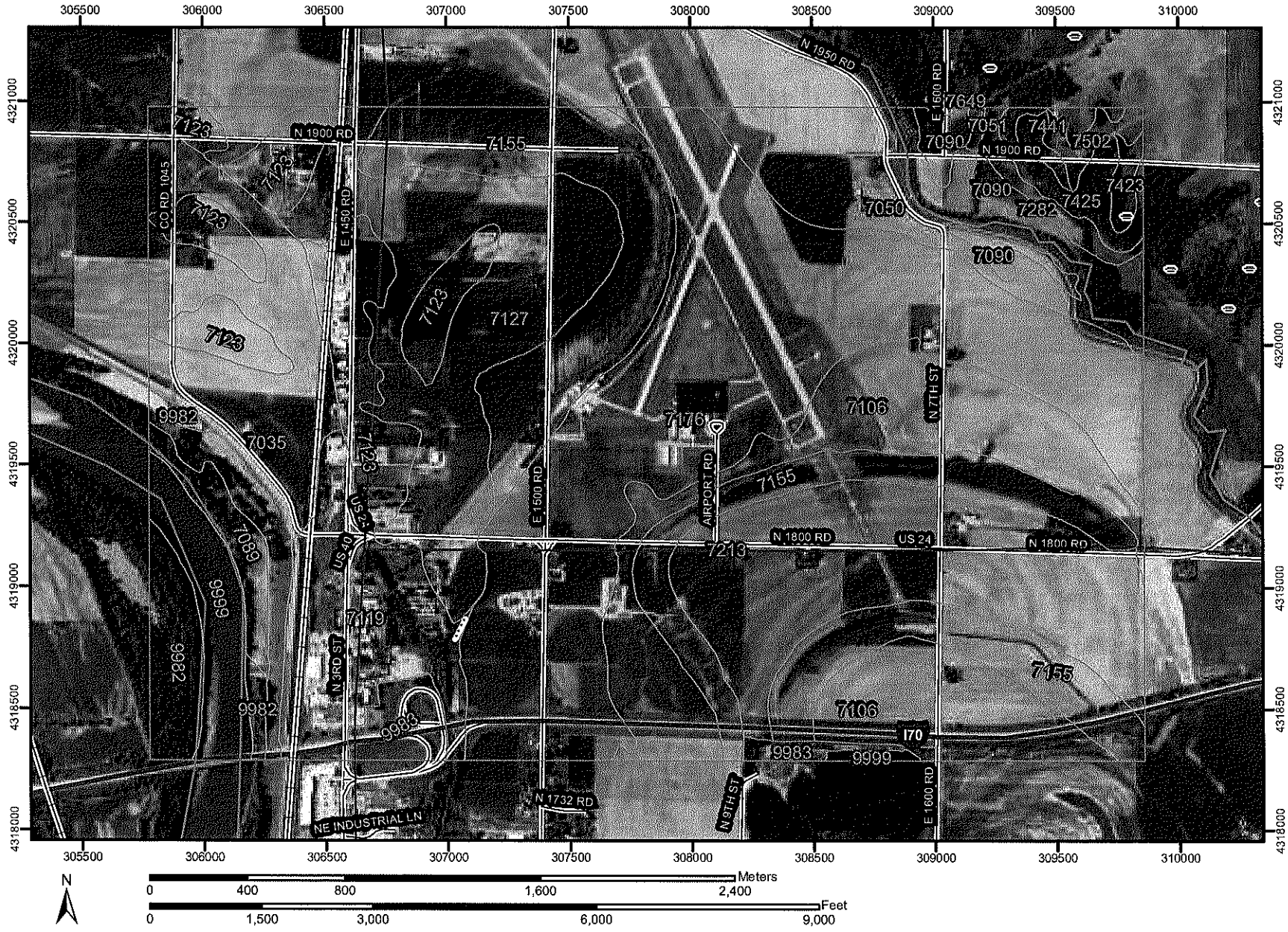
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Douglas County, Kansas
Survey Area Data: Version 5, Dec 21, 2007

Date(s) aerial images were photographed: 1991

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Douglas County, Kansas (KS045)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7035	Eudora-Bismarckgrove fine sandy loams, overwash, occasionally flooded	192.1	7.1%
7050	Kennebec silt loam, occasionally flooded	152.2	5.6%
7051	Kennebec silt loam, frequently flooded	2.7	0.1%
7089	Stonehouse-Eudora fine sandy loams, overwash, occasionally flooded	30.5	1.1%
7090	Wabash silty clay loam, occasionally flooded	29.7	1.1%
7106	Eudora-Bismarckgrove silt loams, rarely flooded	286.2	10.6%
7119	Eudora-Urban land complex, rarely flooded	144.2	5.3%
7123	Eudora silt loam, rarely flooded	177.8	6.6%
7127	Eudora-Kimo complex, overwash, rarely flooded	269.7	9.9%
7155	Kimo silty clay loam, rarely flooded	354.4	13.1%
7176	Rossville silt loam, very rarely flooded	566.6	20.9%
7213	Reading silt loam, moderately wet, very rarely flooded	271.9	10.0%
7282	Konawa fine sandy loam, 8 to 12 percent slopes	16.3	0.6%
7423	Morrill clay loam, 3 to 7 percent slopes	8.7	0.3%
7425	Morrill clay loam, 7 to 12 percent slopes	32.5	1.2%
7441	Morrill-gravelly loam, 4 to 20 percent slopes, stony	7.2	0.3%
7502	Pawnee clay loam, 3 to 6 percent slopes	12.7	0.5%
7649	Thurman complex, 4 to 10 percent slopes	0.5	0.0%
9982	Fluvents, frequently flooded	55.1	2.0%
9983	Gravel pits and quarries	38.4	1.4%
9999	Water	62.0	2.3%
Totals for Area of Interest (AOI)		2,711.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly

indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Douglas County, Kansas Version date:12/21/2007 7:33:37 AM

7035—Eudora-Bismarckgrove fine sandy loams, overwash, occasionally flooded

Map Unit Setting

Elevation: 750 to 980 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Eudora and similar soils: 55 percent
Bismarckgrove and similar soils: 25 percent
Minor components: 20 percent

Description of Eudora

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.1 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Fine sandy loam
7 to 14 inches: Silt loam
14 to 40 inches: Silt loam
40 to 48 inches: Silt loam
48 to 80 inches: Very fine sandy loam

Description of Bismarckgrove

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 10.6 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 6 inches: Fine sandy loam
6 to 14 inches: Silty clay loam
14 to 19 inches: Silty clay loam
19 to 29 inches: Silt loam
29 to 44 inches: Silt loam
44 to 80 inches: Stratified loamy fine sand to fine sandy loam

Minor Components

Bourbonais

Percent of map unit: 10 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Kimo

Percent of map unit: 5 percent
Landform: Meander scars on flood-plain steps
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Stonehouse

Percent of map unit: 5 percent
Landform: Flood-plain steps
Ecological site: Sandy Lowland (PE 30-37) (R106XY023KS)

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7050—Kennebec silt loam, occasionally flooded

Map Unit Setting

Elevation: 400 to 1,300 feet

Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 45 to 64 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Kennebec and similar soils: 95 percent
Minor components: 4 percent

Description of Kennebec

Setting
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 40 to 44 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water capacity: Very high (about 12.8 inches)

Interpretive groups
Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (Draft) (PE 35-42) (R112XY013KS)

Typical profile
0 to 10 inches: Silt loam
10 to 36 inches: Silt loam
36 to 48 inches: Silt loam
48 to 60 inches: Silt loam

Minor Components

Wabash
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Aquolls, ponded
Percent of map unit:
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

7051—Kennebec silt loam, frequently flooded

Map Unit Setting
Elevation: 400 to 2,000 feet

Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Kennebec and similar soils: 88 percent
Minor components: 12 percent

Description of Kennebec

Setting
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 40 to 44 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water capacity: Very high (about 12.8 inches)

Interpretive groups
Land capability (nonirrigated): 5w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile
0 to 10 inches: Silt loam
10 to 22 inches: Silty clay loam
22 to 38 inches: Silty clay loam
38 to 60 inches: Silty clay loam

Minor Components

Wabash
Percent of map unit: 3 percent
Landform: Flood plains
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Vinland
Percent of map unit: 3 percent
Landform: Hillslopes
Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Sogn
Percent of map unit: 3 percent
Landform: Hillslopes
Ecological site: Shallow Limy (PE 35-42) (R112XY028KS)

Martin
Percent of map unit: 3 percent
Landform: Hillslopes

Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Aquolls, ponded

Percent of map unit:
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7089—Stonehouse-Eudora fine sandy loams, overwash, occasionally flooded

Map Unit Setting

Elevation: 750 to 980 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Stonehouse and similar soils: 50 percent
Eudora and similar soils: 30 percent
Minor components: 20 percent

Description of Stonehouse

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability (nonirrigated): 4s
Ecological site: Sandy Lowland (PE 30-37) (R106XY023KS)

Typical profile

0 to 9 inches: Fine sandy loam
9 to 23 inches: Loamy fine sand

23 to 31 inches: Stratified loamy sand
31 to 45 inches: Stratified fine sand
45 to 71 inches: Stratified sandy loam
71 to 80 inches: Stratified loamy fine sand

Description of Eudora

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.1 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Fine sandy loam
7 to 14 inches: Silt loam
14 to 40 inches: Silt loam
40 to 48 inches: Silt loam
48 to 80 inches: Very fine sandy loam

Minor Components

Kimo

Percent of map unit: 10 percent
Landform: Meander scars on flood-plain steps
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Bourbonais

Percent of map unit: 5 percent
Landform: Flood-plain steps
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Bismarckgrove

Percent of map unit: 5 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Aquolls

Percent of map unit:

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

7090—Wabash silty clay loam, occasionally flooded

Map Unit Setting

Elevation: 400 to 1,300 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Wabash and similar soils: 91 percent
Minor components: 9 percent

Description of Wabash

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 2 to 9 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water capacity: Moderate (about 8.1 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: Loamy Lowland (PE 30-37) (R106XY019KS)
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Typical profile

0 to 5 inches: Silty clay loam
5 to 16 inches: Silty clay loam
16 to 52 inches: Silty clay
52 to 70 inches: Silty clay

Minor Components

Kennebec

Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Reading
Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (Draft) (PE 35-42) (R112XY013KS)

7106—Eudora-Bismarckgrove silt loams, rarely flooded

Map Unit Setting
Elevation: 800 to 1,050 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Eudora and similar soils: 55 percent
Bismarckgrove and similar soils: 30 percent
Minor components: 15 percent

Description of Eudora

Setting
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups
Land capability (nonirrigated): 1
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile
0 to 7 inches: Silt loam
7 to 14 inches: Silt loam
14 to 40 inches: Silt loam
40 to 48 inches: Silt loam
48 to 80 inches: Very fine sandy loam

Description of Bismarckgrove

Setting
Landform: Terraces
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.2 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 6 inches: Silt loam
6 to 14 inches: Silty clay loam
14 to 19 inches: Silty clay loam
19 to 29 inches: Silt loam
29 to 44 inches: Silt loam
44 to 80 inches: Stratified loamy fine sand to fine sandy loam

Minor Components

Bourbonais

Percent of map unit: 5 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Kimo

Percent of map unit: 5 percent
Landform: Meander scars on flood-plain steps
Landform position (three-dimensional): Tread
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Stonehouse

Percent of map unit: 5 percent
Landform: Flood-plain steps
Ecological site: Sandy Lowland (PE 30-37) (R106XY023KS)

7119—Eudora-Urban land complex, rarely flooded

Map Unit Setting

Elevation: 750 to 980 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Eudora and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent

Description of Eudora

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Silt loam
7 to 14 inches: Silt loam
14 to 40 inches: Silt loam
40 to 48 inches: Silt loam
48 to 80 inches: Very fine sandy loam

Description of Urban Land

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear

Properties and qualities

Slope: 0 to 1 percent
Frequency of flooding: Rare

Interpretive groups

Land capability (nonirrigated): 8

Minor Components

Bismarckgrove

Percent of map unit: 15 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

7123—Eudora silt loam, rarely flooded

Map Unit Setting

Elevation: 800 to 1,050 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Eudora and similar soils: 85 percent
Minor components: 15 percent

Description of Eudora

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups

Land capability (nonirrigated): 1
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Silt loam
7 to 14 inches: Silt loam
14 to 40 inches: Silt loam
40 to 48 inches: Silt loam
48 to 80 inches: Very fine sandy loam

Minor Components

Bismarckgrove

Percent of map unit: 10 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Bourbonais

Percent of map unit: 5 percent
Landform: Flood-plain steps
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Aquolls, ponded

Percent of map unit:
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7127—Eudora-Kimo complex, overwash, rarely flooded

Map Unit Setting

Elevation: 400 to 1,200 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Eudora and similar soils: 60 percent
Kimo and similar soils: 30 percent
Minor components: 10 percent

Description of Eudora

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Very high (about 12.2 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 12 inches: Silt loam
12 to 72 inches: Silt loam

Description of Kimo

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey over loamy alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 22 to 26 inches
Frequency of flooding: Rare
Frequency of ponding: Occasional
Available water capacity: High (about 11.4 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Typical profile

0 to 6 inches: Silty clay loam
6 to 28 inches: Silty clay
28 to 60 inches: Silt loam

Minor Components

Sarpy

Percent of map unit: 5 percent
Landform: Flood plains
Ecological site: Sandy Lowland (PE 30-37) (R106XY023KS)

Wabash

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

7155—Kimo silty clay loam, rarely flooded

Map Unit Setting

Elevation: 750 to 980 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Kimo and similar soils: 85 percent
Minor components: 15 percent

Description of Kimo

Setting

Landform: Meander scars on terraces
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Clayey over loamy alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 22 to 26 inches
Frequency of flooding: Rare
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.4 inches)

Interpretive groups

Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Silty clay loam
7 to 15 inches: Silty clay
15 to 23 inches: Silty clay loam
23 to 27 inches: Silty clay loam
27 to 60 inches: Silt loam
60 to 80 inches: Silt loam

Minor Components

Eudora

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Bismarckgrove

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Kiro

Percent of map unit: 5 percent
Landform: Depressions on flood-plain steps
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

7176—Rossville silt loam, very rarely flooded

Map Unit Setting

Elevation: 920 to 1,080 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Rossville and similar soils: 85 percent
Minor components: 15 percent

Description of Rossville

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Available water capacity: Very high (about 13.0 inches)

Interpretive groups

Land capability (nonirrigated): 1
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Typical profile

0 to 7 inches: Silt loam
7 to 14 inches: Silt loam
14 to 21 inches: Silt loam
21 to 39 inches: Silt loam
39 to 57 inches: Silt loam
57 to 80 inches: Silt loam

Minor Components

Reading

Percent of map unit: 5 percent
Landform: Flood-plain steps
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Muscotah

Percent of map unit: 5 percent

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Eudora
Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

7213—Reading silt loam, moderately wet, very rarely flooded

Map Unit Setting
Elevation: 920 to 1,080 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Reading and similar soils: 85 percent
Minor components: 15 percent

Description of Reading

Setting
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 40 to 44 inches
Frequency of flooding: Very rare
Frequency of ponding: None
Available water capacity: High (about 11.6 inches)

Interpretive groups
Land capability (nonirrigated): 2w
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Typical profile
0 to 8 inches: Silt loam
8 to 14 inches: Silt loam
14 to 21 inches: Silty clay loam
21 to 29 inches: Silty clay loam
29 to 42 inches: Silty clay loam
42 to 60 inches: Silty clay loam
60 to 80 inches: Silty clay loam

Minor Components

Muscotah

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

Rossville

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Other vegetative classification: CLAY LOWLAND (PE30-37) (106XY004KS_1)

Muscotah

Percent of map unit: 5 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Ecological site: Loamy Lowland (PE 30-37) (R106XY013KS)

7282—Konawa fine sandy loam, 8 to 12 percent slopes

Map Unit Setting

Elevation: 1,000 to 1,200 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 43 to 66 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Konawa and similar soils: 90 percent
Minor components: 10 percent

Description of Konawa

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy glaciofluvial deposits

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: Savannah (PE 30-37) (R106XY025KS)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 19 inches: Fine sandy loam
19 to 39 inches: Clay loam
39 to 47 inches: Clay loam
47 to 60 inches: Loam

Minor Components

Gymer

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (three-dimensional): Crest, side slope
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Welda

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Ecological site: Savannah (PE 30-37) (R106XY025KS)

7423—Morrill clay loam, 3 to 7 percent slopes

Map Unit Setting

Elevation: 700 to 1,500 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Morrill and similar soils: 90 percent
Minor components: 10 percent

Description of Morrill

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy glaciofluvial deposits

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Typical profile

0 to 10 inches: Clay loam
10 to 16 inches: Clay loam
16 to 56 inches: Clay loam
56 to 66 inches: Clay loam

Minor Components

Oska

Percent of map unit: 5 percent
Landform: Hillslopes
Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Pawnee

Percent of map unit: 5 percent
Landform: Hillslopes
Ecological site: Clay Upland (PE 30-37) (R106XY007KS)

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7425—Morrill clay loam, 7 to 12 percent slopes

Map Unit Setting

Elevation: 700 to 2,000 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Morrill and similar soils: 85 percent
Minor components: 15 percent

Description of Morrill

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy glaciofluvial deposits

Properties and qualities

Slope: 7 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability (nonirrigated): 4e
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Typical profile

0 to 8 inches: Clay loam
8 to 13 inches: Clay loam
13 to 56 inches: Clay loam
56 to 66 inches: Clay loam

Minor Components

Martin

Percent of map unit: 5 percent
Landform: Hillslopes
Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Pawnee

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Ecological site: Clay Upland (PE 30-37) (R106XY007KS)

Thurman

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Ecological site: Savannah (PE 30-37) (R106XY025KS)

Basehor

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Ecological site: Shallow Savannah (PE 30-37) (R106XY031KS)

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7441—Morrill-gravelly loam, 4 to 20 percent slopes, stony

Map Unit Setting

Elevation: 800 to 2,000 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Morrill, stony, and similar soils: 85 percent
Minor components: 15 percent

Description of Morrill, Stony

Setting

Landform: Hillslopes
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy glaciofluvial deposits

Properties and qualities

Slope: 4 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Typical profile

0 to 10 inches: Gravelly loam
10 to 15 inches: Gravelly clay loam
15 to 42 inches: Gravelly clay loam
42 to 60 inches: Gravelly sandy clay loam

Minor Components

Sogn

Percent of map unit: 10 percent
Landform: Hillslopes
Ecological site: Shallow Limy (PE 35-42) (R112XY028KS)

Pawnee

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest, side slope
Ecological site: Clay Upland (PE 30-37) (R106XY007KS)

Aquolls

Percent of map unit:
Landform: Depressions, drainageways, hillslopes
Down-slope shape: Concave
Across-slope shape: Concave

7502—Pawnee clay loam, 3 to 6 percent slopes

Map Unit Setting

Elevation: 700 to 1,600 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F

Frost-free period: 175 to 215 days

Map Unit Composition

Pawnee and similar soils: 85 percent
Minor components: 15 percent

Description of Pawnee

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey drift

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 17 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability (nonirrigated): 3e
Ecological site: Clay Upland (PE 30-37) (R106XY007KS)

Typical profile

0 to 7 inches: Clay loam
7 to 12 inches: Clay loam
12 to 34 inches: Clay
34 to 54 inches: Clay loam
54 to 72 inches: Sandy clay loam

Minor Components

Oska

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Morrill

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Martin

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Ecological site: Loamy Upland (Draft) (PE 35-42) (R112XY015KS)

Aquolls
Percent of map unit:
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

7649—Thurman complex, 4 to 10 percent slopes

Map Unit Setting
Elevation: 700 to 2,000 feet
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Thurman and similar soils: 35 percent
Minor components: 65 percent

Description of Thurman

Setting
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy eolian sands

Properties and qualities
Slope: 4 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups
Land capability (nonirrigated): 4e
Ecological site: Savannah (PE 30-37) (R106XY025KS)

Typical profile
0 to 13 inches: Loamy sand
13 to 22 inches: Loamy sand
22 to 60 inches: Fine sand

Minor Components

Unnamed, coarse-loamy
Percent of map unit: 30 percent
Landform: Hillslopes
Landform position (three-dimensional): Base slope
Down-slope shape: Convex

Across-slope shape: Convex
Ecological site: Savannah (PE 30-37) (R106XY025KS)

Unnamed, fine-loamy minor component
Percent of map unit: 25 percent
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Ecological site: Savannah (PE 30-37) (R106XY025KS)

Morrill
Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Sharpsburg
Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

Gymer
Percent of map unit: 3 percent
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Ecological site: Loamy Upland (PE 30-37) (R106XY015KS)

9982—Fluvents, frequently flooded

Map Unit Setting
Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition
Fluvents and similar soils: 100 percent

Description of Fluvents

Setting
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty alluvium

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 33 to 38 inches
Frequency of flooding: Frequent
Frequency of ponding: None

Available water capacity: Moderate (about 9.0 inches)

Interpretive groups

Land capability (nonirrigated): 6w

Typical profile

0 to 60 inches: Silty clay loam

Minor Components

Aquolls

Percent of map unit:
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

9983—Gravel pits and quarries

Map Unit Setting

Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 41 to 64 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Pits, borrow: 100 percent

Description of Pits, Borrow

Setting

Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex

9999—Water

Map Unit Setting

Mean annual precipitation: 31 to 47 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 175 to 215 days

Map Unit Composition

Water: 100 percent

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Nonirrigated Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

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

Class 1 soils have few limitations that restrict their use.

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

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

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

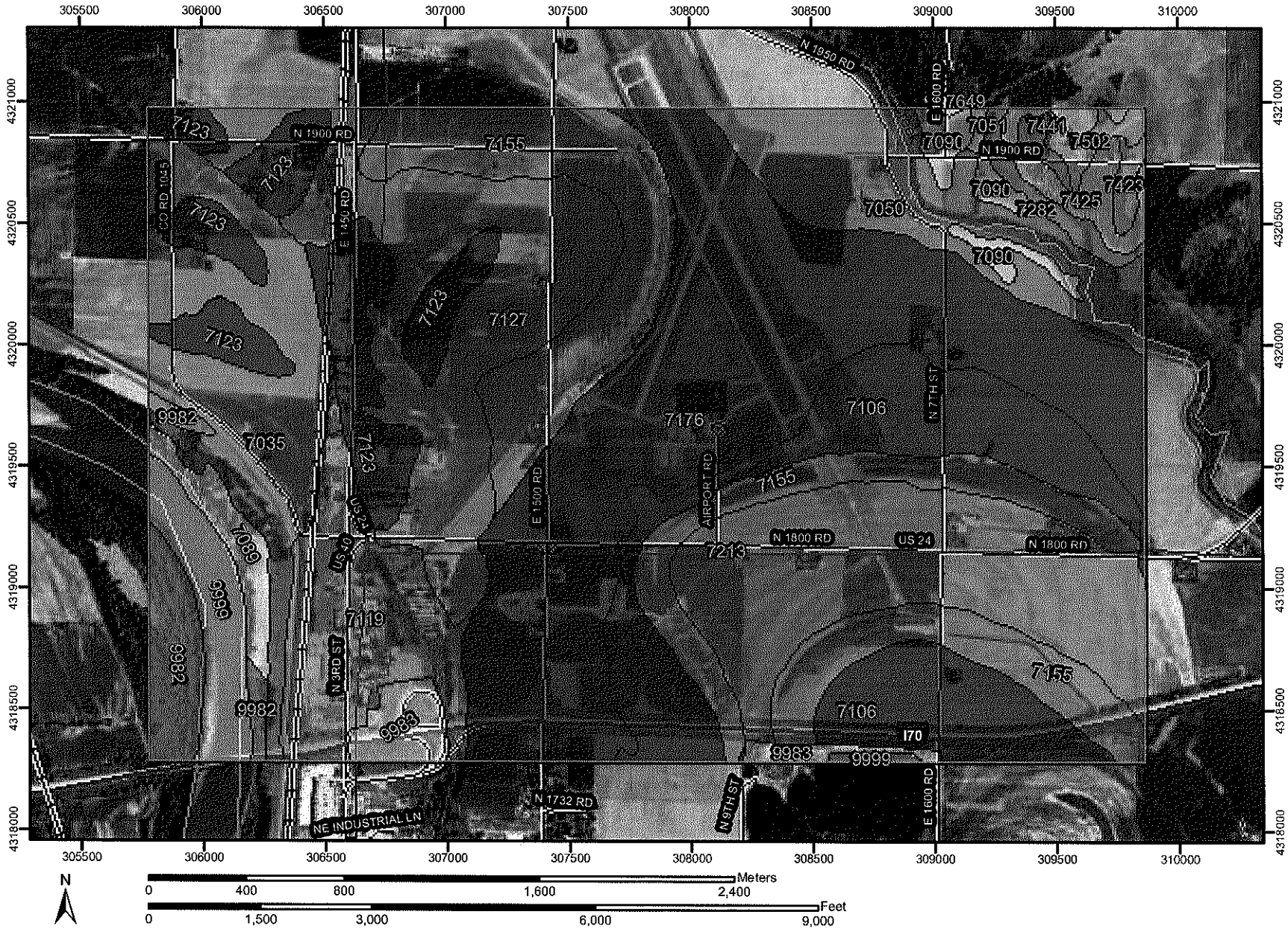
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Nonirrigated Capability Class



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Douglas County, Kansas
Survey Area Data: Version 5, Dec 21, 2007

Date(s) aerial images were photographed: 1991

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Nonirrigated Capability Class

Nonirrigated Capability Class— Summary by Map Unit — Douglas County, Kansas				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
7035	Eudora-Bismarckgrove fine sandy loams, overwash, occasionally flooded	2	192.1	7.1%
7050	Kennebec silt loam, occasionally flooded	2	152.2	5.6%
7051	Kennebec silt loam, frequently flooded	5	2.7	0.1%
7089	Stonehouse-Eudora fine sandy loams, overwash, occasionally flooded	4	30.5	1.1%
7090	Wabash silty clay loam, occasionally flooded	3	29.7	1.1%
7106	Eudora-Bismarckgrove silt loams, rarely flooded	1	286.2	10.6%
7119	Eudora-Urban land complex, rarely flooded	2	144.2	5.3%
7123	Eudora silt loam, rarely flooded	1	177.8	6.6%
7127	Eudora-Kimo complex, overwash, rarely flooded	2	269.7	9.9%
7155	Kimo silty clay loam, rarely flooded	2	354.4	13.1%
7176	Rossville silt loam, very rarely flooded	1	566.6	20.9%
7213	Reading silt loam, moderately wet, very rarely flooded	2	271.9	10.0%
7282	Konawa fine sandy loam, 8 to 12 percent slopes	6	16.3	0.6%
7423	Morrill clay loam, 3 to 7 percent slopes	3	8.7	0.3%
7425	Morrill clay loam, 7 to 12 percent slopes	4	32.5	1.2%
7441	Morrill-gravelly loam, 4 to 20 percent slopes, stony	6	7.2	0.3%
7502	Pawnee clay loam, 3 to 6 percent slopes	3	12.7	0.5%
7649	Thurman complex, 4 to 10 percent slopes	4	0.5	0.0%
9982	Fluvents, frequently flooded	6	55.1	2.0%
9983	Gravel pits and quarries		38.4	1.4%

Nonirrigated Capability Class— Summary by Map Unit — Douglas County, Kansas				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9999	Water		62.0	2.3%
Totals for Area of Interest (AOI)			2,711.3	100.0%

Rating Options—Nonirrigated Capability Class

Aggregation Method: Dominant Condition

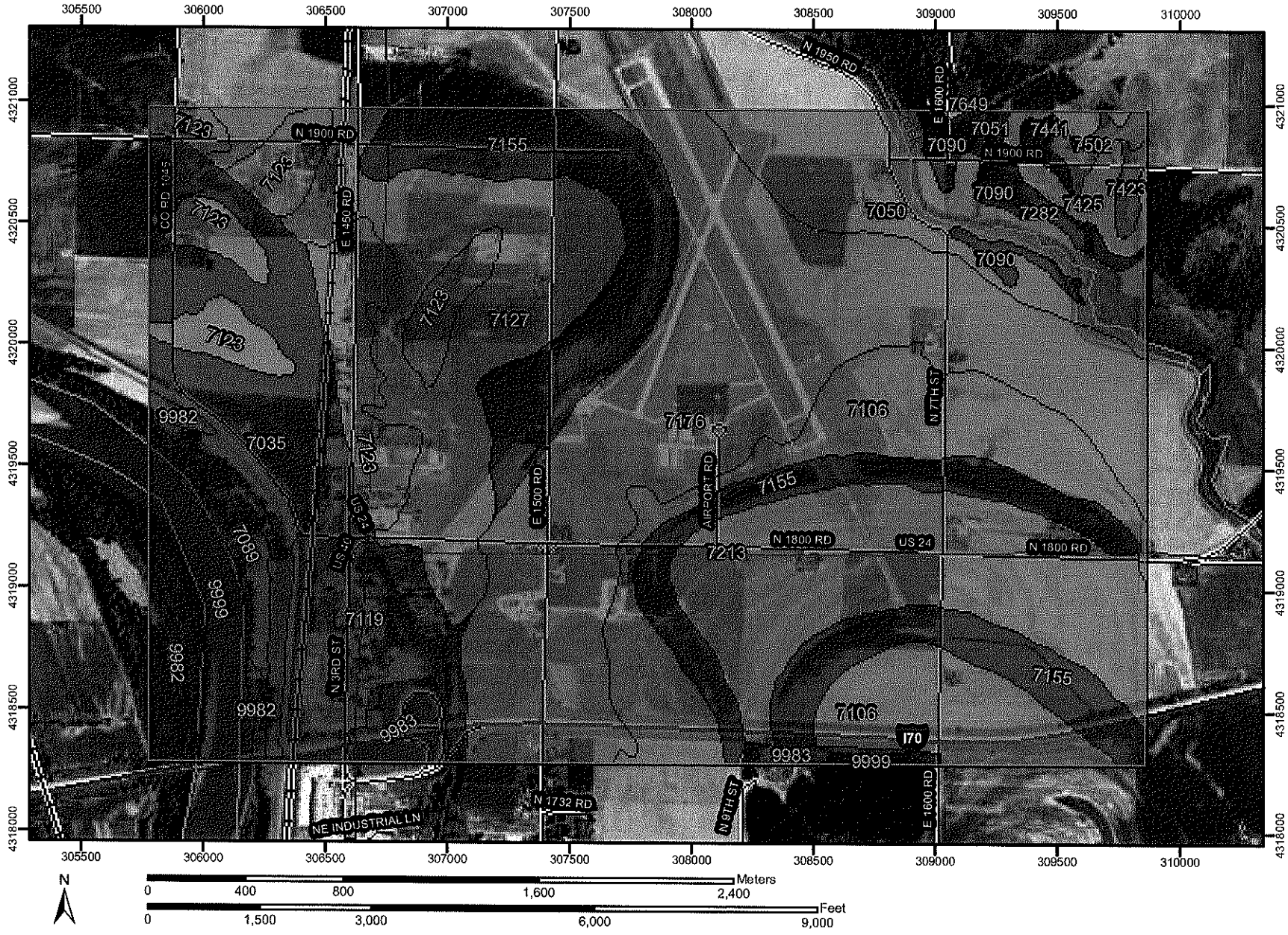
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Custom Soil Resource Report
Map—Farmland Classification



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
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Date(s) aerial images were photographed: 1991

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Table—Farmland Classification

Farmland Classification— Summary by Map Unit — Douglas County, Kansas				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
7035	Eudora-Bismarckgrove fine sandy loams, overwash, occasionally flooded	Not prime farmland	192.1	7.1%
7050	Kennebec silt loam, occasionally flooded	All areas are prime farmland	152.2	5.6%
7051	Kennebec silt loam, frequently flooded	Not prime farmland	2.7	0.1%
7089	Stonehouse-Eudora fine sandy loams, overwash, occasionally flooded	Not prime farmland	30.5	1.1%
7090	Wabash silty clay loam, occasionally flooded	Prime farmland if drained	29.7	1.1%
7106	Eudora-Bismarckgrove silt loams, rarely flooded	All areas are prime farmland	286.2	10.6%
7119	Eudora-Urban land complex, rarely flooded	Not prime farmland	144.2	5.3%
7123	Eudora silt loam, rarely flooded	All areas are prime farmland	177.8	6.6%
7127	Eudora-Kimo complex, overwash, rarely flooded	All areas are prime farmland	269.7	9.9%
7155	Kimo silty clay loam, rarely flooded	Not prime farmland	354.4	13.1%
7176	Rossville silt loam, very rarely flooded	All areas are prime farmland	566.6	20.9%
7213	Reading silt loam, moderately wet, very rarely flooded	All areas are prime farmland	271.9	10.0%
7282	Konawa fine sandy loam, 8 to 12 percent slopes	Not prime farmland	16.3	0.6%
7423	Morrill clay loam, 3 to 7 percent slopes	All areas are prime farmland	8.7	0.3%
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7441	Morrill-gravelly loam, 4 to 20 percent slopes, stony	Not prime farmland	7.2	0.3%
7502	Pawnee clay loam, 3 to 6 percent slopes	All areas are prime farmland	12.7	0.5%
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9982	Fluvents, frequently flooded	Not prime farmland	55.1	2.0%
9983	Gravel pits and quarries	Not prime farmland	38.4	1.4%

Farmland Classification— Summary by Map Unit — Douglas County, Kansas				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9999	Water	Not prime farmland	62.0	2.3%
Totals for Area of Interest (AOI)			2,711.3	100.0%

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://soils.usda.gov/

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://soils.usda.gov/

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.glti.nrcs.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://soils.usda.gov/

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

To: County Commission, City Commission, Members of the Lawrence-Douglas County Planning Commission
Date: March 20, 2008
RE: Annexation, zoning and Chapter 7 revisions

I am writing concerning item A-02-02-08 which will be heard by the Lawrence-Douglas County Metropolitan Planning Commission on Wednesday March 26, 2008.

In December the Planning Commission heard a request to rezone this property from Agricultural to I-2 Industrial. The Commission on a 7 to 2 vote approved the request. Reviewing the statements of the Commissioners at the meeting the key reason for approval of the rezoning request was that it is inevitable that the site would one day be Industrial. In fact the property meets the location criteria described in the latest draft of Chapter 7 of Horizon 2020. There is no doubt that developing the property defined in A-02-02-08 as I-2 is a highly profitable investment for both the landowners and a significant new tax base for the city and/or county and for the Lecompton school district. Now before any decision on the rezoning request has been decided by the county, the property has now requested annexation into the city.

I am not writing to insist that this property should not be annexed or rezoned. I am writing to insist that the city and county operate per statute (K.S.A. 12-747), policy (Horizon 2020) and precedent (Joint City County Ordinance No. 8218). As a property owner within a 1,000 feet of the property to be discussed as item A-02-02-08 at the March 26 Planning Commission meeting, I made an investment based on the City/County Comprehensive plan which stated that this area would not be in line for development for another 10 to 15 years. The Lawrence/Douglas County Comprehensive Plan states:

> *"The Comprehensive Plan provides a vision for the community. It is used as a policy guide that identifies the community's goals for directing future land use decisions. The Plan is also used by property owners to identify where and how development should occur; by residents to understand what the city and county anticipates for future land uses within the community; and by the city, county and other public agencies to plan for future improvements to serve the growing population of the community.*
> *Specifically, the city and county use the Comprehensive Plan to evaluate development proposals; to coordinate development at the fringes of the county's cities; to form the foundation for specific area plans; to project future service and facilities needs; and to meet the requirements for federal and state grant programs. The Comprehensive Plan is used most often as a tool to assist the community's decision makers in evaluating the appropriateness of land development proposals. The Comprehensive Plan allows the decision makers to look at the entire community and the effects of land use decisions on the community as a whole to determine whether individual proposals are consistent with the overall goals of the community."*

While I made an investment based on the Comprehensive Plan, I also understood that policy and planning are ever changing and I had no belief that the plan could not be amended much sooner. It is my understanding that statute, policy and precedent appear to require that a sector plan be developed for this area prior to decisions regarding zoning

and/or annexation. Why are decisions being made without doing this important planning step? The description of the Sector Plan in Chapter 14 of Horizon 2020 seems to match rather precisely this particular property and the surrounding area. I am interested in assuring that there is a level of compatibility between land uses in this area which has had no planning. Just as the land involved in A-02-02-08 is in need of rezoning so is much of the land adjacent to the subject property. I did not understand why the suggestion by the chair of the Planning Commission that the area undergo a sector plan was summarily dismissed by seven planning Commissioners until I began researching statute, policy and precedent.

My research lead to what is I am sure obvious to those involved in local planning and development: Until there are changes to Chapter 7 of Horizon 2020 any planning effort would not result in a rapid change in zoning of the property in question because it does not meet key criteria of the current plan. Those key criteria are in layman's terms 1.) Develop the UGA before unincorporated areas of the county and 2.) Any industrial area must have access to municipal services. Current policy is that areas like this need to "wait their turn". If current policy were to stay in place it would appear to me that any development of the land involved in A-02-02-08 would be many, many years away.

However, I have reviewed the proposed revisions to Chapter 7 dated March 2008 and it appears to solve the two impediments to the land involved in A-02-02-08. The draft of Chapter 7 March 2008 proposes to include and allow Industrial development outside the UGA in unincorporated areas of Douglas County. The second policy change proposed in the draft of Chapter 7 is very specific to land involved in A-02-02-08. On page 7-7 under the heading Farmers Turnpike after describing the need for a plan and the lack of municipal services the document continues "Pending approval of a sector plan, an interim step may be to allow the site to have limited development of warehouse and distribution activities, utilizing rural infrastructure until such time that urban services are available". I would like to assume that language on page 7-7 which matches exactly the request of the applicant's earlier request for rezoning is mere coincidence, but let's call a spade a spade. It is designed to create the necessary policy to move forward with some industrial development on the site. With approval of Chapter 7 the two key reasons why industrial rezoning of the site would have to be denied are now removed.

In the December meeting of the Planning Commission discussed above, one of the seven commissioners voting in favor of the zoning change stated unequivocally that another reason he was voting for rezoning was "this zoning change is free there will be no cost to the county". While the naiveté of the belief in "free" makes a respectful comment difficult if not impossible, I believe that the appropriate governmental entities should examine the potential for significant costs to the City/County that this policy might create. If ultimately annexed by the city, implicit in that action is a commitment to provide a full range of city services, water, sewer, police and fire protection etc., services which clearly carry a high cost to the taxpayers of Douglas County. Neither zoning, nor annexation is "free".

I would respectfully request that the planning commission, the City commission and the County Commission follow the statutes, policy, and precedents and request a sector plan be completed in a timely manner prior to rezoning or annexation. Second, I would like to request that Draft Chapter 7 March 2008 page 7-14 Policy 2.2 be expanded to add that fiscal impact analysis be utilized for developments seeking to develop industrial sites without the benefit of municipal services.

Respectfully,

Steve McDowell
1846 E 900 Road
Lawrence, Kansas 66049

Amy Miller

From: Nuts2sell@aol.com
Sent: Tuesday, May 20, 2008 1:15 PM
To: grant@dgcounty.com; Denny Brown; bradfink@stevensbrand.com; Michelle Leininger; Amy Miller
Subject: Re: planning comm--Agenda 11 and 13

J. Grant Eichhorn
Planning Commission Chair(?)

Brad Finkeldei
Planning Commission Vice-Chair(?)

Planning Staff Members Ms. Miller and Ms. leininger

Apparently, I am late getting these comments in but I imagine that staff may appreciate my not having to bring the more technical English-usage suggestions up for the first time in open public comment. Also, I am a making points I would like you to consider that affect my property closely.

Item 13--Chapter 7, Horizon 2020.

I appreciate the insertion of some language in Horizon 2020 which recognizes prime farmland but the language is confusing. I suggest some ways to tighten up some unclear language:

current draft:

> *The preservation of high-quality agricultural land has been a substantial topic in the community and* [?] *is recognized as a finite resource that is important to the regional economy.*

Comment:
The subject of the second clause is confusing. I suggest the following:

> The preservation of high-quality agricultural land, which has been recognized as a finite resource that is important to the regional economy, has been a substantial topic in the community.

or, better yet:

> High-quality agricultural land has been recognized as a finite resource that is important to the regional economy.

Current Draft:

> *High-quality agricultural land is generally defined as available land that has good soil quality and an adequate moisture supply to produce high yields of crops.*

Comment:
Perhaps what you mean is "high available water capacity" which is the term of art used in the soil descriptions by the NRCS. I don't see why this criteria should be singled out as more important than "well drained", for example, or any of the other descriptive characteristics. Agricultural capability rating is derived as a result of a combination of several soil characteristics, which leads me to the next phrase:

Current draft:

> *Within Douglas County these are generally restricted to Capability Class 1 and 2, non-irrigated lands as identified by the National Resources Conservation Service.*

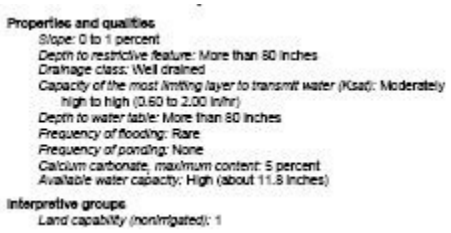
This can be read that only non-irrigated lands can be high-quality agricultural land. It is confusing at least. I suggest either dropping the "non-irrigated lands" phrase completely (fyi: there is no irrigated capability rating for our area) or conforming more exactly to the NRCS language, like the following:

> Within Douglas County these are *capability class (nonirrigated):* 1 and 2 as identified by the National Resources Conservation Service.

The reference to Douglas County is also unnecessary. Combining my comments, you arrive at my best suggestion for the first paragraph:

> High-quality agricultural land has been recognized as a finite resource that is important to the regional economy. High-quality agricultural land is generally defined as available land that has good soil quality, being *capability class (nonirrigated):* 1 and 2 agricultural soils as identified by the National Resources Conservation Service.

For further elucidation, I insert below a snapshot from the NRCS description of a sample (Eudora Silt Loam) soil, to which, if reference is to be made to these studies, our Horizon 2020 language should conform.



Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups
Land capability (nonirrigated): 1

.

My following comments run to the substance of other provisions I have reviewed and which affect my interests..

I find fault with the new language in Chapter 7, under Airport, at page 7.6, to wit:

> *The area around the Lawrence Municipal Airport **best suited** for industrial development generally lies southwest of the airport and North of I-70 and encompasses roughly 230 acres. This site has access to I-70, Highways 24 and 40, and the Lawrence Municipal Airport. [emphasis added].*

I take this 230 acre reference to mean the private property of the Pine Family Farms and its associates. If this is correct, I find this objectionable on five grounds.

First, the land involved is right under the landing/takeoff approach pattern of a runway, not off to the side where we might minimize flight hazards and light distractions and ground casualties in the event of a crash.

Second, the area is highly visible from I-70 and development showing the roofs and backsides of

buildings to the elevated interstate highway would detract from the otherwise scenic views at the gateway to the city.

Third, the area described is the best farm soil of the area and its development flies in the face of preservation of prime farm soils.

Fourth, the area described in this section is not the "best suited" land for commercial or industrial development compared to other nearby properties aside from the fact that the farmer/owner wants to develop it. Objectively, the properties along US 24/59 north from the Maple Grove Industrial Park for the first 1/2 mile are equally well suited for industrial or commercial development. These areas are equally close in road miles to the I-70 toll interchange and are already adjacent to or across the highway from existing industrial/commercial uses. If prime farmland concerns are to be set aside for one project, then it would be unfair and impractical to exclude these superior areas. Also, if the character of the neighborhood changes to predominantly development, then agriculture become less appropriate. Also, agricultural practices (chemical sprays and dust) become noxious in the vicinity of developments.

Fifth, this particular paragraph which characterizes a particular property as "best suited" is an argumentative statement about a property for which there is a pending rezoning application before the governing body of the City of Lawrence. Moreover, it is a matter on which there has been a successful petition-protest by neighboring landowners under Kansas law. I am one of the objecting landowner-petitioners, and I object to this paragraph as an interference with the statutory process.

Furthermore, this language will necessarily be either mooted or contradicted by the governing body in that separate matter, and will likely become irrelevant in either case.

Item 13.

Finally, I renew my objection to the Smart Code Sector Plan, Page 15-7. I object to the location of Smart Code developments on the prime farmlands, and the flood prone areas shown in the areas north of Lawrence in the agricultural floodplain. Additionally, I would point out that the location of the bulls-eye on the corner of US 24/59 and North 1900 is particularly inappropriate for a smart-code project because of the busy freight railroad and the railroad crossing there.

Thank you for consideration

Charles NovoGradac
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League of Women Voters of Lawrence-Douglas County
P.O. Box 1072, Lawrence, Kansas 66044

March 23, 2008

Grant Eichhorn, Chairman
Members
Lawrence-Douglas County Planning Commission
City Hall
Lawrence, Kansas 66044

RE: ITEM NO. 12: COMPREHENSIVE PLAN AMENDMENT TO HORIZON 2020 CHAPTER 7 – INDUSTRIAL AND EMPLOYMENT RELATED LAND USE

Dear Chairman Eichhorn and Planning Commissioners:

We have annotated the Draft Horizon 2020, Chapter 7 - Industrial and Employment Related Land Use and extracted the annotated pages as Exhibit 1. We hope that you will incorporate these comments and suggestions into the amended Chapter 7, *Horizon 2020.*

There is one very serious loophole that is repeated in this version of Chapter 7 that we ask you to correct. The general locational criteria and specific criteria, page 7-14, Goal 2, Policy 2.1 and Policy 2.2, now include general criteria regarding the location to transportation networks and environmental characteristics needed for locating industrial developments, but have no criteria requiring any locational relationship to cities and urban infrastructure, or to the Urban Growth Areas of the cities in Douglas County. The only statement is that the development (Goal 2, Policy 2.1.e.) "Be annexed before development ***if*** [*emphasis added*] adjacent to municipal boundaries."

The significance of this statement is that it would require industrial and employment-related developments to be annexed ONLY if adjacent to city boundaries. Otherwise, this statement implies, an industrial use or employment-related use could be located anywhere in the Rural Area, and presumably also, in the UGA of the cities, without annexation as long as it conforms to the other criteria. What this statement does is open up almost the entire county to random industrial and employment-related development.

We hope this is not what was intended by the changes to Chapter 7, which heretofore strictly limited the location and types of industrial and employment-related development in the Rural Area of Douglas County.

The experience of other communities has indicated that the location and timing of industrial and employment related developments are extremely important in realizing the hoped-for benefits that they bring to the community. In Boulder, Colorado when the IBM plant moved into a site in unincorporated Boulder County in the early 1960s, the costs due to the influx of population into the City of Boulder were not offset by the taxes from the IBM plant because the taxes went to the county. DuPage County, Illinois, in the late 1980s is an example of the negative effect of random county development where the infrastructure costs were not offset by the tax benefits. Infrastructure extensions (sewer, water, power, emergency and other types of services) well beyond the urban boundaries along with the accompanying road improvements needed, proved to create the opposite effects of the hoped-for fiscal benefits for either the counties or cities in DuPage County.

We ask that you change this statement Goal 2, Policy 2.1.e. to read: "be adjacent to municipal boundaries and annexed before development."

Thank you.

Sincerely yours,

Carrie Lindsey
President Elect

Alan Black, Chairman
Land Use Committee

EXHIBIT #1

These are annotated pages extracted from the amended version of Draft Chapter 7, Industrial, etc. Land Use submitted to the PC by LUC

- Increase the number and diversity of jobs available to the citizens of Douglas County to stabilize the future employment base and generate additional wealth in the community.

- Identify an adequate amount of available land in a number of locations in Douglas County to meet diverse industrial and business related development needs.

Would you please give some technical justification for establishing this number of new jobs by 2020? Or is this just wishful thinking?

- Increase community involvement in economic development activities, by partnering with the local business community and area educational institutions to bring new technology and investment to the region for the purpose of meeting the economic development job growth goal of securing twenty thousand new jobs in Douglas County by 2020.

- Protect, enhance, and retain existing industrial-related land use areas serving the community.

- Continue to address the needs of existing businesses and industries to ensure their retention in the community and to help facilitate expansion plans of those businesses and industries for the future.

- Encourage site availability, site improvements, and community amenities which best respond to the market demands for industrial and business development while maintaining the community objectives for the type and quality of such development.

Provide

- ~~Encourage~~ bicycle, pedestrian and public transit access from neighborhoods to industrial and business employment centers.

Also add: "Avoid sites that are hazardous and/or abnormally costly to develop such as areas subject to flooding, and/or in need of extraordinary infrastructure costs to prepare sites for development."

- Minimize impacts to the natural environment in the identification of new industrial and business development areas or in the redevelopment of existing areas. Whenever possible, industrial and business development should encourage the retention of open space to serve a variety of purposes, including stormwater management, preservation of wildlife habitat and ecological functions, recreational opportunities, and reduction of visual impacts on surrounding areas.

1. INDUSTRIAL LAND USE

INDUSTRIAL LAND USE CATEGORIES

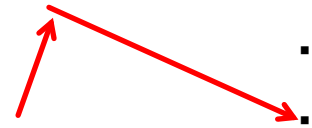
Industrial development in Douglas County has taken on many shapes and forms in the past. This Comprehensive Plan recognizes this variety in development and establishes the following categories of industrial-related land use:

- **Warehouse and Distribution** - an area generally characterized by businesses involved in the warehousing and distribution of wholesale goods and supplies.

- be of adequate parcel size, generally over forty acres;
- lie primarily outside of the 100-year or regulatory floodplain;
- have minimal average slopes;
- be located outside prime agricultural farmland as defined by United States Department of Agriculture.[1]

After identifying a general location for potential industrial and employment park development, further site analysis and environmental suitability should be conducted considering site-specific criteria. Sites should *substantially* meet the following **specific** criteria on a site plan or development plan level:

- preserve environmentally sensitive areas, including vegetative cover and wildlife habitat, to act as buffers and site amenities;
- encourage natural stormwater management, including locations that permit direct discharge to the floodplain;
- have available and adequate utilities, infrastructure and services for the proposed use;
- be compatible with existing and future zoning/land use patterns, including the use of appropriate buffers between land uses;
- ~~be annexed before development if adjacent to municipal boundaries.~~



This opens up the entire county to industrial development. This should read, "be adjacent to municipal boundaries and annexed before development."

Initial applications for site considerations should first be weighted against the general locational criteria, and then against the specific criteria as individual proposals move through the development process. A non-exclusive list of sites that substantially meet the general criteria are illustrated in Map 7-2, Map of General Locations for Future Industrial and Business Park Development, and are detailed in descriptions below. Locations initiated through the planning process that are not on Map 7-2 will be weighted against the general locational criteria above.

INDIVIDUAL SITE ANALYSIS:

- **Farmland Industries**

  Transportation: State Highway and Rail access
  Parcel Size: 275+ acres
  Floodplain: None
  Slope: Mostly minimal (0-3%) with some 3-7% and higher
  Prime Farmland: Approximately 20% covered.

  Generally this area is located north of K-10, west of East Hills Business Park, south of N 1500 Road, and west of E 1575 Road. While the entire site contains roughly 400+ acres, the proposed Farmland Industries Redevelopment Plan, currently working through the approval process, identifies approximately 275 acres of land for industrial uses. The site has access to K-10 Highway, as well as possible future connections to East Hills Business Park. In addition the site has direct access to rail lines that exist on the north end of the property. The site lies outside of the 100-year floodplain and is generally covered by

[1] Prime Agricultural Farmland as defined by the United States Department of Agriculture, National Resources Conservation Resource in the National Soil Survey Handbook and illustrated for Douglas County through the Web Soil Survey.

minimal (0-3%) slopes, with a few areas having 3-7% and higher slopes. Approximately 20% of the area is covered by prime farmland. Portions of the site pose some challenges related to environmental clean-up from the prior use that needs to be addressed before re-development, but would be a good site for Warehouse and Distribution, Office Research and Industrial uses, especially when combined in a collaborative park setting.

- **Southeast Area**

  Transportation: State Highway access
  Parcel Size: 200+ acres (with an additional 30 identified for Warehouse)
  Floodplain: None
  Slope: Minimal (0-3%)
  Prime Farmland: Approximately 90% covered.

The Southeast Industrial Area is located on the south side of East 23rd Street/Kansas Highway 10, south of East Hills Business Park. This area consists of general industrial land uses and it is anticipated this area will experience increased industrial development as noted in the Southeast Area Plan. That plan recommends less intense Industrial uses, such as Warehouse and Distribution and Office Research for approximately 30 acres south of N 1360 Road between E 1700 Road and E 1750 Road. The plan recommends more intense industrial uses for the roughly 200 acres for the area northwest of the intersection of 25th Terrace and Franklin Road, the area east of Franklin Road, north of E. 25th Street and N. 1360 Road, west of E. 1750 Road (Noria Road), and south of E. 23rd Street/K-10 Highway and the area north and south of Franklin Park Circle. Like East Hills Business Park, the Southeast Industrial Area will serve as the eastern gateway to the community. This site has access to Kansas Highway 10 and lies outside of the 100-year floodplain. The area is generally covered by minimal (0-3%) slopes and is almost 90% covered by prime agricultural farmland.

- **~~Airport~~**

Any development here would precipitate the need for very costly storm drainage infrastructure. It is a hazardous area because of its location within or surrounded by the area of inundation following a breach in the levee.

  Transportation: Federal Interstate, State Highway, Air and Rail access
  Parcel Size: 230+ acres
  Floodplain: Approximately 10% of those 230 acres
  Slope: Minimal; 0-3%
  Prime Farmland: Approximately 90% covered.

The Lawrence Municipal Airport, located in North Lawrence along US-24/40/59, is a newly developing industrial area of the community. Aviation enterprises are present and there is the potential for additional aviation and related enterprises. Currently, the airport is an island surrounded by some county industrial land use, but mostly agricultural land uses. As development continues to occur in neighboring Leavenworth County, the US-24/40/59 corridor will become a major thoroughfare. As the City begins initiating long-range planning activities for improved municipal services to and stormwater management within this area, development pressures will increase for this area. It is recommended by this Comprehensive Plan that annexation be a part of any industrial development proposed for this area. As this area evolves into a community gateway, development proposals are also encouraged to employ sound site planning

This was originally considered one of the best sites.

of Highway 40 and is detailed in the West 6th Street/K-10 Nodal Plan. The area contains approximately 300 acres and lies outside of the 100-year floodplain. The area is located adjacent to both Highway 40 and K-10 Highway, as well as being in close proximity to I-70. The site has mostly minimal slopes (0-3%) with some 3-7% slopes and is approximately 40% covered by prime farmland. Over time, as this area develops, it will serve as a gateway to the City of Lawrence and would be best suited for Warehouse and Distribution uses, Industrial uses, Work-live Campus type centers and Industrial/Business/Research parks.

- **Eudora North & Eudora South**

  Areas have been generally identified on the east side of Eudora, both north and south of K-10 Highway that would be appropriate for Industrial development. It is recommended that Eudora annex both areas prior to development.

- **Baldwin City**

  The Comprehensive Plan already identifies that a general area to the west of the current Baldwin City limits would be ideal for industrial development at such time that the City of Baldwin is able to provide utilities to the site. Baldwin City is currently in the process of drafting and adopting a comprehensive plan and therefore any decisions regarding specific locations for this site should wait until that process is complete.

- **Highway 56 and Highway 59**

  The Comprehensive Plan identifies that a general area near the proposed intersection of Highways 56 and 59 would be ideal for industrial development in the future. It may be possible to develop the site to a limited extent prior to the available of urban services; however, intense development should wait until such time that urban services are able to be provided.

- **Midland Junction**

  This area generally lies near the intersection of N 2000 Road and Highway 24/59 north of Lawrence. While the area is located within the Urban Growth Area for the City of Lawrence, development is not anticipated for more than 30 years. This area is located in proximity to transportation networks and meets the general location criteria making it ideal for industrial development in the future.

- **Highway 56 and K-33**

  The Comprehensive Plan identifies that a general area near the intersection of Highways 56 and K-33 would be ideal for industrial development in the future due to its proximity to the proposed Gardner Intermodal Facility. It may be possible to develop the site to a limited extent prior to the availability of urban services; however, intense development should wait until such time that urban services are able to be provided.

Guidelines are needed to provide direction on how much, where and at what scale industrial and employment-related development is appropriate for the market it is intended to serve.

GOAL 2: Criteria for Location of New Industrial and Employment-Related Development

Provide industrial and employment-related areas to meet the economic needs of the community.

Policy 2.1: Utilize Locational Criteria for All Industrial and Employment-Related Development

1. A given site, whether located within City limits, in the UGA, or in unincorporated areas of Douglas County, should *substantially* meet the following **general** locational criteria:
    a. be in close proximity to Federal and State transportation networks;
    b. be of adequate parcel size, generally over forty acres;
    c. lie primarily outside of the 100-year or regulatory floodplain;
    d. have minimal average slopes;
    e. be located outside prime agricultural farmland as defined by United States Department of Agriculture.[1]

2. After identifying a general location for potential industrial and employment park development, further site analysis and environmental suitability should be conducted considering site-specific criteria. Sites should *substantially* meet the following **specific** criteria on a site plan or development plan level:
    a. preserve environmentally sensitive areas, including vegetative cover and wildlife habitat, to act as buffers and site amenities;
    b. encourage natural stormwater management, including locations that permit direct discharge to the floodplain;
    c. have available and adequate utilities, infrastructure and services for the proposed use;
    d. be compatible with existing and future zoning/land use patterns, including the use of appropriate buffers between land uses;
    e. ~~be annexed before development if adjacent to municipal boundaries.~~
    f. Utilize the following general locational criteria in reviewing industrial and employment-related development request.

How are you going to provide pollution control with direct discharge into floodplains?

Please reverse this sentence to read: "be adjacent to municipal boundaries and annexed before development;"

Policy 2.2: Require Impact Analysis to Ensure Adequate Infrastructure Facilities

Thank you.

Utilize fiscal impact analysis for developments seeking tax abatements or other forms of public assistance to ensure that the costs for public services or facilities by the development can be recovered from revenues generated.

COMMENT: This statement, Policy 2.1.e. would allow random development of industrial and employment related uses and parks in the Rural Area of the County because it implies that only proposed developments adjacent to cities need to be annexed, and otherwise, if all other criteria are met, they would be allowed without the restriction of being annexed. This is a major loophole. Please reword this as suggested above.

Policy 2.3: Adhere to Designated Land Uses

a. Locate the development of planned industrial, office research and warehouse distribution facilities in accordance with the general locational criteria listed on p. 7-5. Additionally, sites that meet those criteria are identified on Map 7-2. Require annexation of sites that are adjacent to the City of Lawrence limits.

This needs a modifier. Taken by itself, it opens the county to random development of industrial sites.

b. Designate new industrial, office research and warehouse distribution areas to support job creation. Ensure that new industrial, office research and warehouse distribution developments are concentrated in areas with similar compatible uses.

c. Large-scale industrial and employment-related development should be located in planned parks to help ensure coordination of circulation systems, lot configuration, site layout [building, parking and access facilities], and environmental amenities.

Policy 2.4: Maintain an Inventory of Industrial and Employment-Related Land Uses and Develop a Method to Monitor Related Growth

a. Maintain a methodology for site selection that takes into consideration industrial users needs and the best interests of the community.

b. Identify and plan for an appropriate supply of industrially zoned land.

c. Develop a technique to monitor the aggregate size of industrial and employment-related developments within the community.

Policy 2.5: Ensure Compatibility of Development

a. Establish design guidelines and standards for new industrial and employment-related development.

b. Encourage best management practices for site planning and design that include, but are not limited to, the consideration of natural site features, building placement and orientation, vehicular and pedestrian circulation patterns, open space, landscaping, lighting, stormwater management, and interfacings with adjacent neighborhoods and development.

c. Encourage building design techniques that include, but are not limited to, the consideration of facade and exterior wall articulation, materials and colors, rooflines, entryways, signage, and energy and resource conservation.

d. Major entrances into industrial and business parks should be identified by attractive "gateway" features. Gateways should include special signage, landscaping and accent lighting, and/or a common sculptural feature and should be located outside the public street rights-of-way.

d. Use high quality materials in the construction of screening and landscaping to decrease long-term maintenance costs. Quality of site landscaping shall mirror the quality of the overall development.

e. Unsightly views and light trespass ~~should~~ shall be screened from neighboring properties and the public right-of-way. Building materials or structures incompatible with the image of a high-quality development, such as chain-link fences, outdoor storage facilities, etc., should not be the means of screening areas visible from public streets or adjacent parcels.

5. Lighting

Any lighting used to illuminate parking areas, signs or structures shall be placed to deflect light away from any adjoining property or from public streets through fixture type, height and location.

Policy 3.2: Consideration of Transitional Uses

a. Consider low-intensity commercial or office development as a transition between industrial and employment-related development and low-density residential neighborhoods. The low-intensity commercial or office development should include:

1. Design elements such as: height, massing, and scale compatible with the surrounding low-density residential uses;

2. Site design compatible with surrounding residential neighborhoods with consideration given to extensive screening, building and parking orientation, and preservation of natural site amenities; and

3. Site access provided from arterial, collector or access/frontage streets and traffic directed away from surrounding residential areas.

b. Encourage the integration of higher-density residential development through compatible design with industrial and employment-related developments and the surrounding low-density residential neighborhoods. Compatible design includes proper building transition and buffers.

c. Utilize medium- or high-intensity recreational facilities as a transitional use to lesser-intensity uses. Encourage the joint use of parking facilities to serve the recreational uses.

d. Incorporate open spaces and natural site features as a transitional use between industrial and employment-related development and low-density residential development.

d. Adequate ingress and egress from industrial and employment-related centers should strive to provide a minimum of two access points.

e. Encourage shared access between adjacent industrial and employment-related developments. Plan for coordinated traffic circulation within and adjacent to proposed development areas.

Policy 4.4: Pedestrian Access and Circulation

A major failing of our public transportation system is that the City does not require bus stops WITHIN large commercial centers; and this would also include industrial parks. Target, for example, objected to allowing city buses to get close to the Target entrance because the driveway surface would not take the wear. The city should require that provision be made for bus entry and convenient stops within large centers and business parks.

a. Provide sidewalks on both sides of all streets (public and private).

b. Provide safe, convenient pedestrian access from parking areas and avoid pedestrian and vehicular conflicts within these industrial and employment-related developments.

c. Include bicycle access, or the potential for such access, within industrial and employment-related developments, between major employment areas within the community, and with the community's overall bicycle network.

d. ~~Strongly consider~~ Provide public transit facilities and pedestrian-related facilities as a requirement of industrial and business park development.

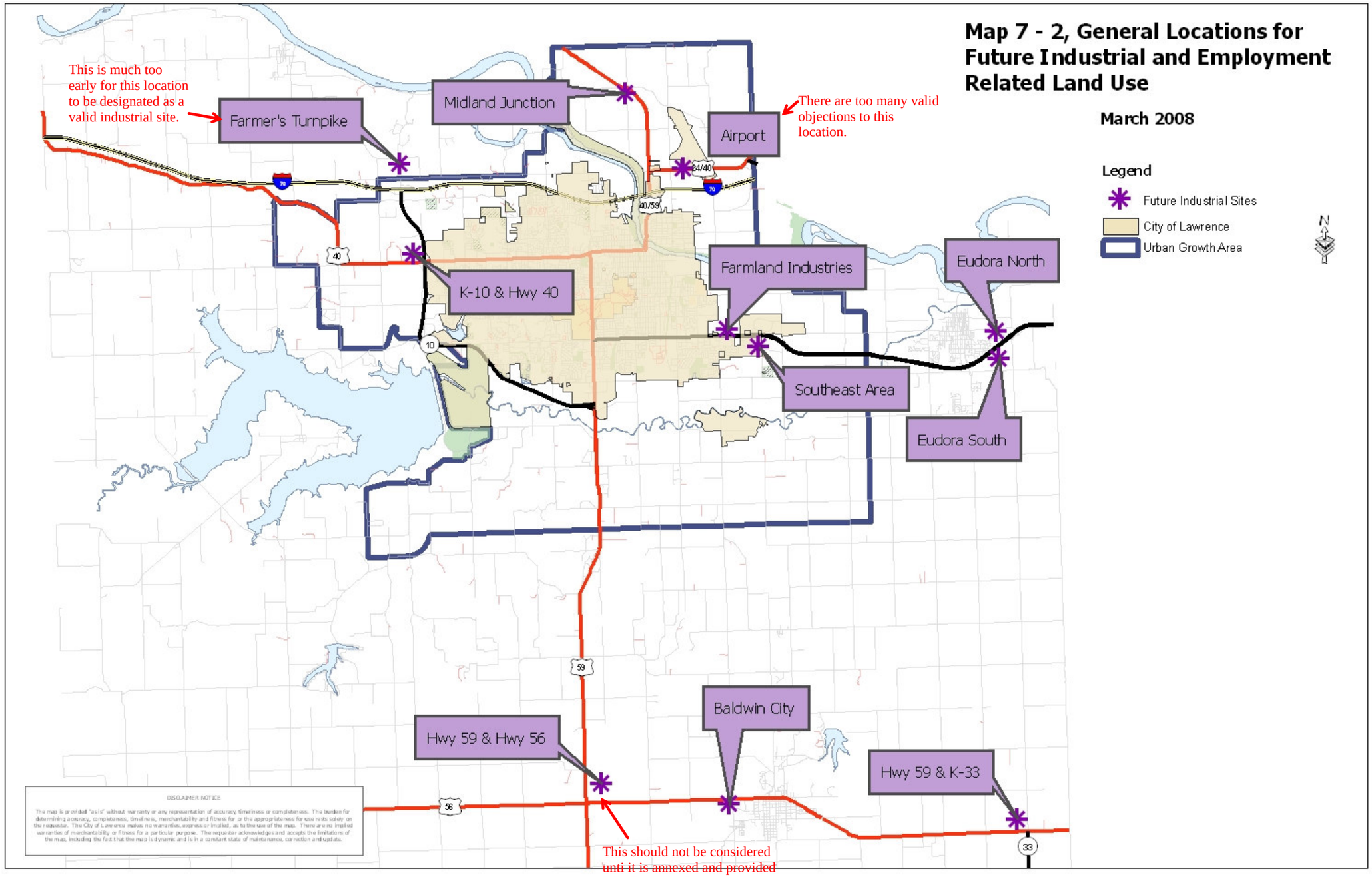
e. Encourage public transit.

Policy 4.5: Parking and Loading

a. Develop parking areas in convenient locations to support industrial and employment-related traffic.

b. Identify potential parking areas which will serve mass transit and carpooling.

c. Ensure adequate loading space, within a building or a side or rear yard, in such a way that all storage, standing and maneuvering of trucks will take place solely on private property and be screened or buffered from adjacent lower-intensity uses.


Map 7 - 2, General Locations for Future Industrial and Employment Related Land Use
March 2008
Legend
Future Industrial Sites
City of Lawrence
Urban Growth Area
N
This is much too early for this location to be designated as a valid industrial site.
Farmer's Turnpike
Midland Junction
There are too many valid objections to this location.
Airport
K-10 & Hwy 40
Farmland Industries
Eudora North
Southeast Area
Eudora South
Baldwin City
Hwy 59 & Hwy 56
Hwy 59 & K-33
This should not be considered ~~unti it is annexed and provided~~ with Baldwin City utilities and infrastructure.
DISCLAIMER NOTICE
The map is provided "as is" without warranty or any representation of accuracy, timeliness or completeness. The burden for determining accuracy, completeness, timeliness, merchantability and fitness for or the appropriateness for use rests solely on the requestor. The City of Lawrence makes no warranties, express or implied, as to the use of the map. There are no implied warranties of merchantability or fitness for a particular purpose. The requestor acknowledges and accepts the limitations of the map, including the fact that the map is dynamic and is in a constant state of maintenance, correction and update.

From: Marguerite [mailto:mermeling@myvine.com]
Sent: Monday, March 24, 2008 9:59 AM
To: Scott McCullough
Subject: Chapter 7 PC

Dear Planning Staff and Planning Commission,

As members of Scenic Riverway Community Association, we disagree with changes made to Chapter7 and recommend the following for discussion and consideration.

1. P7-4 paragraph under heading Lawrence- New Industrial Areas, last sentence "The following criteria strike a balance between industrial user needs and community interests, as well as being aligned with criteria developed through the ECO2 process". These "industrial user needs" have been 'suggested' by Chamber of Commerce without any paper trail of documentation to substantiate their recommendations. It is there fore impossible to make this statement.

2. Under Individual Site analysis: Farmers Turnpike strike "Pending approval of a sector plan, an interim step may be to allow the site to have limited development of warehouse and distribution activities utilizing rural infrastructure until such time that urban services are available". This recommends/suggests suboptimal use of land that is positioned as a **gateway** for two cities and could frustrate future more economically valuable development at this site. Suggestion of interium uses is premature, without foundation and is poor planning without future cost benefit analysis.

Stan Unruh
Secretary

March 23, 2008

Jane M. Eldredge
E-Mail: jeldredge@barberemerson.com

Mr. Grant Eichhorn, Chair
Lawrence/Douglas County Metropolitan
Planning Commission
City Hall
6 East Sixth Street
Lawrence, Kansas 66044

Via Facsimile and U.S. Mail

Re: Item Number 12, CPA-2004-02 - Revised Amended Chapter Seven of Horizon 2020

Dear Chairman Eichhorn:

Thank you, your sub-committee and the staff for the work in the revisions to this Chapter. It is much improved. However, there are some inconsistencies that should be clarified before adoption of this Chapter. The inconsistencies are as follows:

1. One of the most important strategies found on Page 7-2 is **"Protect, enhance, and retain existing industrial-related land use areas serving the community."** This strategy is specifically undermined by the following:
2.
   a. Page 7-4 Burroughs Creek Corridor, please delete the last sentence of that paragraph:

      ~~"Future development of this area should be in accordance with the Burroughs Creek Corridor Plan".~~

      The Burroughs Creek Corridor Plan as adopted by the City Commission in 2006, recommends significant re-zoning of these existing small industrial lots. The Burroughs Creek Corridor Plan should be promptly reconsidered as it is in direct conflict with the otherwise expressed policy of this Planning Commission to preserve the small industrial sites where most of our "homegrown businesses" are located. At the very least the Burroughs Creek Corridor Plan should be amended to clearly state that in the event of a conflict, Horizon 2020 controls.

b. Page 7-4, second paragraph under **Union Pacific Railroad Corridor**, the first sentence should revised as:
"New development, redevelopment and expansion in the area should be encouraged to ~~establish standard sized development parcels and~~ upgrade and improve the appearance and image of the area."

Changing the sizes of the lots to "standard sizes" is in direct conflict with the policy behind the text amendment (TA-07-14-07) approved by the Planning Commission on February 27, 2008, to allow the smaller parcels and setbacks to remain. The text amendment protects these smaller businesses and smaller industrial sites from the newly adopted larger lot and setback requirements of the Land Development Code; and

c. Page 7-4, second paragraph, please delete the last sentence is:

"~~Where consolidation of industrial sites is impractical, it is recommended those properties be converted to residential and/or neighborhood commercial uses~~".

The point of preserving the smaller industrial sites is to enhance and protect our smaller businesses and allow them to expand. It is **not** to convert these sites to residential or neighborhood commercial areas. Such conversions would diminish our already too small supply of such smaller industrial sites.

3. On page 7-4 **LAWRENCE-NEW INDUSTRIAL AREAS**, the last sentence should be modified as follows:

"The following criteria strike a balance between industrial user needs and community interests, ~~as well as being adopted with criteria developed with the ECO^2 process.~~"

The ECO^2 process and plan are well under way, but not complete. A decision to adopt the ECO^2 process into Horizon 2020 should be a separate consideration by the Planning Commission with proper prior public notice. It should not be until after the staff review of ECO^2 is complete. Such a policy decision should be carefully considered because of its ramification for the entire comprehensive plan. It should not be adopted *de facto* as a mere insertion into the revised Industrial Chapter.

4. On pages 7-4 through 7-5, Locational Criteria for Industrial Developments, the general locational criteria are excellent and should be used to determine conformity with the Comprehensive Plan, with the exception of the last bullet which should be deleted, which is:

    - ***~~"be located outside prime agricultural farmland as defined by United States Department of Agriculture".~~***

There is no definition of "prime agricultural farmland" in Horizon 2020 itself. If such a dramatic policy change is to be made, it should be made in light of other considerations of the use of "prime agricultural farmland" as well. For instance is rural residential or commercial permissible, but not industrial? What goals are we trying to accomplish?

The proposed criteria is too vague to offer any guidance as to whether our goal is to preserve certain ground for farming or only to prevent it from becoming industrial. This criteria is over broad and over reaching. It will only become a contentious and divisive factor among neighbors.

5. **Specific Criteria** on page 7-5 contains a list of things that are to be met for a proposed industrial location to be in conformance with the comprehensive plan. All of these criteria are requirements of a site plan or development plan. Each one can be addressed by the developer once a specific business or industry is ready to select that site. These are criteria that are not appropriate in identifying locations for future industrial sites. They are appropriate to consider with the development of a designated and zoned site when it is ready for a site plan or development plan for a particular end user. These should be deleted as locational criteria. All are required in the Land Development Code at the appropriate point in the development cycle.

Horizon 2020 **"provides a vision for the community."**, Horizon 2020, p. 1, first sentence. The implementation of the vision is the Land Development Code. Only when an industrial user has been identified will it be possible to ascertain whether there are available and adequate utilities, infrastructure and services for the proposed use. It is confusing to refer to some of these later requirements as location criteria.

As we have been told by Beth Johnson of the Lawrence/Douglas County Chamber of Commerce, the site selection people used by most industrial users will not wait for the annexation, zoning and initial planning of a proposed site. Often they want a site that can be

moved into within six to twelve months. Therefore, the location of the site and the zoning should be complete before a prospective industrial user would even be able to address the **"specific criteria".** Therefore, please revise the first full paragraph on p.7-5 as follows:

> ***~~"After identifying a general location for potential industrial and employment park development, further site analysis and environmental suitability should be conducted considering site specific criteria. Sites should substantially meet the following specific criteria on a site plan or development plan level:~~***
> - ***~~preserve environmentally sensitive areas, including vegetative cover and wildlife habitat, to act as buffers and site amenities;~~***
> - ***~~encourage natural stormwater management, including locations that permit direct discharge to the flood plain;~~***
> - ***~~have available and adequate utilities, infrastructure and services for the proposed use;~~***
> - ***~~be compatible with existing and future zoning/land use patterns, including the use of appropriate buffers between land uses;~~***
> - ***~~be annexed before development if adjacent to municipal boundaries.~~***
>
> ***~~Initial applications for site considerations should first be weighted against the general locational criteria, and then against the specific criteria as individual proposals move through the development process.~~***
>
> ***A non-exclusive list of sites that substantially meet the general criteria are illustrated in Map 7-2, Map of General Locations for Future Industrial and Business Park Development, and are detailed in descriptions below. Locations initiated through the planning process that are not on Map 7-2 will be weighted against the general locational criteria above.***

6. **<u>INDIVIDUAL SITE ANALYSIS</u>** on pages 7-5 through 7-9 should be consistent. The I-70/K-10 Industrial Park site is the only one of eleven proposed industrial sites for which a sector plan is required. This is neither logical nor consistent. There no longer appears to be any doubt that this is a logical and badly needed industrial site. If the Planning Commission elects to direct a 4000 acre sector plan for the Farmer's Turnpike area, it should do so without including this site. Such a sector plan and should not be used as yet another reason to delay consideration of this annexation. Please modify the description of the I-70/K-10 site on page 7-7 as follows:

- ***"~~Farmer's Turnpike~~ I-70/K-10 Industrial Park***
  Transportation: Federal Interstate and State Highway access
  Parcel Size: 150 acres, with possibility of more
  Flood plain: None
  Slope: Mainly 0-3%
  ~~Prime Farmland: Approximately 40% covered~~.

The ~~Farmer's Turnpike~~ I-70/K-10 Industrial Park area lies generally north of N 1800 Road (Farmer's Turnpike) near the intersection of Kansas Highway 10 and I-70. The proposed area contains roughly 150 acres with the potential for more land. ~~to be identified for industrial and employment related land use through the long-range planning process. That process includes completion of a sector plan prior to annexation and development to better understand appropriate land uses, infrastructure issues and other service issues, such as police and fire protection~~. The area contains land of minimal slope (0-3%) and also lies outside of the 100-year flood plain. ~~Approximately 40% of the 150 acre site is covered with prime farmland~~. This area substantially meets the general locational criteria and will be an important future economic development area for the Lawrence community because of its prime location near the I-70 interchange. The site is adjacent to, but outside of the Urban Growth Area, and is some distance from the Lawrence city limits making providing urban infrastructure a challenge. It is presently served by rural utilities. ~~Pending approval of a sector plan, an interim step may be to allow the site to have limited development of warehouse and distribution activities utilizing rural infrastructure until such time that urban services are available. In the future, this area will be an important gateway to the city that has the opportunity to develop as a work-live campus type center or Industrial/Business/Research Park~~."

7. On page 7-12, under Policy 1.1, please add a new section d. as follows:

"d. Retain setbacks and lot sizes that were permitted under the prior Lawrence Zoning Ordinance in order to allow development, redevelopment and expansion of the existing older industrial areas in a harmonious way."

The addition of this policy will support the text amendment (TA-07-14-07) to the Land Development Code as approved by the Planning Commission in February 2008.

8. Page 7-14, please delete Policy 2.1.1.e. and Policy 2.1.2. in its entirety, for the reasons stated above.

9. On page 7-15, Policy 2.3.a., please rewrite as follows:

> ***Policy 2.3: Adhere to Designated Land Uses***
> ***a. Locate the development of planned industrial, office research and warehouse distribution facilities in accordance with the general locational criteria listed on p. 7.5. ~~Additionally, sites that meet those criteria are identified on Map 7-2. Require annexation of sites that are adjacent to the City of Lawrence limits~~.***

The strategy stated on page 7-5 that potential industrial locations that meet the general location criteria, but are not on Map 7-2, will be considered based on the general location criteria was an excellent addition. However, unless you delete the next to last sentence, no sites that are not on Map 7-2 will be considered and the flexible strategy will be defeated. The last sentence regarding our annexation policy should be deleted as redundant because it is included in Chapter 4 - Growth management.

Thank you for your consideration of these requested revisions and concerns prior to making a recommendation for adoption.

Sincerely,

BARBER EMERSON, L.C.

Jane M. Eldredge

JME:klb

bcc: James D. Schwada

League of Women Voters of Lawrence-Douglas County
P.O. Box 1072, Lawrence, Kansas 66044

May 18, 2008

Grant Eichhorn, Chairman
Members
Lawrence-Douglas County Planning Commission
City Hall
Lawrence, Kansas 66044

Re: ITEM NO. 11: COMPREHENSIVE PLAN AMENDMENT TO HORIZON 2020 CHAPTER 7 – INDUSTRIAL AND EMPLOYMENT RELATED LAND USE

Dear Chairman Eichhorn and Planning Commissioners:

We see the same issues in this version of Chapter 7, Horizon 2020, that have created concern for the League regarding the lack of specificity in proposed locations for industrial and employment related land use which would allow a proliferation of intensive uses in the Rural Area of the County. As one of our members pointed out, the use of the term in "proximity" to, without provision for access to the mentioned thoroughfares would allow location of these uses along the full length of the highways.

We are attaching our previous most recent letter to you regarding our concerns about this new Chapter 7 addition to Horizon 2020.

Sincerely yours,

Milton Scott
Board Representative

Alan Black, Chairman
Land Use Committee

ATTACHMENT

League of Women Voters of Lawrence-Douglas County
P.O. Box 1072, Lawrence, Kansas 66044

March 23, 2008

Grant Eichhorn, Chairman
Members
Lawrence-Douglas County Planning Commission
City Hall
Lawrence, Kansas 66044

RE: ITEM NO. 12: COMPREHENSIVE PLAN AMENDMENT TO HORIZON 2020 CHAPTER 7 – INDUSTRIAL AND EMPLOYMENT RELATED LAND USE

Dear Chairman Eichhorn and Planning Commissioners:

We have annotated the Draft Horizon 2020, Chapter 7 - Industrial and Employment Related Land Use and extracted the annotated pages as Exhibit 1. We hope that you will incorporate these comments and suggestions into the amended Chapter 7, *Horizon 2020.*

There is one very serious loophole that is repeated in this version of Chapter 7 that we ask you to correct. The general locational criteria and specific criteria, page 7-14, Goal 2, Policy 2.1 and Policy 2.2, now include general criteria regarding the location to transportation networks and environmental characteristics needed for locating industrial developments, but have no criteria requiring any locational relationship to cities and urban infrastructure, or to the Urban Growth Areas of the cities in Douglas County. The only statement is that the development (Goal 2, Policy 2.1.e.) "Be annexed before development ***if*** [*emphasis added*] adjacent to municipal boundaries."

The significance of this statement is that it would require industrial and employment-related developments to be annexed ONLY if adjacent to city boundaries. Otherwise, this statement implies, an industrial use or employment-related use could be located anywhere in the Rural Area, and presumably also, in the UGA of the cities, without annexation as long as it conforms to the other criteria. What this statement does is open up almost the entire county to random industrial and employment-related development.

We hope this is not what was intended by the changes to Chapter 7, which heretofore strictly limited the location and types of industrial and employment-related development in the Rural Area of Douglas County.

The experience of other communities has indicated that the location and timing of industrial and employment related developments are extremely important in realizing the hoped-for benefits that they bring to the community. In Boulder, Colorado when the IBM plant moved into a site in unincorporated Boulder County in the early 1960s, the costs due to the influx of population into the City of Boulder were not offset by the taxes from the IBM plant because the taxes went to the county. DuPage County, Illinois, in the late 1980s is an example of the negative effect of random county development where the infrastructure costs were not offset by the tax benefits. Infrastructure extensions (sewer, water, power, emergency and other types of services) well beyond the urban boundaries along with the accompanying road improvements needed, proved to create the opposite effects of the hoped-for fiscal benefits for either the counties or cities in DuPage County.

We ask that you change this statement Goal 2, Policy 2.1.e. to read: "be adjacent to municipal boundaries and annexed before development."

Thank you.

Sincerely yours,

Carrie Lindsey
President Elect

Alan Black, Chairman
Land Use Committee

Attachment

LWV3-24&26-08pc Ch7 LTR2editedFINAL.wpd

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May 19, 2008

Jane M. Eldredge
E-Mail: jeldredge@barberemerson.com

Mr. Grant Eichhorn, Chair
Lawrence/Douglas County Metropolitan
Planning Commission
City Hall
6 East Sixth Street
Lawrence, Kansas 66044

Via Facsimile and U.S. Mail

Re: Planning Commission Agenda Item No. 11 - Industrial and Employment-Related Land Use

Dear Chairman Eichhorn:

Please make the following changes to the May 2008 Draft of the revised Chapter Seven:

1. Page 7-4, please delete the last sentence under the description of the Union Pacific Railroad Corridor. That sentence is: "~~Where consolidation of industrial sites is impractical, it is recommended those properties be converted to residential and/or neighborhood commercial uses~~."

2. Page 7-7: the description of the I-70 and K-10 industrial site: please delete the last sentence of this description which is: "~~In the future, this area will be an important gateway to the City that has the opportunity to develop as a work-live campus type center or Industrial/Business/Research Park~~." This sentence should be replaced with, **"This area would be best suited for Warehouse Distribution Uses, Industrial Uses, Work-live Campus Type Centers and Industrial/Business/Research Parks."**

   The industrial land use categories of Warehouse and Distribution and Industrial are permitted at the Farmland Industries site, the Southeast Area site, the Airport site and the K-10 and Highway 40 site.

The I-70/K-10 site is uniquely suited for warehouse distribution and industrial land uses as defined in this chapter. These uses should not be excluded from this site.

3. Policy 2.1(1)(e), please delete this reference to prime agricultural farmland.

Thank you for your consideration.

Sincerely,

BARBER EMERSON, L.C.

Jane M. Eldredge

Jane M. Eldredge

JME:klb

James W. Grauerholz

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March 24, 2008

Amy Miller
Long Range Planner
Lawrence-Douglas County Planning Office
City Hall
Lawrence KS 66044

re: Horizon 2020, Chapter 7, Industrial Uses; draft March 2008

Dear Amy,

Thank you for addressing the concerns that I expressed in my letter to Sheila Stogsdill dated Nov. 20, 2007, about proposed revisions in Chapter 7 where it deals with the Burroughs Creek Corridor (the former Santa Fe Railroad Corridor), i.e., in the map at page 7-25, and in the Chapter's new text at page 7-4:

> The Burroughs Creek Corridor (the former Santa Fe Railroad Corridor) stretches from East 31st Street to the Kansas River in East Lawrence and includes a north and south segment. Parts of the corridor area offer smaller land parcels and provide* opportunities for small business owners to coexist with neighboring residential uses. Future development of this area should be in accordance with the Burroughs Creek Corridor Plan.
>
> (* typo corrected: "parts … provide" rather than "provides)

Technical comments:

[1] The Burroughs Creek Corridor Plan's Study Area did not include the area north of 9th Street (extended) to the Kansas River; see p. 1-1 and map at 1-3. But the additional area comprises only two zoning districts: the large employment-related area zoned "IG," with several industrial/commercial uses, and the large area zoned "GPI," comprising the City's sewage-treatment plant and the northern part of Brook Creek Park, to the Kansas River. I believe it is appropriate to include these districts.

[2] The mention of "a north and south segment" included, in the Dec. 2004 draft, language specifying "23rd Street" as the dividing line between the two segments; that is absent from this draft, perhaps rendering the mention of two "segments" unclear.

[3] I believe the new sentence that mentions the Burroughs Creek Corridor Plan should be reinforced slightly, with language along these lines:

> Future development of this area should be in accordance with the Goals and Recommendations established in the Burroughs Creek Corridor Plan.

My thanks to you and the Planning Commissioners for considering these slight, final suggested amendments.

Sincerely,

James W. Grauerholz
Brook Creek Neighborhood Association member
Burroughs Creek Corridor Plan Study Committee, 2005–2006