

Table of Contents Section II – Soil and Site Information

	Issue Date	Date of Last Review	Responsible Staff
<i>Use and Explanation of Soil Interpretations</i>			
<i>Explanation of Key Phrases Used in Soil Interpretations</i>			
Soils Legends <i>* Acreage and Proportionate Extent of the Soils</i>	1/02	1/02	SOI
Soil Descriptions - Nontechnical <i>Use and Explanation of Nontechnical Descriptions</i> <i>*Nontechnical Soils Description Report</i>	1/02	1/93	SOI
Soil Descriptions - Technical <i>*Map Unit Description Report</i>	1/02	1/02	SOI
Cropland Interpretations - Technical <i>*Prime Farmland Report</i> <i>* Kansas Soil Rating for Plant Growth Index</i> <i>*Soil Properties for Conservation Planning</i>	1/02	1/02	SOI
Rangeland, Grazed Forestland, Native Pastureland Interpretations <i>*Rangeland Productivity Report</i> <i>*Range Site Descriptions</i>	1/02	1/02	SOI
Forestland Interpretations <i>Use and Explanation of Forestland Interpretations</i> <i>*Woodland Management and Productivity</i>	1/93	1/93	SOI
Nonagricultural Interpretations <i>*Building Site Development Report</i> <i>*Construction Materials Report</i>	1/02	1/02	SOI
Recreation Interpretations <i>*Recreational Interpretations</i>	1/02	1/02	SOI
Wildlife Interpretations <i>*Wildlife Interpretations Report</i>	1/02	1/02	SOI
Pastureland and Hayland Interpretations <i>*Yields Per Acre of Pasture and Hayland</i>	1/02	1/02	SOI

	Issue Date	Date of Last Review	Responsible Staff
Mined Land Interpretations <i>Use and Explanation of Mined Land Interpretations</i>	1/93	1/93	SOI
Windbreak Interpretations <i>*Conservation Tree and Shrub Management Report</i>	1/02	1/02	SOI
Engineering Interpretations <i>*Engineering Index Properties</i> <i>*Physical Properties of the Soils</i> <i>*Chemical Properties of the Soils</i> <i>*Water Features</i> <i>*Soil Features</i> <i>*Water Management Report</i>	1/02	1/02	SOI
Waste Disposal Interpretations <i>*Sanitary Facilities Report</i> <i>*Agricultural Waste Management Report</i>	1/02	1/02	SOI
Water Quantity and Quality Interpretations <i>Use and Explanation of Water Quantity and Quality Interpretations</i> <i>*Appendix A – Soils Potential For Surface Loss and Leaching</i> <i>*Appendix B – Pesticide Selected Properties Database</i> <i>*Appendix C – Herbicide Selected Properties Database</i> <i>*Soil-Pesticide Interaction Screening Procedure Worksheet (Blank)</i> <i>*WIN-PST SPISP II Soil Sensitivity to Pesticide Loss Rating Report</i>	1/02	1/02	SOI
Hydric Soil Interpretations <i>Use and Explanation of Hydric Soil Interpretations</i> <i>*Hydric Soils List</i>	1/02	1/02	SOI
HEL Interpretations <i>Use and Explanation of Highly Erodible Land Interpretations</i> <i>*Highly Erodible Lands Report</i> <i>*LS and Supporting Data for 1990 Frozen HEL List</i> <i>*CRP 20 Soil Supporting Data for 1990 Frozen HEL List</i>	7/95	1/00	SOI

**County specific computer generated reports.*

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Chautauqua County, Kansas: Published

Map symbol	Soil name	Acres	Percent
015CS	Clime-Sogn Complex, 3 To 15 Percent Slopes-----	2,051	0.5
035CC	Clime-Sogn Complex, 2 To 15 Percent Slopes-----	6,598	1.6
035LA	Labette Silty Clay Loam, 1 To 3 Percent Slopes-----	413	0.1
035MC	Martin Silty Clay Loam, 2 To 7 Percent Slopes, Eroded-----	917	0.2
035RA	Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded-----	27	*
035SA	Smolan Silty Clay Loam, 1 To 3 Percent Slopes-----	25	*
035SC	Smolan Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	36	*
035SD	Sogn Silty Clay Loam, 0 To 10 Percent Slopes-----	276	*
035TA	Tabler Silty Clay Loam, 0 To 1 Percent Slopes-----	1,146	0.3
049CD	Catoosa Silt Loam, 0 To 2 Percent Slopes-----	96	*
049CF	Catoosa-Sogn Complex, 0 To 8 Percent Slopes-----	231	*
049CK	Clime Stony Silty Clay Loam, 20 To 30 Percent Slopes-----	43	*
049CS	Clime-Sogn Complex, 5 To 20 Percent Slopes-----	21,309	5.2
049EM	Eram Silt Loam, 1 To 4 Percent Slopes-----	131	*
049KD	Kenoma Silt Loam, 1 To 3 Percent Slopes-----	77	*
049LA	Labette Silty Clay Loam, 1 To 4 Percent Slopes-----	295	*
049LD	Labette-Dwight Complex, 0 To 3 Percent Slopes-----	337	*
049ME	Martin Silty Clay, 3 To 7 Percent Slopes, Eroded-----	307	*
049SH	Sogn Silty Clay Loam, 0 To 3 Percent Slopes-----	1,323	0.3
049ST	Steedman Stony Loam, 5 To 20 Percent Slopes-----	1,738	0.4
049VD	Verdigris Silt Loam, Channeled-----	8	*
125BG	Bates-Collinsville Complex, 4 To 20 Percent Slopes-----	53	*
125DB	Dennis Silt Loam, 1 To 4 Percent Slopes-----	545	0.1
125EB	Eram Silty Clay Loam, 1 To 4 Percent Slopes-----	328	*
125ET	Eram-Talihina Silty Clay Loams, 6 To 20 Percent Slopes-----	753	0.2
125KA	Kenoma Silt Loam, 0 To 2 Percent Slopes-----	61	*
125LA	Lanton Silty Clay Loam, Occasionally Flooded-----	355	*
AED	Arents, Earthen Dam-----	188	*
Ba	Bates Fine Sandy Loam, 1 To 4 Percent Slopes-----	1,425	0.3
Ca	Clareson Silty Clay Loam, 0 To 2 Percent Slopes-----	2,994	0.7
Cs	Clareson-Sogn Complex, 1 To 3 Percent Slopes-----	6,314	1.5
Ct	Cleora Fine Sandy Loam, Occasionally Flooded-----	962	0.2
Cx	Clime-Sogn Complex, 8 To 30 Percent Slopes-----	35,350	8.6
Db	Dennis Silt Loam, 1 To 3 Percent Slopes-----	6,775	1.6
Dc	Dennis Silt Loam, 3 To 7 Percent Slopes-----	16,097	3.9
De	Dennis Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	13,065	3.2
DEE	Dennis Silt Loam, 4 To 7 Percent Slopes-----	544	0.1
Ds	Dennis-Dwight Silt Loams, 1 To 3 Percent Slopes-----	2,349	0.6
Ea	Eram Silty Clay Loam, 1 To 3 Percent Slopes-----	12,220	3.0
Ec	Eram-Collinsville Complex, 1 To 7 Percent Slopes-----	10,971	2.7
Iv	Ivan Silt Loam, Occasionally Flooded-----	5,338	1.3
Ke	Kenoma Silt Loam, 0 To 1 Percent Slopes-----	2,833	0.7
Ln	Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes-----	2,443	0.6
Lo	Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes, Eroded-----	921	0.2
Lu	Lula Silt Loam, 0 To 2 Percent Slopes-----	7,147	1.7
M-W	Miscellaneous Water-----	36	*
Ma	Martin Silty Clay Loam, 0 To 1 Percent Slopes-----	225	*
Mb	Martin Silty Clay Loam, 1 To 4 Percent Slopes-----	10,919	2.6
Mc	Martin Silty Clay Loam, 4 To 7 Percent Slopes-----	12,946	3.1
Me	Martin Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	9,372	2.3
Ms	Martin-Dwight Silty Clay Loams, 1 To 3 Percent Slopes-----	13,985	3.4
Mt	Mason Silt Loam, Rarely Flooded-----	15,704	3.8
Mx	Mason-Drummond Silt Loams, Rarely Flooded-----	712	0.2
Nd	Niotaze-Darnell Complex, 8 To 20 Percent Slopes-----	38,098	9.2
Oa	Osage Silty Clay Loam, Occasionally Flooded-----	4,116	1.0
Oc	Osage Silty Clay, Occasionally Flooded-----	3,092	0.7
Os	Osage-Drummond Complex, Occasionally Flooded-----	4,894	1.2
PIT	Pits-----	9	*
QUA	Quarry-----	28	*
So	Sogn Soils, 1 To 3 Percent Slopes-----	22,708	5.5
St	Steedman Stony Clay Loam, 8 To 20 Percent Slopes-----	58,632	14.2
Sv	Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes-----	3,447	0.8
Sx	Stephenville-Darnell Fine Sandy Loams, 1 To 5 Percent Slopes-----	31,517	7.6
Ve	Verdigris Silt Loam, Occasionally Flooded-----	11,593	2.8
W	Water-----	3,006	0.7
	Total-----	412,454	100.0

* Less than 0.1 percent.

NONTECHNICAL SOIL DESCRIPTIONS
Chautauqua County, Kansas

Nontechnical soil descriptions describe soil properties or management considerations specific to a soil map unit or group of map units, shown in the NonTechnical Descriptions report. These descriptions are written in terminology that Non-technical users of soil survey information can understand. Nontechnical soil descriptions are a powerful tool for creating reports. These high quality, easy to read reports can be generated by conservation planners and other NRCS employees for distribution to land users. Soil map unit descriptions and National Soil Information System records are the basis for these descriptions.

015CS Clime-Sogn Complex, 3 To 15 Percent Slopes

Clime soil makes up 67 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 30 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep summit hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification .

035CC Clime-Sogn Complex, 2 To 15 Percent Slopes

Clime soil makes up 60 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately steep backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 20 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately steep backslope hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

035LA Labette Silty Clay Loam, 1 To 3 Percent Slopes

Labette soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from limestone-shale. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

035MC Martin Silty Clay Loam, 2 To 7 Percent Slopes, Eroded

Martin, eroded, soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4e.

035RA Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded

Reading soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping terrace on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 1.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

035SA Smolan Silty Clay Loam, 1 To 3 Percent Slopes

Smolan soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping footslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey loess. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe25-34) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

035SC Smolan Silty Clay Loam, 3 To 7 Percent Slopes, Eroded

Smolan, eroded, soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey loess. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

035SD Sogn Silty Clay Loam, 0 To 10 Percent Slopes

Sogn soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to strongly sloping hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

035TA Tabler Silty Clay Loam, 0 To 1 Percent Slopes

Tabler soil makes up 95 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level hillslope on upland. The runoff class is high. The parent material consists of calcareous clayey alluvium. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil is in the Clay Upland (pe24-32) range site. It is in the nonirrigated land capability classification 2s.

049CD Catoosa Silt Loam, 0 To 2 Percent Slopes

Catoosa soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping backslope hillslope on upland. The runoff class is low. The parent material consists of residuum weathered from limestone. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

049CF Catoosa-Sogn Complex, 0 To 8 Percent Slopes

Catoosa soil makes up 55 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to strongly sloping summit hillslope on upland. The runoff class is low. The parent material consists of residuum weathered from limestone. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 35 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to strongly sloping hillslope on upland. The runoff class is low. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

049CK Clime Stony Silty Clay Loam, 20 To 30 Percent Slopes

Clime soil makes up 100 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a steep to steep backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 7e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

049CS Clime-Sogn Complex, 5 To 20 Percent Slopes

Clime soil makes up 65 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 20 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

049EM Eram Silt Loam, 1 To 4 Percent Slopes

Eram soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope, summit hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

049KD Kenoma Silt Loam, 1 To 3 Percent Slopes

Kenoma soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping summit hillslope on upland. The runoff class is very high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is well drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 72 inches. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

049LA Labette Silty Clay Loam, 1 To 4 Percent Slopes

Labette soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit, backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from limestone-shale. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

049LD Labette-Dwight Complex, 0 To 3 Percent Slopes

Labette soil makes up 65 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from limestone-shale. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

Dwight soil makes up 35 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from limestone, cherty. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is moderately well drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil contains a slightly saline horizon. This soil is in the Clay Pan (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

049ME Martin Silty Clay, 3 To 7 Percent Slopes, Eroded

Martin, eroded, soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping backslope, footslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. This soil is moderately well drained. The slowest permeability is slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

049SH Sogn Silty Clay Loam, 0 To 3 Percent Slopes

Sogn soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping summit hillslope on upland. The runoff class is low. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

049ST Steedman Stony Loam, 5 To 20 Percent Slopes

Steedman soil makes up 85 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from clayey shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. The soil contains a maximum amount of 1 percent calcium carbonate. This soil is in the Loamy Upland (pe24-32) range site. It is in the nonirrigated land capability classification 6e.

049VD Verdigris Silt Loam, Channeled

Verdigris soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is frequently flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 5w.

125BG Bates-Collinsville Complex, 4 To 20 Percent Slopes

Bates soil makes up 45 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping summit ridge on upland. The runoff class is medium. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderately slow. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

Collinsville soil makes up 40 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep backslope ridge on upland. The runoff class is low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

125DB Dennis Silt Loam, 1 To 4 Percent Slopes

Dennis soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2e.

125EB Eram Silty Clay Loam, 1 To 4 Percent Slopes

Eram soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 3e.

125ET Eram-Talihina Silty Clay Loams, 6 To 20 Percent Slopes

Eram soil makes up 50 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping summit ridge on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 24 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 6e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Talihina soil makes up 35 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep shoulder ridge on upland. The runoff class is very high. The parent material consists of residuum weathered from shale. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a very low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 24 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 7s.

125KA Kenoma Silt Loam, 0 To 2 Percent Slopes

Kenoma soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping paleoterrace on upland. The runoff class is very high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-42) range site. It is in the nonirrigated land capability classification 2s.

125LA Lanton Silty Clay Loam, Occasionally Flooded

Lanton soil makes up 95 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain, river valley. The runoff class is high. The parent material consists of silty and clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is slow. It has a high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Loamy Lowland (pe35-42) range site. It is in the nonirrigated land capability classification 2w.

Ba Bates Fine Sandy Loam, 1 To 4 Percent Slopes

Bates soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping hillslope on upland. The runoff class is low. The parent material consists of sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 2e.

Ca Clareson Silty Clay Loam, 0 To 2 Percent Slopes

Clareson soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping hillslope on upland. The runoff class is low. The parent material consists of silty and clayey residuum weathered from limestone, unspecified. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Flats (pe35-38) range site. It is in the nonirrigated land capability classification 3s.

Cs Clareson-Sogn Complex, 1 To 3 Percent Slopes

Clareson soil makes up 65 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is medium. The parent material consists of silty and clayey residuum weathered from limestone, unspecified. The soil is 20 to 40 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Flats (pe35-38) range site. It is in the nonirrigated land capability classification 6s.

Sogn soil makes up 35 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is low. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 10 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe34-38) range site. It is in the nonirrigated land capability classification 7.

Ct Cleora Fine Sandy Loam, Occasionally Flooded

Cleora soil makes up 90 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 2w.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Cx Clime-Sogn Complex, 8 To 30 Percent Slopes

Clime soil makes up 62 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a strongly sloping to steep backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, calcareous. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Limy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 6e.

Sogn soil makes up 25 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep hillslope on upland. The runoff class is medium. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7.

Db Dennis Silt Loam, 1 To 3 Percent Slopes

Dennis soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 2e.

Dc Dennis Silt Loam, 3 To 7 Percent Slopes

Dennis soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping summit hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 3e.

De Dennis Silty Clay Loam, 3 To 7 Percent Slopes, Eroded

Dennis, eroded, soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 4e.

DEE Dennis Silt Loam, 4 To 7 Percent Slopes

Dennis soil makes up 100 percent of the map unit. This map unit is in the This soil occurs on a moderately sloping footslope, backslope hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe24-32) range site. It is in the nonirrigated land capability classification 3e.

Ds Dennis-Dwight Silt Loams, 1 To 3 Percent Slopes

Dennis soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 15 inches. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 4s.

Dwight soil makes up 23 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from limestone, cherty. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil contains a slightly saline horizon. This soil is in the Claypan (pe35-38) range site. It is in the nonirrigated land capability classification 4s.

Ea Eram Silty Clay Loam, 1 To 3 Percent Slopes

Eram soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping backslope hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-38) range site. It is in the nonirrigated land capability classification 3e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Ec Eram-Collinsville Complex, 1 To 7 Percent Slopes

Eram soil makes up 70 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit hillslope on upland. The runoff class is high. The parent material consists of silty and clayey residuum weathered from shale, unspecified. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Clay Upland (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Collinsville soil makes up 20 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit, shoulder hillslope on upland. The runoff class is very low. The parent material consists of sandstone residuum. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Sandstone (pe35-38) range site. It is in the nonirrigated land capability classification 6.

Iv Ivan Silt Loam, Occasionally Flooded

Ivan soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Lowland (pe30-36) range site. It is in the nonirrigated land capability classification 2w.

Ke Kenoma Silt Loam, 0 To 1 Percent Slopes

Kenoma soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level hillslope on upland. The runoff class is high. The parent material consists of loess over ancient clayey alluvium and/or residuum weathered from limestone and shale. This soil is moderately well drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil contains a very slightly saline horizon. This soil is in the Clay Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2s.

Ln Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes

Longford soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on upland. The runoff class is high. The parent material consists of clayey alluvium. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

Lo Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes, Eroded

Longford, eroded, soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping backslope hillslope on upland. The runoff class is high. The parent material consists of clayey alluvium. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is very slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

Lu Lula Silt Loam, 0 To 2 Percent Slopes

Lula soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level to gently sloping hillslope on upland. The runoff class is low. The parent material consists of residuum weathered from limestone, unspecified. The soil is 40 to 60 inches deep to bedrock (lithic). This soil is well drained. The slowest permeability is moderate. It has a moderate available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 2e.

Ma Martin Silty Clay Loam, 0 To 1 Percent Slopes

Martin soil makes up 95 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. The soil contains a maximum amount of 15 percent calcium carbonate. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2s.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Mb Martin Silty Clay Loam, 1 To 4 Percent Slopes

Martin soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone and shale over silty and clayey residuum weathered from limestone and shale. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 30 inches. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 2e.

Mc Martin Silty Clay Loam, 4 To 7 Percent Slopes

Martin soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 3e.

Me Martin Silty Clay Loam, 3 To 7 Percent Slopes, Eroded

Martin, eroded, soil makes up 85 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a moderately sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4e.

Ms Martin-Dwight Silty Clay Loams, 1 To 3 Percent Slopes

Martin soil makes up 75 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is high. The parent material consists of silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale. The soil is 40 to 60 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a high available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Upland (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

Dwight soil makes up 15 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is very high. The parent material consists of silty and clayey residuum weathered from limestone, cherty. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil contains a slightly saline horizon. This soil is in the Clay Pan (pe30-36) range site. It is in the nonirrigated land capability classification 4s.

Mt Mason Silt Loam, Rarely Flooded

Mason soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level stream terrace on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 1.

Mx Mason-Drummond Silt Loams, Rarely Flooded

Mason soil makes up 75 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level stream terrace on river valley. The runoff class is low. The parent material consists of silty alluvium. This soil is well drained. The slowest permeability is moderately slow. It has a high available water capacity and a moderate shrink swell potential. This soil is rarely flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 3s.

Drummond soil makes up 15 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level terrace on river valley. The runoff class is very high. The parent material consists of clayey and/or loamy alluvium. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is rarely flooded and is not ponded. The top of the seasonal high water table is at 48 inches. This soil contains a slightly saline horizon. This soil is in the Saline Lowland (pe24-32) range site. It is in the nonirrigated land capability classification 5s.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Nd Niotaze-Darnell Complex, 8 To 20 Percent Slopes

Niotaze soil makes up 65 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from sandstone and shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat poorly drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Darnell soil makes up 20 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep backslope hillslope on upland. The runoff class is very low. The parent material consists of loamy material weathered from sandstone. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is somewhat excessively drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6s.

Oa Osage Silty Clay Loam, Occasionally Flooded

Osage soil makes up 85 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is high. The parent material consists of clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is occasionally flooded and is occasional ponded. The top of the seasonal high water table is at 6 inches. This soil is in the Clay Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 2w.

Oc Osage Silty Clay, Occasionally Flooded

Osage soil makes up 90 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very high. The parent material consists of clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is occasionally flooded and is occasional ponded. The top of the seasonal high water table is at 6 inches. This soil is in the Clay Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 3w.

Os Osage-Drummond Complex, Occasionally Flooded

Osage soil makes up 60 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very high. The parent material consists of clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a very high shrink swell potential. This soil is occasionally flooded and is occasional ponded. The top of the seasonal high water table is at 6 inches. This soil is in the Clay Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 4s.

Drummond soil makes up 25 percent of the map unit. This map unit is in the Cherokee Prairies Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very high. The parent material consists of clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a low available water capacity and a high shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 48 inches. This soil contains a slightly saline horizon. It is in the nonirrigated land capability classification .

So Sogn Soils, 1 To 3 Percent Slopes

Sogn soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is low. The parent material consists of loamy residuum weathered from limestone, unspecified. The soil is 4 to 20 inches deep to bedrock (lithic). This soil is somewhat excessively drained. The slowest permeability is moderate. It has a very low available water capacity and a moderate shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Limy (pe30-36) range site. It is in the nonirrigated land capability classification 7s.

St Steedman Stony Clay Loam, 8 To 20 Percent Slopes

Steedman soil makes up 100 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a strongly sloping to moderately steep backslope hillslope on upland. The runoff class is very high. The parent material consists of clayey residuum weathered from clayey shale. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is moderately well drained. The slowest permeability is slow. It has a low available water capacity and a high shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 18 inches. The soil contains a maximum amount of 1 percent calcium carbonate. This soil is in the Loamy Upland (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Sv Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes

Stephenville soil makes up 85 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping hillslope on upland. The runoff class is low. The parent material consists of fine-loamy material weathered from sandstone. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 2e.

NONTECHNICAL SOIL DESCRIPTIONS--Continued
Chautauqua County, Kansas

Sx Stephenville-Darnell Fine Sandy Loams, 1 To 5 Percent Slopes

Stephenville soil makes up 60 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping hillslope on upland. The runoff class is low. The parent material consists of fine-loamy material weathered from sandstone. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is well drained. The slowest permeability is moderate. It has a low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 6e.

Darnell soil makes up 25 percent of the map unit. This map unit is in the Cross Timbers Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping summit hillslope on upland. The runoff class is very low. The parent material consists of loamy material weathered from sandstone. The soil is 10 to 20 inches deep to bedrock (paralithic). This soil is somewhat excessively drained. The slowest permeability is moderately rapid. It has a very low available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Shallow Savannah (pe35-38) range site. It is in the nonirrigated land capability classification 4s.

Ve Verdigris Silt Loam, Occasionally Flooded

Verdigris soil makes up 90 percent of the map unit. This map unit is in the Bluestem Hills Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on river valley. The runoff class is negligible. The parent material consists of silty alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a very high available water capacity and a moderate shrink swell potential. This soil is occasionally flooded and is not ponded. The seasonal high water table is at a depth of more than 6 feet. This soil is in the Loamy Lowland (pe35-38) range site. It is in the nonirrigated land capability classification 2w.

015CS—Clime-Sogn complex, 3 to 15 percent slopes**Map Unit Composition**

Clime: 67 percent
 Sogn: 30 percent
 Minor components: 3 percent

Component Descriptions**Clime**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.8 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Limy Upland (pe30-36)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; silty clay
 H2—9 to 33 inches; silty clay
 Cr—33 to 37 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 3 to 15 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 1.4 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium

Ecological site: Shallow Limy (pe30-36)

Typical Profile:

H1—0 to 7 inches; silty clay loam
 R—7 to 11 inches; unweathered bedrock

Minor Components**Rock outcrop**

Composition: About 3 percent

035CC—Clime-Sogn complex, 2 to 15 percent slopes**Map Unit Composition**

Clime: 60 percent
 Sogn: 20 percent
 Minor components: 20 percent

Component Descriptions**Clime**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.7 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Limy Upland (pe30-36)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 8 inches; silty clay
 H2—8 to 20 inches; silty clay
 H3—20 to 36 inches; silty clay
 Cr—36 to 40 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 2 to 15 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Very low (About 2.0 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Shallow Limy (pe30-36)

Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 10 inches; silty clay loam

R—10 to 14 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: About 10 percent

Geomorphic Position: hillslope on upland

Drainage class: Moderately well drained

Martin

Composition: About 10 percent

Geomorphic Position: hillslope on upland

Slope: 3 to 7 percent

Drainage class: Moderately well drained

Ecological site: Loamy Upland (pe30-36)

035LA—Labette silty clay loam, 1 to 3 percent slopes

Map Unit Composition

Labette: 85 percent

Minor components: 15 percent

Component Descriptions

Labette

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Parent material: Silty and clayey residuum weathered from limestone-shale

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Moderate (About 6.0 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: High

Ecological site: Loamy Upland (pe30-36)

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 7 inches; silty clay loam

H2—7 to 36 inches; silty clay

R—36 to 40 inches; unweathered bedrock

Minor Components

Dwight

Composition: About 8 percent

Slope: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)

Drainage class: Moderately well drained

Ecological site: Clay Pan (pe30-36)

Irwin

Composition: About 7 percent

Slope: 1 to 3 percent

Drainage class: Well drained

Ecological site: Clay Upland (pe25-34)

035MC—Martin silty clay loam, 2 to 7 percent slopes, eroded

Map Unit Composition

Martin: 90 percent

Minor components: 10 percent

Component Descriptions

Martin

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Parent material: Silty and clayey colluvium

derived from limestone-shale over silty and clayey

residuum weathered from limestone-shale

Slope: 2 to 7 percent

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 9.7 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: High

Ecological site: Loamy Upland (pe30-36)

Land capability (nonirrigated): 4e

Typical Profile:

- H1—0 to 9 inches; silty clay loam
- H2—9 to 15 inches; silty clay loam
- H3—15 to 60 inches; silty clay

Minor Components

Clime

- Composition:* About 5 percent
- Slope:* 5 to 9 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)
- Drainage class:* Moderately well drained
- Ecological site:* Limy Upland (pe30-36)

Labette

- Composition:* About 5 percent
- Slope:* 1 to 3 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)
- Drainage class:* Well drained
- Ecological site:* Loamy Upland (pe30-36)

035RA—Reading silt loam, 0 to 2 percent slopes, rarely flooded

Map Unit Composition

- Reading: 85 percent
- Minor components: 15 percent

Component Descriptions

Reading

- MLRA:* 76 - Bluestem Hills
- Landform:* Terrace on river valley
- Parent material:* Silty alluvium
- Slope:* 0 to 2 percent
- Drainage class:* Well drained
- Slowest permeability:* Moderately slow (About 0.20 in/hr)
- Available water capacity:* High (About 11.6 inches)
- Shrink-swell potential:* Moderate (About 4.5 LEP)
- Flooding hazard:* Rare
- Depth to seasonal water saturation:* More than 6 feet
- Runoff class:* Low
- Ecological site:* Loamy Lowland (pe30-36)
- Land capability (nonirrigated):* 1

Typical Profile:

- H1—0 to 14 inches; silt loam
- H2—14 to 50 inches; silty clay loam
- H3—50 to 60 inches; silty clay loam

Minor Components

Brewer

- Composition:* About 5 percent
- Slope:* 0 to 1 percent
- Drainage class:* Well drained
- Ecological site:* Loamy Terrace (pe24-32)

Martin

- Composition:* About 5 percent
- Geomorphic Position:* hillslope on upland
- Slope:* 3 to 7 percent
- Drainage class:* Moderately well drained
- Ecological site:* Loamy Upland (pe30-36)

Ivan

- Composition:* About 5 percent
- Slope:* 0 to 2 percent
- Drainage class:* Well drained
- Ecological site:* Loamy Lowland (pe30-36)

035SA—Smolan silty clay loam, 1 to 3 percent slopes

Map Unit Composition

- Smolan: 90 percent
- Minor components: 10 percent

Component Descriptions

Smolan

- MLRA:* 76 - Bluestem Hills
- Landform:* Hillslope on upland
- Hillslope position:* Footslope
- Parent material:* Silty and clayey loess
- Slope:* 1 to 3 percent
- Drainage class:* Moderately well drained
- Slowest permeability:* Slow (About 0.06 in/hr)
- Available water capacity:* High (About 10.7 inches)
- Shrink-swell potential:* High (About 7.5 LEP)
- Flooding hazard:* None
- Depth to seasonal water saturation:* More than 6 feet
- Runoff class:* High
- Ecological site:* Loamy Upland (pe25-34)
- Land capability (irrigated):* 2e
- Land capability (nonirrigated):* 2e

Typical Profile:

- H1—0 to 8 inches; silty clay loam
- H2—8 to 15 inches; silty clay loam
- H3—15 to 40 inches; silty clay
- H4—40 to 60 inches; silty clay loam

Minor Components

Norge

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe24-32)

Norge

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe24-32)

Labette

Composition: About 5 percent
Slope: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe30-36)

035SD—Sogn silty clay loam, 0 to 10 percent slopes

035SC—Smolan silty clay loam, 3 to 7 percent slopes, eroded

Map Unit Composition

Sogn: 90 percent
 Minor components: 10 percent

Map Unit Composition

Smolan: 90 percent
 Minor components: 10 percent

Component Descriptions

Component Descriptions

Smolan

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey loess
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.7 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe25-34)
Land capability (nonirrigated): 4e

Typical Profile:

- H1—0 to 6 inches; silty clay loam
- H2—6 to 15 inches; silty clay loam
- H3—15 to 40 inches; silty clay
- H4—40 to 60 inches; silty clay loam

Minor Components

Martin

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 0 to 10 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Limy (pe30-36)
Land capability (nonirrigated): 7s

Typical Profile:

- H1—0 to 10 inches; silty clay loam
- R—10 to 14 inches; unweathered bedrock

Minor Components

Clime

Composition: About 5 percent
Slope: 7 to 15 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Limy Upland (pe30-36)

Labette

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained
Ecological site: Loamy Upland (pe30-36)

035TA—Tabler silty clay loam, 0 to 1 percent slopes

Map Unit Composition

Tabler: 95 percent
 Minor components: 5 percent

Component Descriptions

Tabler

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Calcareous clayey alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 30 to 42 inches
Runoff class: High
Ecological site: Clay Upland (pe24-32)
Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 48 inches; silty clay
 H3—48 to 60 inches; silty clay

Minor Components

Vanoss

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe24-32)

049CD—Catoosa silt loam, 0 to 2 percent slopes

Map Unit Composition

Catoosa: 90 percent
 Minor components: 10 percent

Component Descriptions

Catoosa

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Residuum weathered from limestone
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 6.5 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 10 inches; silt loam
 H2—10 to 34 inches; silty clay loam
 R—34 to 38 inches; unweathered bedrock

Minor Components

Sogn

Composition: About 10 percent
Geomorphic Position: hillslope on upland
Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Ecological site: Shallow Limy (pe30-36)

049CF—Catoosa-Sogn complex, 0 to 8 percent slopes

Map Unit Composition

Catoosa: 55 percent
 Sogn: 35 percent
 Minor components: 10 percent

Component Descriptions

Catoosa

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit

Parent material: Residuum weathered from limestone
Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 5.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; silt loam
 H2—9 to 26 inches; silty clay loam
 R—26 to 30 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 0 to 8 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 1.6 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Limy (pe30-36)
Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 8 inches; silty clay loam
 R—8 to 12 inches; unweathered bedrock

Minor Components**Eram**

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe30-36)

Clime

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Limy Upland (pe30-36)

049CK—Clime stony silty clay loam, 20 to 30 percent slopes**Map Unit Composition**

Clime: 100 percent

Component Descriptions**Clime**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 20 to 30 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 5.3 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Limy Upland (pe30-36)
Land capability (nonirrigated): 7e

Typical Profile:

H1—0 to 2 inches; stony silty clay loam
 H2—2 to 10 inches; silty clay loam
 H3—10 to 27 inches; silty clay
 H4—27 to 33 inches; silty clay
 Cr—33 to 37 inches; unweathered bedrock

049CS—Clime-Sogn complex, 5 to 20 percent slopes**Map Unit Composition**

Clime: 65 percent
 Sogn: 20 percent

Minor components: 15 percent

Component Descriptions

Climate

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Hillslope position: Backslope

Parent material: Silty and clayey residuum weathered from shale, calcareous

Slope: 5 to 20 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 4.3 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very high

Ecological site: Limy Upland (pe30-36)

Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 10 inches; silty clay

H2—10 to 24 inches; silty clay

H3—24 to 31 inches; silty clay

Cr—31 to 35 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Parent material: Loamy residuum weathered from limestone, unspecified

Slope: 5 to 10 percent

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Drainage class: Somewhat excessively drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Very low (About 1.6 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Shallow Limy (pe30-36)

Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 8 inches; silty clay loam

R—8 to 12 inches; unweathered bedrock

Minor Components

Eram

Composition: About 3 percent

Geomorphic Position: hillslope on upland

Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe30-36)

Martin

Composition: About 3 percent

Geomorphic Position: hillslope on upland

Slope: 4 to 7 percent

Drainage class: Moderately well drained

Ecological site: Loamy Upland (pe30-36)

Rock outcrop

Composition: About 3 percent

Dwight

Composition: About 3 percent

Slope: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)

Drainage class: Moderately well drained

Ecological site: Clay Pan (pe30-36)

Labette

Composition: About 3 percent

Geomorphic Position: hillslope on upland

Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Ecological site: Loamy Upland (pe30-36)

049EM—Eram silt loam, 1 to 4 percent slopes

Map Unit Composition

Eram: 90 percent

Minor components: 10 percent

Component Descriptions

Eram

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Hillslope position: Backslope, summit

Parent material: Silty and clayey residuum weathered from shale, unspecified

Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 5.0 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 10 inches; silt loam
 H2—10 to 33 inches; silty clay
 Cr—33 to 37 inches; weathered bedrock

Minor Components

Bates

Composition: About 5 percent
Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe24-32)

Dwight

Composition: About 5 percent
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Moderately well drained
Ecological site: Clay Pan (pe30-36)

Depth to seasonal water saturation: About 72 to 72 inches
Runoff class: Very high
Ecological site: Clay Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 50 inches; silty clay
 H3—50 to 60 inches; silty clay loam

Minor Components

Eram

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe30-36)

Catoosa

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe30-36)

049KD—Kenoma silt loam, 1 to 3 percent slopes

Map Unit Composition

Kenoma: 90 percent
 Minor components: 10 percent

Component Descriptions

Kenoma

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: High (About 9.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None

049LA—Labette silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Labette: 90 percent
 Minor components: 10 percent

Component Descriptions

Labette

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit, backslope
Parent material: Silty and clayey residuum weathered from limestone-shale
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 5.1 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet

Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2e

Typical Profile:
 H1—0 to 9 inches; silty clay loam
 H2—9 to 30 inches; silty clay
 R—30 to 34 inches; unweathered bedrock

Minor Components

Sogn

Composition: About 10 percent
Geomorphic Position: hillslope on upland
Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Ecological site: Shallow Limy (pe30-36)

**049LD—Labette-Dwight complex,
 0 to 3 percent slopes**

Map Unit Composition

Labette: 65 percent
 Dwight: 35 percent

Component Descriptions

Labette

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from limestone-shale
Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 5.1 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 9 inches; silty clay loam
 H2—9 to 30 inches; silty clay loam
 R—30 to 34 inches; unweathered bedrock

Dwight

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from limestone, cherty
Slope: 0 to 3 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Low (About 5.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Clay Pan (pe30-36)
Land capability (nonirrigated): 4s

Typical Profile:
 H1—0 to 4 inches; silt loam
 H2—4 to 27 inches; silty clay
 H3—27 to 42 inches; silty clay
 R—42 to 46 inches; unweathered bedrock

049ME—Martin silty clay, 3 to 7 percent slopes, eroded

Map Unit Composition

Martin: 90 percent
 Minor components: 10 percent

Component Descriptions

Martin

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope, footslope
Parent material: Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)

Land capability (nonirrigated): 4e

Typical Profile:

- H1—0 to 7 inches; silty clay
- H2—7 to 60 inches; silty clay

Minor Components

Climate

- Composition:* About 10 percent
- Geomorphic Position:* hillslope on upland
- Slope:* 3 to 7 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)
- Drainage class:* Moderately well drained
- Ecological site:* Limy Upland (pe30-36)

- Geomorphic Position:* hillslope on upland
- Slope:* 3 to 7 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)
- Drainage class:* Moderately well drained
- Ecological site:* Limy Upland (pe30-36)

Catoosa

- Composition:* About 5 percent
- Geomorphic Position:* hillslope on upland
- Slope:* 0 to 2 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (lithic)
- Drainage class:* Well drained
- Ecological site:* Loamy Upland (pe30-36)

049SH—Sogn silty clay loam, 0 to 3 percent slopes

Map Unit Composition

- Sogn: 85 percent
- Minor components: 15 percent

Component Descriptions

Sogn

- MLRA:* 76 - Bluestem Hills
- Landform:* Hillslope on upland
- Hillslope position:* Summit
- Parent material:* Loamy residuum weathered from limestone, unspecified
- Slope:* 0 to 3 percent
- Depth to restrictive feature:* 4 to 20 inches to bedrock (lithic)
- Drainage class:* Somewhat excessively drained
- Slowest permeability:* Moderate (About 0.60 in/hr)
- Available water capacity:* Very low (About 1.6 inches)
- Shrink-swell potential:* Moderate (About 4.5 LEP)
- Flooding hazard:* None
- Depth to seasonal water saturation:* More than 6 feet
- Runoff class:* Low
- Ecological site:* Shallow Limy (pe30-36)
- Land capability (nonirrigated):* 7s

Typical Profile:

- H1—0 to 8 inches; silty clay loam
- R—8 to 12 inches; unweathered bedrock

Minor Components

Climate

- Composition:* About 10 percent

049ST—Steedman stony loam, 5 to 20 percent slopes

Map Unit Composition

- Steedman: 85 percent
- Minor components: 15 percent

Component Descriptions

Steedman

- MLRA:* 84A - Cross Timbers
- Landform:* Hillslope on upland
- Hillslope position:* Backslope
- Parent material:* Clayey residuum weathered from clayey shale
- Slope:* 5 to 20 percent
- Depth to restrictive feature:* 20 to 40 inches to bedrock (paralithic)
- Drainage class:* Moderately well drained
- Slowest permeability:* Slow (About 0.06 in/hr)
- Available water capacity:* Low (About 4.4 inches)
- Shrink-swell potential:* High (About 7.5 LEP)
- Flooding hazard:* None
- Depth to seasonal water saturation:* About 12 to 24 inches
- Runoff class:* Very high
- Ecological site:* Loamy Upland (pe24-32)
- Land capability (nonirrigated):* 6e

Typical Profile:

- H1—0 to 7 inches; stony loam
- H2—7 to 36 inches; silty clay
- Cr—36 to 40 inches; weathered bedrock

Minor Components

Rock outcrop

- Composition:* About 5 percent

Collinsville

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 2 to 8 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Sandstone (pe35-38)

Bates

Composition: About 5 percent
Slope: 2 to 6 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe24-32)

049VD—Verdigris silt loam, channeled

Map Unit Composition

Verdigris: 85 percent
 Minor components: 15 percent

Component Descriptions

Verdigris

MLRA: 76 - Bluestem Hills
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.4 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Lowland (pe35-38)
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 27 inches; silt loam
 H2—27 to 60 inches; silt loam

Minor Components

Martin

Composition: About 8 percent
Geomorphic Position: hillslope on upland
Slope: 4 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

Dennis

Composition: About 7 percent
Geomorphic Position: hillslope on upland
Slope: 1 to 4 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe24-32)

125BG—Bates-Collinsville complex, 4 to 20 percent slopes

Map Unit Composition

Bates: 45 percent
 Collinsville: 40 percent
 Minor components: 15 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Summit
Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and silty residuum weathered from sandstone-shale
Slope: 4 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Low (About 6.0 inches)
Shrink-swell potential: Low (About 2.9 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 15 inches; loam
 H2—15 to 27 inches; loam
 H3—27 to 31 inches; clay loam
 Cr—31 to 35 inches; weathered bedrock

Collinsville

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Backslope
Parent material: Sandstone residuum
Slope: 4 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.1 inches)
Shrink-swell potential: Low (About 1.6 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Sandstone (pe35-42)
Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 11 inches; fine sandy loam
 H2—11 to 17 inches; fine sandy loam
 R—17 to 21 inches; unweathered bedrock

Minor Components

Dennis

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 4 to 7 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 4 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

Talihina

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 6 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Clay Upland (pe35-42)

125DB—Dennis silt loam, 1 to 4 percent slopes

Map Unit Composition

Dennis: 90 percent
 Minor components: 10 percent

Component Descriptions

Dennis

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland

Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 4 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-42)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 13 inches; silt loam
 H2—13 to 19 inches; silty clay loam
 H3—19 to 60 inches; silty clay

Minor Components

Bates

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Eram

Composition: About 5 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-42)

125EB—Eram silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Eram: 90 percent
 Minor components: 10 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.9 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 11 inches; silty clay loam
 H2—11 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Minor Components**Bates**

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Talihina

Composition: About 5 percent
Slope: 6 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Clay Upland (pe35-42)

125ET—Eram-Talihina silty clay loams, 6 to 20 percent slopes**Map Unit Composition**

Eram: 50 percent
 Talihina: 35 percent
 Minor components: 15 percent

Component Descriptions**Eram**

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 6 to 8 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.9 inches)
Shrink-swell potential: High (About 7.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 28 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 11 inches; silty clay loam
 H2—11 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Talihina

MLRA: 112 - Cherokee Prairies
Landform: Ridge on upland
Hillslope position: Shoulder
Parent material: Residuum weathered from shale
Slope: 6 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Very low (About 2.9 inches)
Shrink-swell potential: High (About 8.3 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 28 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 7s

Typical Profile:

H1—0 to 7 inches; silty clay loam
 H2—7 to 14 inches; silty clay
 H3—14 to 17 inches; silty clay
 Cr—17 to 21 inches; weathered bedrock

Minor Components**Bates**

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 3 to 6 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Collinsville

Composition: About 5 percent
Geomorphic Position: ridge on upland
Slope: 1 to 4 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone (pe35-42)

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-42)

Dennis

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 1 to 4 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-42)

125LA—Lanton silty clay loam, occasionally flooded

125KA—Kenoma silt loam, 0 to 2 percent slopes

Map Unit Composition

Map Unit Composition

Kenoma: 90 percent
 Minor components: 10 percent

Lanton: 95 percent
 Minor components: 5 percent

Component Descriptions

Component Descriptions

Kenoma

MLRA: 112 - Cherokee Prairies
Landform: Paleoterrace on upland
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.9 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: Very high
Ecological site: Clay Upland (pe35-42)
Land capability (nonirrigated): 2s

Lanton

MLRA: 112 - Cherokee Prairies
Landform: Flood plain, river valley
Parent material: Silty and clayey alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.5 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: High
Ecological site: Loamy Lowland (pe35-42)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 12 inches; silt loam
 H2—12 to 60 inches; silty clay

Typical Profile:

H1—0 to 12 inches; silty clay loam
 H2—12 to 32 inches; silty clay loam
 H3—32 to 60 inches; silty clay loam

Minor Components

Minor Components

Zaar

Composition: About 5 percent
Slope: 1 to 4 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Upland (pe35-42)

Osage

Composition: About 5 percent
Slope: 0 to 2 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-42)

Catoosa

Composition: About 5 percent
Slope: 0 to 2 percent

AED—Arents, Earthen Dam

Ba—Bates fine sandy loam, 1 to 4 percent slopes

Map Unit Composition

Bates: 85 percent
Minor components: 15 percent

Component Descriptions

Bates

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Parent material: Sandy and silty residuum weathered from sandstone, unspecified over sandy and

silty residuum weathered from sandstone-shale

Slope: 1 to 4 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Low (About 5.6 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Low

Ecological site: Loamy Upland (pe35-38)

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 16 inches; fine sandy loam
H2—16 to 28 inches; sandy clay loam
H3—28 to 34 inches; gravelly sandy clay loam
Cr—34 to 38 inches; unweathered bedrock

Minor Components

Collinsville

Composition: About 8 percent

Geomorphic Position: hillslope on upland

Slope: 1 to 7 percent

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Ecological site: Shallow Sandstone (pe35-38)

Eram

Composition: About 7 percent

Geomorphic Position: hillslope on upland

Slope: 1 to 7 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Moderately well drained

Ecological site: Clay Upland (pe35-38)

Ca—Clareson silty clay loam, 0 to 2 percent slopes

Map Unit Composition

Clareson: 85 percent
Minor components: 15 percent

Component Descriptions

Clareson

MLRA: 112 - Cherokee Prairies

Landform: Hillslope on upland

Parent material: Silty and clayey residuum weathered from limestone, unspecified

Slope: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: Very slow (About 0.00 in/hr)

Available water capacity: Low (About 4.3 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Low

Ecological site: Shallow Flats (pe35-38)

Land capability (nonirrigated): 3s

Typical Profile:

H1—0 to 17 inches; silty clay loam
H2—17 to 29 inches; flaggy silty clay
H3—29 to 35 inches; flaggy silty clay
R—35 to 39 inches; unweathered bedrock

Minor Components

Sogn

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Ecological site: Shallow Limy (pe34-38)

Lula

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)

Drainage class: Well drained

Ecological site: Loamy Upland (pe35-38)

Cs—Clareson-Sogn complex, 1 to 3 percent slopes

Map Unit Composition

Clareson: 65 percent
Sogn: 35 percent

Component Descriptions

Clareson

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from limestone, unspecified
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Low (About 4.3 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Flats (pe35-38)
Land capability (nonirrigated): 6s

Typical Profile:

H1—0 to 17 inches; silty clay loam
H2—17 to 29 inches; flaggy silty clay
H3—29 to 35 inches; flaggy silty clay
R—35 to 39 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 1 to 3 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Shallow Limy (pe34-38)

Land capability (nonirrigated): 7

Typical Profile:

H1—0 to 10 inches; silty clay loam
R—10 to 14 inches; unweathered bedrock

Ct—Cleora fine sandy loam, occasionally flooded

Map Unit Composition

Cleora: 90 percent
Minor components: 10 percent

Component Descriptions

Cleora

MLRA: 84A - Cross Timbers
Landform: Flood plain on river valley
Parent material: Loamy alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 8.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Loamy Lowland (pe35-38)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 18 inches; fine sandy loam
H2—18 to 44 inches; fine sandy loam
H3—44 to 84 inches; stratified loamy fine sand to loam

Minor Components

Verdigris

Composition: About 10 percent
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-38)

Cx—Clime-Sogn complex, 8 to 30 percent slopes

Map Unit Composition

Clime: 62 percent

Sogn: 25 percent
 Minor components: 13 percent

Component Descriptions

Clime

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 8 to 30 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 3.7 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Limy Upland (pe30-36)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 10 inches; silty clay
 H2—10 to 18 inches; silty clay
 H3—18 to 28 inches; silty clay
 Cr—28 to 32 inches; unweathered bedrock

Sogn

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 8 to 20 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Shallow Limy (pe30-36)
Land capability (nonirrigated): 7

Typical Profile:

H1—0 to 10 inches; silty clay loam
 R—10 to 14 inches; unweathered bedrock

Minor Components

Martin

Composition: About 10 percent
Slope: 0 to 1 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

Clareson

Composition: About 3 percent
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-38)

Db—Dennis silt loam, 1 to 3 percent slopes

Map Unit Composition

Dennis: 90 percent
 Minor components: 10 percent

Component Descriptions

Dennis

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 10.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 14 inches; silt loam
 H2—14 to 19 inches; silty clay loam
 H3—19 to 76 inches; silty clay loam

Minor Components

Eram

Composition: About 10 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-38)

Dc—Dennis silt loam, 3 to 7 percent slopes**Map Unit Composition**

Dennis: 85 percent
 Minor components: 15 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 14 inches; silt loam
 H2—14 to 19 inches; silty clay loam
 H3—19 to 76 inches; silty clay loam

Minor Components**Eram**

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 1 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-38)

Dwight

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Claypan (pe35-38)

Martin

Composition: About 5 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

De—Dennis silty clay loam, 3 to 7 percent slopes, eroded**Map Unit Composition**

Dennis: 85 percent
 Minor components: 5 percent

Component Descriptions**Dennis**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 3 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 7 inches; silty clay loam
 H2—7 to 12 inches; silty clay loam
 H3—12 to 76 inches; silty clay

Minor Components**Dwight**

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Claypan (pe35-38)

DEE—Dennis silt loam, 4 to 7 percent slopes**Map Unit Composition**

Dennis: 100 percent

Component Descriptions

Dennis

MLRA: -
Landform: Hillslope on upland
Hillslope position: Footslope, backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 4 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.5 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe24-32)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 13 inches; silt loam
 H2—13 to 20 inches; silty clay loam
 H3—20 to 60 inches; silty clay

Ds—Dennis-Dwight silt loams, 1 to 3 percent slopes

Map Unit Composition

Dennis: 60 percent
 Dwight: 23 percent
 Minor components: 17 percent

Component Descriptions

Dennis

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 18 inches
Runoff class: High
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 14 inches; silt loam

H2—14 to 19 inches; silty clay loam
 H3—19 to 76 inches; silty clay loam

Dwight

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from limestone, cherty
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Claypan (pe35-38)
Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 5 inches; silt loam
 H2—5 to 22 inches; silty clay
 H3—22 to 60 inches; silty clay

Minor Components

Unnamed Soil

Composition: About 17 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-38)

Ea—Eram silty clay loam, 1 to 3 percent slopes

Map Unit Composition

Eram: 90 percent
 Minor components: 10 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: Low (About 4.8 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe35-38)
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 8 inches; silty clay loam
 H2—8 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Minor Components

Dennis

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-38)

Bates

Composition: About 5 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-38)

Ec—Eram-Collinsville complex, 1 to 7 percent slopes

Map Unit Composition

Eram: 70 percent
 Collinsville: 20 percent
 Minor components: 10 percent

Component Descriptions

Eram

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Silty and clayey residuum weathered from shale, unspecified
Slope: 1 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 4.8 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches

Runoff class: High
Ecological site: Clay Upland (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:
 H1—0 to 8 inches; silty clay loam
 H2—8 to 32 inches; silty clay
 Cr—32 to 36 inches; weathered bedrock

Collinsville

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Hillslope position: Summit, shoulder
Parent material: Sandstone residuum
Slope: 1 to 7 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Shallow Sandstone (pe35-38)
Land capability (nonirrigated): 6

Typical Profile:
 H1—0 to 12 inches; loam
 R—12 to 16 inches; unweathered bedrock

Minor Components

Bates

Composition: About 10 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-38)

Iv—Ivan silt loam, occasionally flooded

Map Unit Composition

Ivan: 90 percent
 Minor components: 10 percent

Component Descriptions

Ivan

MLRA: 76 - Bluestem Hills

Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.7 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe30-36)
Land capability (nonirrigated): 2w

Typical Profile:
 H1—0 to 16 inches; silt loam
 H2—16 to 80 inches; silty clay loam

Minor Components

Mason

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-38)

Verdigris

Composition: About 5 percent
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-38)

Ke—Kenoma silt loam, 0 to 1 percent slopes

Map Unit Composition

Kenoma: 90 percent
 Minor components: 10 percent

Component Descriptions

Kenoma

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loess over ancient clayey alluvium and/or residuum weathered from limestone and shale
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)

Available water capacity: High (About 10.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 6 to 18 inches
Runoff class: High
Ecological site: Clay Upland (pe30-36)
Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 11 inches; silt loam
 H2—11 to 38 inches; silty clay
 H3—38 to 84 inches; silty clay

Minor Components

Eram

Composition: About 10 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-38)

Ln—Longford silty clay loam, Bedrock Substratum, 1 to 4 percent slopes

Map Unit Composition

Longford: 90 percent
 Minor components: 10 percent

Component Descriptions

Longford

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey alluvium
Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.01 in/hr)
Available water capacity: High (About 9.9 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 13 inches; silty clay loam
 H3—13 to 48 inches; silty clay
 H4—48 to 54 inches; silty clay loam
 R—54 to 58 inches; unweathered bedrock

Minor Components**Martin**

Composition: About 10 percent
Slope: 0 to 1 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

**Lo—Longford silty clay loam,
 Bedrock Substratum, 1 to 4
 percent slopes, eroded**

Map Unit Composition

Longford: 90 percent
 Minor components: 10 percent

Component Descriptions**Longford**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey alluvium
Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Very slow (About 0.01 in/hr)
Available water capacity: High (About 9.9 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 8 inches; silty clay loam
 H2—8 to 13 inches; silty clay loam
 H3—13 to 48 inches; silty clay
 H4—48 to 54 inches; silty clay loam
 R—54 to 58 inches; unweathered bedrock

Minor Components**Martin**

Composition: About 10 percent
Slope: 0 to 1 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

**Lu—Lula silt loam, 0 to 2 percent
 slopes**

Map Unit Composition

Lula: 90 percent
 Minor components: 10 percent

Component Descriptions**Lula**

MLRA: 112 - Cherokee Prairies
Landform: Hillslope on upland
Parent material: Residuum weathered from limestone, unspecified
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (lithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 10 inches; silt loam
 H2—10 to 17 inches; silty clay loam
 H3—17 to 46 inches; silty clay loam
 R—46 to 50 inches; unweathered bedrock

Minor Components**Kenoma**

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe30-36)

Clareson

Composition: About 5 percent

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-38)

M-W—Miscellaneous Water

Ma—Martin silty clay loam, 0 to 1 percent slopes

Map Unit Composition

Martin: 95 percent
 Minor components: 5 percent

Component Descriptions

Martin

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale
Slope: 0 to 1 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 12 inches; silty clay loam
 H2—12 to 18 inches; silty clay loam
 H3—18 to 54 inches; silty clay
 Cr—54 to 58 inches; unweathered bedrock

Minor Components

Dwight

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Claypan (pe35-38)

Mb—Martin silty clay loam, 1 to 4 percent slopes

Map Unit Composition

Martin: 85 percent
 Minor components: 15 percent

Component Descriptions

Martin

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey colluvium derived from limestone and shale over silty and clayey residuum weathered from limestone and shale
Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 36 inches
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 12 inches; silty clay loam
 H2—12 to 18 inches; silty clay loam
 H3—18 to 54 inches; silty clay
 Cr—54 to 58 inches; unweathered bedrock

Minor Components

Osage

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-38)

Dwight

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Claypan (pe35-38)

Mc—Martin silty clay loam, 4 to 7 percent slopes**Map Unit Composition**

Martin: 85 percent
 Minor components: 15 percent

Component Descriptions**Martin**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very high
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 12 inches; silty clay loam
 H2—12 to 18 inches; silty clay loam
 H3—18 to 54 inches; silty clay
 Cr—54 to 58 inches; unweathered bedrock

Minor Components**Clime**

Composition: About 10 percent
Geomorphic Position: hillslope on upland
Slope: 8 to 30 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Limy Upland (pe30-36)

Unnamed Soil

Composition: About 5 percent
Slope: 4 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

Me—Martin silty clay loam, 3 to 7 percent slopes, eroded**Map Unit Composition**

Martin: 85 percent
 Minor components: 15 percent

Component Descriptions**Martin**

MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Silty and clayey colluvium derived from limestone-shale over silty and clayey residuum weathered from limestone-shale
Slope: 3 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Moderate (About 8.7 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Upland (pe30-36)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 7 inches; silty clay loam
 H2—7 to 10 inches; silty clay loam
 H3—10 to 54 inches; silty clay
 Cr—54 to 58 inches; unweathered bedrock

Minor Components**Martin**

Phase: Sev. Er.
Composition: About 15 percent
Slope: 3 to 7 percent
Depth to restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe30-36)

Ms—Martin-Dwight silty clay loams, 1 to 3 percent slopes**Map Unit Composition**

Martin: 75 percent

Dwight: 15 percent
 Minor components: 10 percent

Component Descriptions

Martin

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Parent material: Silty and clayey colluvium
 derived from limestone-shale over silty and
 clayey

residuum weathered from limestone-shale

Slope: 1 to 3 percent

Depth to restrictive feature: 40 to 60 inches to
 bedrock (paralithic)

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 9.2
 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6
 feet

Runoff class: High

Ecological site: Loamy Upland (pe30-36)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 12 inches; silty clay loam
 H2—12 to 18 inches; silty clay loam
 H3—18 to 54 inches; silty clay
 Cr—54 to 58 inches; unweathered bedrock

Dwight

MLRA: 76 - Bluestem Hills

Landform: Hillslope on upland

Parent material: Silty and clayey residuum
 weathered from limestone, cherty

Slope: 1 to 3 percent

Drainage class: Moderately well drained

Slowest permeability: Very slow (About 0.00
 in/hr)

Available water capacity: Moderate (About 8.0
 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6
 feet

Runoff class: Very high

Ecological site: Clay Pan (pe30-36)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 5 inches; silty clay loam
 H2—5 to 22 inches; silty clay
 H3—22 to 60 inches; silty clay

Minor Components Unnamed Soil

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: 40 to 60 inches
 to bedrock (paralithic)

Drainage class: Moderately well drained

Ecological site: Loamy Upland (pe30-36)

Mt—Mason silt loam, rarely flooded

Map Unit Composition

Mason: 85 percent

Minor components: 15 percent

Component Descriptions

Mason

MLRA: 112 - Cherokee Prairies

Landform: Stream terrace on river valley

Parent material: Silty alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

Slowest permeability: Moderately slow (About
 0.20 in/hr)

Available water capacity: High (About 10.6
 inches)

Shrink-swell potential: Moderate (About 4.5
 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: More than 6
 feet

Runoff class: Low

Ecological site: Loamy Lowland (pe35-38)

Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 72 inches; silty clay loam

Minor Components

Osage

Composition: About 5 percent

Slope: 0 to 1 percent

Drainage class: Poorly drained

Ecological site: Clay Lowland (pe35-38)

Ivan

Composition: About 5 percent

Slope: 0 to 2 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe30-36)

Verdigris

Composition: About 5 percent

Slope: 0 to 2 percent

Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-38)

H1—0 to 8 inches; silt loam
 H2—8 to 30 inches; clay loam
 H3—30 to 60 inches; variable

Mx—Mason-Drummond silt loams, rarely flooded

Map Unit Composition

Mason: 75 percent
 Drummond: 15 percent
 Minor components: 10 percent

Component Descriptions

Mason

MLRA: 112 - Cherokee Prairies
Landform: Stream terrace on river valley
Parent material: Silty alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: High (About 10.6 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Loamy Lowland (pe35-38)
Land capability (nonirrigated): 3s

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 72 inches; silty clay loam

Drummond

MLRA: 112 - Cherokee Prairies
Landform: Terrace on river valley
Parent material: Clayey and/or loamy alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: About 24 to 72 inches
Runoff class: Very high
Ecological site: Saline Lowland (pe24-32)
Land capability (nonirrigated): 5s

Typical Profile:

Minor Components

Unnamed Soil

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-38)

Nd—Niotaze-Darnell complex, 8 to 20 percent slopes

Map Unit Composition

Niotaze: 65 percent
 Darnell: 20 percent
 Minor components: 15 percent

Component Descriptions

Niotaze

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Parent material: Clayey residuum weathered from sandstone and shale
Slope: 8 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 3.6 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Very high
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 10 inches; cobbly fine sandy loam
 H2—10 to 28 inches; silty clay
 Cr—28 to 32 inches; unweathered bedrock

Darnell

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Loamy material weathered from sandstone
Slope: 8 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)

Drainage class: Somewhat excessively drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Very low (About 2.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Shallow Savannah (pe35-38)
Land capability (nonirrigated): 6s

Typical Profile:
 H1—0 to 5 inches; fine sandy loam
 H2—5 to 14 inches; fine sandy loam
 Cr—14 to 18 inches; weathered bedrock

Minor Components

Steedman

Composition: About 10 percent
Slope: 8 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-38)

Dennis

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-38)

Oa—Osage silty clay loam, occasionally flooded

Map Unit Composition

Osage: 85 percent
 Minor components: 15 percent

Component Descriptions

Osage

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Very high (About 17.0 LEP)
Flooding hazard: Occasional

Ponding hazard: Occasional
Depth to seasonal water saturation: About 0 to 12 inches
Runoff class: High
Ecological site: Clay Lowland (pe35-38)
Land capability (nonirrigated): 2w

Typical Profile:
 H1—0 to 20 inches; silty clay loam
 H2—20 to 88 inches; silty clay

Minor Components

Mason

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-38)

Osage

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-38)

Dennis

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Loamy Upland (pe35-38)

Oc—Osage silty clay, occasionally flooded

Map Unit Composition

Osage: 90 percent
 Minor components: 10 percent

Component Descriptions

Osage

MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 6.5 inches)
Shrink-swell potential: Very high (About 17.0 LEP)
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth to seasonal water saturation: About 0 to 12 inches

Runoff class: Very high
Ecological site: Clay Lowland (pe35-38)
Land capability (nonirrigated): 3w

Typical Profile:
 H1—0 to 20 inches; silty clay
 H2—20 to 88 inches; silty clay

Minor Components

Verdigris
Composition: About 5 percent
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Ecological site: Loamy Lowland (pe35-38)

Osage
Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-38)

Os—Osage-Drummond complex, occasionally flooded

Map Unit Composition

Osage: 60 percent
 Drummond: 25 percent
 Minor components: 15 percent

Component Descriptions

Osage
MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Very high (About 17.0 LEP)
Flooding hazard: Occasional
Ponding hazard: Occasional
Depth to seasonal water saturation: About 0 to 12 inches
Runoff class: Very high
Ecological site: Clay Lowland (pe35-38)
Land capability (nonirrigated): 4s

Typical Profile:
 H1—0 to 20 inches; silty clay loam
 H2—20 to 88 inches; silty clay

Drummond
MLRA: 112 - Cherokee Prairies
Landform: Flood plain on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Low (About 4.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 24 to 72 inches
Runoff class: Very high

Typical Profile:
 H1—0 to 8 inches; silt loam
 H2—8 to 30 inches; clay loam
 H3—30 to 34 inches; variable

Minor Components

Unnamed Soil
Composition: About 15 percent
Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Clay Lowland (pe35-38)

PIT—Pits

QUA—Quarry

So—Sogn Soils, 1 to 3 percent slopes

Map Unit Composition

Sogn: 90 percent
 Minor components: 10 percent

Component Descriptions

Sogn
MLRA: 76 - Bluestem Hills
Landform: Hillslope on upland
Parent material: Loamy residuum weathered from limestone, unspecified
Slope: 1 to 3 percent
Depth to restrictive feature: 4 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very low (About 2.0 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet

Runoff class: Low
Ecological site: Shallow Limy (pe30-36)
Land capability (nonirrigated): 7s

Typical Profile:
 H1—0 to 10 inches; silty clay loam
 R—10 to 14 inches; unweathered bedrock

Minor Components

Clareson

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Ecological site: Shallow Flats (pe35-38)

Rock outcrop

Composition: About 5 percent

St—Steedman stony clay loam, 8 to 20 percent slopes

Map Unit Composition

Steedman: 100 percent

Component Descriptions

Steedman

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Clayey residuum weathered from clayey shale
Slope: 8 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 3.5 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Very high
Ecological site: Loamy Upland (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 6 inches; gravelly clay loam
 H2—6 to 30 inches; clay
 Cr—30 to 34 inches; weathered bedrock

Sv—Stephenville fine sandy loam, 1 to 4 percent slopes

Map Unit Composition

Stephenville: 85 percent
 Minor components: 15 percent

Component Descriptions

Stephenville

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Parent material: Fine-loamy material weathered from sandstone
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 12 inches; fine sandy loam
 H2—12 to 34 inches; sandy clay loam
 Cr—34 to 38 inches; weathered bedrock

Minor Components

Darnell

Composition: About 5 percent
Geomorphic Position: hillslope on upland
Slope: 8 to 20 percent
Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)
Drainage class: Somewhat excessively drained
Ecological site: Shallow Savannah (pe35-38)

Eram

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-38)

Bates

Composition: About 5 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-38)

Sx—Stephenville-Darnell fine sandy loams, 1 to 5 percent slopes**Map Unit Composition**

Stephenville: 60 percent
Darnell: 25 percent
Minor components: 15 percent

Component Descriptions**Stephenville**

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Parent material: Fine-loamy material weathered from sandstone
Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Low (About 4.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Savannah (pe35-38)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; fine sandy loam
H2—9 to 38 inches; sandy clay loam
Cr—38 to 42 inches; weathered bedrock

Darnell

MLRA: 84A - Cross Timbers
Landform: Hillslope on upland
Hillslope position: Summit
Parent material: Loamy material weathered from sandstone
Slope: 1 to 5 percent

Depth to restrictive feature: 10 to 20 inches to bedrock (paralithic)

Drainage class: Somewhat excessively drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)

Available water capacity: Very low (About 2.0 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very low

Ecological site: Shallow Savannah (pe35-38)

Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 5 inches; fine sandy loam
H2—5 to 14 inches; fine sandy loam
Cr—14 to 18 inches; weathered bedrock

Minor Components**Niotaze**

Composition: About 5 percent
Slope: 8 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat poorly drained
Ecological site: Savannah (pe35-38)

Eram

Composition: About 5 percent
Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe35-38)

Bates

Composition: About 5 percent
Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Loamy Upland (pe35-38)

Ve—Verdigris silt loam, occasionally flooded**Map Unit Composition**

Verdigris: 90 percent
Minor components: 10 percent

Component Descriptions**Verdigris**

MLRA: 76 - Bluestem Hills
Landform: Flood plain on river valley

Parent material: Silty alluvium
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.0 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Lowland (pe35-38)
Land capability (nonirrigated): 2w

Typical Profile:
 H1—0 to 12 inches; silt loam

H2—12 to 68 inches; silty clay loam

Minor Components

Cleora

Composition: About 5 percent
Slope: 0 to 2 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-38)

Mason

Composition: About 5 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Loamy Lowland (pe35-38)

W—Water

Farmland Classification
Chautauqua County, Kansas : Published

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in the following table. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in the "Acres and Proportionate Extent of Soils" table. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described in other tables in this document."

Map symbol	Mapunit name	Farmland Classification
035LA	Labette silty clay loam, 1 to 3 percent slopes	All areas are prime farmland
035RA	Reading silt loam, 0 to 2 percent slopes, rarely flooded	All areas are prime farmland
035SA	Smolan silty clay loam, 1 to 3 percent slopes	All areas are prime farmland
035TA	Tabler silty clay loam, 0 to 1 percent slopes	All areas are prime farmland
049CD	Catoosa silt loam, 0 to 2 percent slopes	All areas are prime farmland
049EM	Eram silt loam, 1 to 4 percent slopes	All areas are prime farmland
049KD	Kenoma silt loam, 1 to 3 percent slopes	All areas are prime farmland
049LA	Labette silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
125DB	Dennis silt loam, 1 to 4 percent slopes	All areas are prime farmland
125EB	Eram silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
125KA	Kenoma silt loam, 0 to 2 percent slopes	All areas are prime farmland
Ba	Bates fine sandy loam, 1 to 4 percent slopes	All areas are prime farmland
Ct	Cleora fine sandy loam, occasionally flooded	All areas are prime farmland
Db	Dennis silt loam, 1 to 3 percent slopes	All areas are prime farmland
Ea	Eram silty clay loam, 1 to 3 percent slopes	All areas are prime farmland
Iv	Ivan silt loam, occasionally flooded	All areas are prime farmland
Ke	Kenoma silt loam, 0 to 1 percent slopes	All areas are prime farmland
Ln	Longford silty clay loam, bedrock substratum, 1 to 4 percent slopes	All areas are prime farmland
Lo	Longford silty clay loam, bedrock substratum, 1 to 4 percent slopes, eroded	All areas are prime farmland
Lu	Lula silt loam, 0 to 2 percent slopes	All areas are prime farmland
Ma	Martin silty clay loam, 0 to 1 percent slopes	All areas are prime farmland
Mb	Martin silty clay loam, 1 to 4 percent slopes	All areas are prime farmland
Mt	Mason silt loam, rarely flooded	All areas are prime farmland
Sv	Stephenville fine sandy loam, 1 to 4 percent slopes	All areas are prime farmland
Ve	Verdigris silt loam, occasionally flooded	All areas are prime farmland
125LA	Lanton silty clay loam, occasionally flooded	Prime farmland if drained
Oa	Osage silty clay loam, occasionally flooded	Prime farmland if drained
Oc	Osage silty clay, occasionally flooded	Prime farmland if drained

SOIL RATING FOR PLANT GROWTH, modified 1998
Chautauqua County, Kansas

The "Soil Rating for Plant Growth, modified 1998" (SRPG) is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Map symbol	Soil name	Crop Index
015CS	Clime-Sogn Complex, 3 To 15 Percent Slopes-----	24
035CC	Clime-Sogn Complex, 2 To 15 Percent Slopes-----	29
035LA	Labette Silty Clay Loam, 1 To 3 Percent Slopes-----	60
035MC	Martin Silty Clay Loam, 2 To 7 Percent Slopes, Eroded-----	71
035RA	Reading Silt Loam, 0 To 2 Percent Slopes, Rarely Flooded-----	80
035SA	Smolan Silty Clay Loam, 1 To 3 Percent Slopes-----	77
035SC	Smolan Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	75
035SD	Sogn Silty Clay Loam, 0 To 10 Percent Slopes-----	9
035TA	Tabler Silty Clay Loam, 0 To 1 Percent Slopes-----	70
049CD	Catoosa Silt Loam, 0 To 2 Percent Slopes-----	61
049CF	Catoosa-Sogn Complex, 0 To 8 Percent Slopes-----	28
049CK	Clime Stony Silty Clay Loam, 20 To 30 Percent Slopes-----	13
049CS	Clime-Sogn Complex, 5 To 20 Percent Slopes-----	28
049EM	Eram Silt Loam, 1 To 4 Percent Slopes-----	51
049KD	Kenoma Silt Loam, 1 To 3 Percent Slopes-----	70
049LA	Labette Silty Clay Loam, 1 To 4 Percent Slopes-----	43
049LD	Labette-Dwight Complex, 0 To 3 Percent Slopes-----	52
049ME	Martin Silty Clay, 3 To 7 Percent Slopes, Eroded-----	66
049SH	Sogn Silty Clay Loam, 0 To 3 Percent Slopes-----	10
049ST	Steedman Stony Loam, 5 To 20 Percent Slopes-----	19
049VD	Verdigris Silt Loam, Channeled-----	67
125BG	Bates-Collinsville Complex, 4 To 20 Percent Slopes-----	33
125DB	Dennis Silt Loam, 1 To 4 Percent Slopes-----	74
125EB	Eram Silty Clay Loam, 1 To 4 Percent Slopes-----	48
125ET	Eram-Talihina Silty Clay Loams, 6 To 20 Percent Slopes-----	33
125KA	Kenoma Silt Loam, 0 To 2 Percent Slopes-----	76
125LA	Lanton Silty Clay Loam, Occasionally Flooded-----	81
AED	Arents, Earthen Dam-----	0
Ba	Bates Fine Sandy Loam, 1 To 4 Percent Slopes-----	52
Ca	Clareson Silty Clay Loam, 0 To 2 Percent Slopes-----	46
Cs	Clareson-Sogn Complex, 1 To 3 Percent Slopes-----	33
Ct	Cleora Fine Sandy Loam, Occasionally Flooded-----	66
Cx	Clime-Sogn Complex, 8 To 30 Percent Slopes-----	23
DEE	Dennis Silt Loam, 4 To 7 Percent Slopes-----	67
Db	Dennis Silt Loam, 1 To 3 Percent Slopes-----	68
Dc	Dennis Silt Loam, 3 To 7 Percent Slopes-----	69
De	Dennis Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	67
Ds	Dennis-Dwight Silt Loams, 1 To 3 Percent Slopes-----	71
Ea	Eram Silty Clay Loam, 1 To 3 Percent Slopes-----	50
Ec	Eram-Collinsville Complex, 1 To 7 Percent Slopes-----	40
Iv	Ivan Silt Loam, Occasionally Flooded-----	67
Ke	Kenoma Silt Loam, 0 To 1 Percent Slopes-----	76
Ln	Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes-----	84
Lo	Longford Silty Clay Loam, Bedrock Substratum, 1 To 4 Percent Slopes, Eroded-----	83
Lu	Lula Silt Loam, 0 To 2 Percent Slopes-----	82
M-W	Miscellaneous Water-----	0
Ma	Martin Silty Clay Loam, 0 To 1 Percent Slopes-----	74
Mb	Martin Silty Clay Loam, 1 To 4 Percent Slopes-----	79
Mc	Martin Silty Clay Loam, 4 To 7 Percent Slopes-----	72
Me	Martin Silty Clay Loam, 3 To 7 Percent Slopes, Eroded-----	77
Ms	Martin-Dwight Silty Clay Loams, 1 To 3 Percent Slopes-----	79
Mt	Mason Silt Loam, Rarely Flooded-----	83
Mx	Mason-Drummond Silt Loams, Rarely Flooded-----	78
Nd	Niotaze-Darnell Complex, 8 To 20 Percent Slopes-----	22
Oa	Osage Silty Clay Loam, Occasionally Flooded-----	69
Oc	Osage Silty Clay, Occasionally Flooded-----	54
Os	Osage-Drummond Complex, Occasionally Flooded-----	60
PIT	Pits-----	0
QUA	Quarry-----	0
So	Sogn Soils, 1 To 3 Percent Slopes-----	7
St	Steedman Stony Clay Loam, 8 To 20 Percent Slopes-----	17
Sv	Stephenville Fine Sandy Loam, 1 To 4 Percent Slopes-----	44
Sx	Stephenville-Darnell Fine Sandy Loams, 1 To 5 Percent Slopes-----	36
Ve	Verdigris Silt Loam, Occasionally Flooded-----	84
W	Water-----	0

Chautauqua County, Kansas: Published
 Field Office Thunderbook: Soils Properties for Conservation Planning

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "K", "Kf", "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer)

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodibility group	Wind erodibility index
								K	Kf	T		
015CS:CLIME-----	67	N/A	6e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
015CS:SOGN-----	30	N/A	N/A	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
035CC:CLIME-----	60	N/A	6e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
035CC:SOGN-----	20	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
035LA:LABETTE---	85	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	2	7	38
035MC:MARTIN----	90	N/A	4e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	5	7	38
035RA:READING---	85	N/A	1	All areas are prime farmland	B	Loamy Lowland (pe30-36)	7	.32	.32	5	6	48
035SA:SMOLAN----	90	2e-	2e	All areas are prime farmland	C	Loamy Upland (pe25-34)	8	.37	.37	5	7	38
035SC:SMOLAN----	90	N/A	4e	Not prime farmland	C	Loamy Upland (pe25-34)	8	.37	.37	5	7	38
035SD:SOGN-----	90	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
035TA:TABLER----	95	N/A	2s	All areas are prime farmland	D	Clay Upland (pe24-32)	8	.37	.37	5	7	38
049CD:CATOOSA---	90	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe30-36)	7	.37	.37	2	6	48
049CF:CATOOSA---	55	N/A	6e	Not prime farmland	B	Loamy Upland (pe30-36)	7	.37	.37	2	6	48
049CF:SOGN-----	35	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.37	1	4L	86
049CK:CLIME-----	100	N/A	7e	Not prime farmland	C	Limy Upland (pe30-36)	9	.28	.32	3	8	0
049CS:CLIME-----	65	N/A	6e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
049CS:SOGN-----	20	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
049EM:ERAM-----	90	N/A	3e	All areas are prime farmland	C	Clay Upland (pe30-36)	7	.43	.43	3	6	48

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 Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
049KD:KENOMA----	90	N/A	3e	All areas are prime farmland	D	Clay Upland (pe30-36)	7	.43	.43	3	6	48
049LA:LABETTE---	90	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	2	7	38
049LD:LABETTE---	65	N/A	3e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	2	7	38
049LD:DWIGHT----	35	N/A	4s	Not prime farmland	D	Clay Pan (pe30-36)	7	.43	.43	2	6	48
049ME:MARTIN----	90	N/A	4e	Not prime farmland	C	Loamy Upland (pe30-36)	4	.28	.28	5	4	86
049SH:SOGN-----	85	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
049ST:STEEDMAN--	85	N/A	6e	Not prime farmland	C	Loamy Upland (pe24-32)	9	.24	.37	3	8	0
049VD:VERDIGRIS-	85	N/A	5w	Not prime farmland	B	Loamy Lowland (pe35-38)	7	.32	.32	5	6	48
125BG:BATES-----	45	N/A	6e	Not prime farmland	B	Loamy Upland (pe35-42)	6	.32	.32	3	5	56
125BG:COLLINSVIL LE-----	40	N/A	7s	Not prime farmland	D	Shallow Sandstone (pe35-42)	3	.20	.20	1	3	86
125DB:DENNIS----	90	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe35-42)	7	.43	.43	5	6	48
125EB:ERAM-----	90	N/A	3e	All areas are prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
125ET:ERAM-----	50	N/A	6e	Not prime farmland	C	Clay Upland (pe35-42)	8	.37	.37	3	7	38
125ET:TALIHINA--	35	N/A	7s	Not prime farmland	D	Clay Upland (pe35-42)	4	.37	.37	2	4	86
125KA:KENOMA----	90	N/A	2s	All areas are prime farmland	D	Clay Upland (pe35-42)	7	.43	.43	3	6	48
125LA:LANTON----	95	N/A	2w	Prime farmland if drained	C	Loamy Lowland (pe35-42)	8	.37	.37	5	7	38
AED:ARENTS, EARTHEN DAM----	100	N/A	8	Not prime farmland		Unspecified		---	---	-	---	---
Ba:BATES-----	85	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe35-38)	3	.20	.20	3	3	86
Ca:CLARESON-----	85	N/A	3s	Not prime farmland	C	Shallow Flats (pe35-38)	8	.32	.32	2	7	38

Chautauqua County, Kansas: Published
 Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
Cs:CLARESON-----	65	N/A	6s	Not prime farmland	C	Shallow Flats (pe35-38)	8	.32	.32	2	7	38
Cs:SOGN-----	35	N/A	7	Not prime farmland	D	Shallow Limy (pe34-38)	5	.32	.37	1	4L	86
Ct:CLEORA-----	90	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe35-38)	3	.20	.20	5	3	86
Cx:CLIME-----	62	N/A	6e	Not prime farmland	C	Limy Upland (pe30-36)	4	.28	.28	3	4	86
Cx:SOGN-----	25	N/A	7	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
DEE:DENNIS-----	100	N/A	3e	Not prime farmland	C	Loamy Upland (pe24-32)	7	.43	.43	5	6	48
Db:DENNIS-----	90	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe35-38)	7	.43	.43	5	6	48
Dc:DENNIS-----	85	N/A	3e	Not prime farmland	C	Loamy Upland (pe35-38)	7	.43	.43	5	6	48
De:DENNIS-----	85	N/A	4e	Not prime farmland	C	Loamy Upland (pe35-38)	8	.37	.37	5	7	38
Ds:DENNIS-----	60	N/A	4s	Not prime farmland	C	Loamy Upland (pe35-38)	7	.43	.43	5	6	48
Ds:DWIGHT-----	23	N/A	4s	Not prime farmland	D	Claypan (pe35-38)	7	.43	.43	5	6	48
Ea:ERAM-----	90	N/A	3e	All areas are prime farmland	C	Clay Upland (pe35-38)	8	.37	.37	3	7	38
Ec:ERAM-----	70	N/A	6e	Not prime farmland	C	Clay Upland (pe35-38)	8	.37	.37	3	7	38
Ec:COLLINSVILLE-	20	N/A	6	Not prime farmland	D	Shallow Sandstone (pe35-38)	6	.32	.32	1	5	56
Iv:IVAN-----	90	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe30-36)	5	.32	.32	5	4L	86
Ke:KENOMA-----	90	N/A	2s	All areas are prime farmland	D	Clay Upland (pe30-36)	7	.43	.43	3	6	48
Ln:LONGFORD-----	90	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	3	7	38
Lo:LONGFORD-----	90	N/A	3e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	3	7	38
Lu:LULA-----	90	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe35-38)	7	.37	.37	3	6	48

Chautauqua County, Kansas: Published
 Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
M- W:MISCELLANEOUS WATER-----	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Ma:MARTIN-----	95	N/A	2s	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	4	7	38
Mb:MARTIN-----	85	N/A	2e	All areas are prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	4	7	38
Mc:MARTIN-----	85	N/A	3e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	4	7	38
Me:MARTIN-----	85	N/A	4e	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	4	7	38
Ms:MARTIN-----	75	N/A	4s	Not prime farmland	C	Loamy Upland (pe30-36)	8	.37	.37	4	7	38
Ms:DWIGHT-----	15	N/A	4s	Not prime farmland	D	Clay Pan (pe30-36)	8	.37	.43	5	7	38
Mt:MASON-----	85	N/A	1	All areas are prime farmland	B	Loamy Lowland (pe35-38)	7	.37	.37	5	6	48
Mx:MASON-----	75	N/A	3s	Not prime farmland	B	Loamy Lowland (pe35-38)	7	.37	.37	5	6	48
Mx:DRUMMOND-----	15	N/A	5s	Not prime farmland	D	Saline Lowland (pe24-32)	7	.43	.43	2	6	48
Nd:NIOTAZE-----	65	N/A	6e	Not prime farmland	C	Savannah (pe35-38)	9	.20	.64	3	8	0
Nd:DARNELL-----	20	N/A	6s	Not prime farmland	C	Shallow Savannah (pe35-38)	3	.24	.24	2	3	86
Oa:OSAGE-----	85	N/A	2w	Prime farmland if drained	D	Clay Lowland (pe35-38)	4	.32	.32	5	4	86
Oc:OSAGE-----	90	N/A	3w	Prime farmland if drained	D	Clay Lowland (pe35-38)	4	.28	.28	5	4	86
Os:OSAGE-----	60	N/A	4s	Not prime farmland	D	Clay Lowland (pe35-38)	8	.32	.32	5	7	38
Os:DRUMMOND-----	25	N/A	N/A	Not prime farmland	D	Unspecified	7	.43	.43	2	6	48
PIT:PITS-----	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
QUA:QUARRY-----	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
So:SOGN-----	90	N/A	7s	Not prime farmland	D	Shallow Limy (pe30-36)	5	.32	.32	1	4L	86
St:STEEDMAN-----	100	N/A	6e	Not prime farmland	C	Loamy Upland (pe35-38)	9	.20	.28	3	8	0

Chautauqua County, Kansas: Published
 Field Office Thunderbook: Soils Properties for Conservation Planning--Continued

Map symbol and soil name	Percent	Irr Cap Class	Nonirr Cap Class	Prime Farmland	Hydro-logic Group	Range site name	Windbreak suitability group	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
								K	Kf	T		
Sv:STEPHENVILLE-	85	N/A	2e	All areas are prime farmland	B	Savannah (pe35-38)	3	.24	.24	3	3	86
Sx:STEPHENVILLE-	60	N/A	6e	Not prime farmland	B	Savannah (pe35-38)	3	.24	.24	3	3	86
Sx:DARNELL-----	25	N/A	4s	Not prime farmland	C	Shallow Savannah (pe35-38)	3	.24	.24	2	3	86
Ve:VERDIGRIS----	90	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe35-38)	7	.32	.32	5	6	48
W:WATER-----	100	N/A	N/A			Unspecified		---	---	-	---	---

RANGELAND PRODUCTIVITY
Chautauqua County, Kansas

Use and Explanation of Rangeland, Grazed Forest Land, Native Pastureland Interpretations

Information in this subsection can be used to plan the use and management of soils for rangeland, grazed forest land, and native pasture. Different kinds of soils vary in their capacity to produce native grasses and other plants suitable for grazing. Information in this subsection provides groupings of similar soils and estimates of potential forage production, which can be used to determine livestock stocking rates.

Rangeland. Range is land on which the native vegetation (climax or natural potential plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Rangeland receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Grazed Forest Land. Includes land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significantly impairing other forest values.

Native Pasture. Includes land on which the native vegetation (climax or natural potential plant community) is forest but which is used and managed primarily for production of native plants for forage. Native pasture includes cut-over forest land and forest land cleared and now managed for native or naturalized forage plants.

Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management based on the relationship between the soils and vegetation and water.

The Rangeland, Grazed Forest land, Native Pastureland Interpretations shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, unfavorable years. An explanation of the column headings in this table follows.

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, average, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the National Range and Pasture Handbook, which is available in local offices of the Natural Resources Conservation Service. The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

RANGELAND PRODUCTIVITY--Continued
Chautauqua County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
015CS:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
035CC:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
035LA:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
035MC:				
Martin, eroded-----	Loamy Upland (pe30-36)	6,500	5,000	3,500
035RA:				
Reading-----	Loamy Lowland (pe30-36)	10,000	8,000	6,000
035SA:				
Smolan-----	Loamy Upland (pe25-34)	5,500	4,000	3,000
035SC:				
Smolan, eroded-----	Loamy Upland (pe25-34)	5,500	4,000	3,000
035SD:				
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
035TA:				
Tabler-----	Clay Upland (pe24-32)	3,800	2,600	1,800
049CD:				
Catoosa-----	Loamy Upland (pe30-36)	6,500	5,000	4,000
049CF:				
Catoosa-----	Loamy Upland (pe30-36)	6,500	5,000	4,000
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
049CK:				
Clime-----	Limy Upland (pe30-36)	5,000	4,000	3,000
049CS:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
049EM:				
Eram-----	Clay Upland (pe30-36)	6,000	4,200	2,500
049KD:				
Kenoma-----	Clay Upland (pe30-36)	6,000	4,500	2,500
049LA:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
049LD:				
Labette-----	Loamy Upland (pe30-36)	5,500	4,500	3,500
Dwight-----	Clay Pan (pe30-36)	4,000	3,000	2,000
049ME:				
Martin, eroded-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
049SH:				
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
049ST:				
Steedman-----	Loamy Upland (pe24-32)	6,000	5,000	3,500
049VD:				
Verdigris-----	Loamy Lowland (pe35-38)	10,000	8,500	6,000
125BG:				
Bates-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
Collinsville-----	Shallow Sandstone (pe35-42)	4,000	3,000	2,000
125DB:				
Dennis-----	Loamy Upland (pe35-42)	6,250	4,750	3,250
125EB:				
Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
125ET:				
Eram-----	Clay Upland (pe35-42)	6,000	4,000	2,500
Talihina-----	Clay Upland (pe35-42)	6,000	4,000	2,500
125KA:				
Kenoma-----	Clay Upland (pe35-42)	6,000	4,000	2,500
125LA:				
Lanton-----	Loamy Lowland (pe35-42)	10,000	7,000	5,500
AED:				
Arents, Earthen Dam-----	---	---	---	---
Ba:				
Bates-----	Loamy Upland (pe35-38)	7,000	5,500	4,000
Ca:				
Clareson-----	Shallow Flats (pe35-38)	5,000	4,000	2,500
Cs:				
Clareson-----	Shallow Flats (pe35-38)	5,000	4,000	2,500
Sogn-----	Shallow Limy (pe34-38)	3,500	2,500	1,500
Ct:				
Cleora-----	Loamy Lowland (pe35-38)	8,500	6,100	5,000
Cx:				
Clime-----	Limy Upland (pe30-36)	5,000	3,500	2,500
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
Db:				
Dennis-----	Loamy Upland (pe35-38)	7,000	5,500	4,000
Dc:				
Dennis-----	Loamy Upland (pe35-38)	7,000	5,500	4,000
De:				
Dennis, eroded-----	Loamy Upland (pe35-38)	6,250	4,750	3,250
DEE:				
Dennis-----	Loamy Upland (pe24-32)	7,000	5,500	4,000
Ds:				
Dennis-----	Loamy Upland (pe35-38)	7,000	5,500	4,000

RANGELAND PRODUCTIVITY--Continued
Chautauqua County, Kansas

(Only the soils that support rangeland vegetation suitable for grazing are rated.) Refer to range site description to determine the percentage allowable of grasses, forbs, and shrubs for the range ecological site.

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Average year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
Dwight-----	Claypan (pe35-38)	4,000	3,000	2,000
Ea:				
Eram-----	Clay Upland (pe35-38)	6,000	4,200	3,000
Ec:				
Eram-----	Clay Upland (pe35-38)	6,000	4,000	3,000
Collinsville-----	Shallow Sandstone (pe35-38)	3,500	2,300	1,500
Iv:				
Ivan-----	Loamy Lowland (pe30-36)	10,000	8,000	6,000
Ke:				
Kenoma-----	Clay Upland (pe30-36)	6,000	4,500	2,500
Ln:				
Longford-----	Loamy Upland (pe30-36)	5,500	4,000	3,000
Lo:				
Longford, eroded-----	Loamy Upland (pe30-36)	5,500	4,000	3,000
Lu:				
Lula-----	Loamy Upland (pe35-38)	7,000	5,500	4,000
M-W:				
Miscellaneous Water-----	---	---	---	---
Ma:				
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Mb:				
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Mc:				
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Me:				
Martin, eroded-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Ms:				
Martin-----	Loamy Upland (pe30-36)	7,000	5,500	4,000
Dwight-----	Clay Pan (pe30-36)	4,000	3,000	2,000
Mt:				
Mason-----	Loamy Lowland (pe35-38)	10,000	8,000	6,000
Mx:				
Mason-----	Loamy Lowland (pe35-38)	10,000	8,000	6,000
Drummond-----	Saline Lowland (pe24-32)	7,000	5,800	5,000
Nd:				
Niotaze-----	Savannah (pe35-38)	5,000	3,800	3,000
Darnell-----	Shallow Savannah (pe35-38)	3,200	2,100	1,400
Oa:				
Osage-----	Clay Lowland (pe35-38)	9,000	8,000	6,000
Oc:				
Osage-----	Clay Lowland (pe35-38)	9,000	8,000	6,000
Os:				
Osage-----	Clay Lowland (pe35-38)	9,000	8,000	6,000
Drummond-----	---	---	---	---
PIT:				
Pits-----	---	---	---	---
QUA:				
Quarry-----	---	---	---	---
So:				
Sogn-----	Shallow Limy (pe30-36)	3,500	2,500	1,500
St:				
Steedman-----	Loamy Upland (pe35-38)	6,250	4,750	3,250
Sv:				
Stephenville-----	Savannah (pe35-38)	4,500	3,300	2,500
Sx:				
Stephenville-----	Savannah (pe35-38)	4,500	3,300	2,500
Darnell-----	Shallow Savannah (pe35-38)	3,200	2,100	1,400
Ve:				
Verdigris-----	Loamy Lowland (pe35-38)	10,000	8,500	6,000
W:				
Water-----	---	---	---	---

BUILDING SITE DEVELOPMENT
Chautauqua County, Kansas

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The following tables show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Very limited Shrink-swell Slope	1.00 0.04	Very limited Shrink-swell Depth to soft bedrock Slope	1.00 0.20 0.04	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	30	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.04	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.04	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 0.50
035CC: Clime-----	60	Very limited Shrink-swell Slope	1.00 0.04	Very limited Shrink-swell Depth to soft bedrock Slope	1.00 0.06 0.04	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	20	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.04	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.04	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 0.50
035LA: Labette-----	85	Very limited Shrink-swell Depth to hard bedrock	1.00 0.06	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.06
035MC: Martin, eroded-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.12
035RA: Reading-----	85	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
035SA: Smolan-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
035SC: Smolan, eroded-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.12
035SD: Sogn-----	90	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.12
035TA: Tabler-----	95	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.95	Very limited Shrink-swell	1.00
049CD: Catoosa-----	90	Somewhat limited Shrink-swell	0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Somewhat limited Shrink-swell	0.50
049CF: Catoosa-----	55	Somewhat limited Depth to hard bedrock Shrink-swell	0.79 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Somewhat limited Depth to hard bedrock Shrink-swell Slope	0.79 0.50 0.00
Sogn-----	35	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.00
049CK: Clime-----	100	Very limited Slope Shrink-swell	1.00 1.00	Very limited Slope Shrink-swell Depth to soft bedrock	1.00 1.00 0.20	Very limited Slope Shrink-swell	1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049CS: Cline-----	65	Very limited Shrink-swell Slope	1.00 0.84	Very limited Shrink-swell Slope Depth to soft bedrock	1.00 0.84 0.35	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	20	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.00	Very limited Depth to hard bedrock Shrink-swell Slope	1.00 0.50 0.00	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 0.50
049EM: Eram-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell Depth to soft bedrock	1.00 1.00 0.20	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
049KD: Kenoma-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
049LA: Labette-----	90	Very limited Shrink-swell Depth to hard bedrock	1.00 0.46	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.46
049LD: Labette-----	65	Very limited Shrink-swell Depth to hard bedrock	1.00 0.46	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.46
Dwight-----	35	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 0.96	Very limited Shrink-swell	1.00
049ME: Martin, eroded----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.12
049SH: Sogn-----	85	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50
049ST: Steedman-----	85	Very limited Shrink-swell Depth to saturated zone Slope	1.00 0.98 0.84	Very limited Depth to saturated zone Shrink-swell Slope Depth to soft bedrock	1.00 1.00 0.84 0.06	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.98
049VD: Verdigris-----	85	Very limited Flooding Shrink-swell	1.00 0.00	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.00
125BG: Bates-----	45	Not limited		Somewhat limited Depth to soft bedrock	0.35	Somewhat limited Slope	0.48
Collinsville-----	40	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to hard bedrock Slope	1.00 1.00
125DB: Dennis-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
125EB: Eram-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell Depth to soft bedrock	1.00 1.00 0.29	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
125ET: Eram-----	50	Very limited Shrink-swell Depth to saturated zone	1.00 0.39	Very limited Depth to saturated zone Shrink-swell Depth to soft bedrock	1.00 1.00 0.29	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.86 0.39
Talihina-----	35	Very limited Depth to soft bedrock Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.84 0.39	Very limited Depth to saturated zone Shrink-swell Depth to soft bedrock Slope	1.00 1.00 1.00 0.84	Very limited Depth to soft bedrock Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00 0.39
125KA: Kenoma-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00
125LA: Lanton-----	95	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.98 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.98 0.50
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Ba: Bates-----	85	Not limited		Somewhat limited Depth to soft bedrock	0.15	Not limited	
Ca: Clareson-----	85	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 1.00 0.06	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06
Cs: Clareson-----	65	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 1.00 0.06	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06
Sogn-----	35	Very limited Depth to hard bedrock Shrink-swell	1.00 1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 1.00 0.50
Ct: Cleora-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Cx: Clime-----	62	Very limited Shrink-swell Slope	1.00 1.00	Very limited Shrink-swell Slope Depth to soft bedrock	1.00 1.00 0.64	Very limited Shrink-swell Slope	1.00 1.00
Sogn-----	25	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 0.96 0.50	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 0.96 0.50	Very limited Depth to hard bedrock Slope Shrink-swell	1.00 1.00 0.50

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Db: Dennis-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
Dc: Dennis-----	85	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
De: Dennis, eroded----	85	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
						Slope	0.12
DEE: Dennis-----	100	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
						Slope	0.48
Ds: Dennis-----	60	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
Dwight-----	23	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Ea: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	0.29	Depth to saturated zone	1.00
Ec: Eram-----	70	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	0.29	Depth to saturated zone	1.00
Collinsville-----	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
						Slope	0.00
Iv: Ivan-----	90	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
Ke: Kenoma-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	1.00
Ln: Longford-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
				Depth to hard bedrock	0.13		
Lo: Longford, eroded---	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
				Depth to hard bedrock	0.13		

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Lu: Lula-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to hard bedrock Shrink-swell	0.77	Somewhat limited Shrink-swell	0.50
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Mb: Martin-----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00	Very limited Shrink-swell	1.00
Mc: Martin-----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.48
Me: Martin, eroded-----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.12
Ms: Martin-----	75	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Dwight-----	15	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Mt: Mason-----	85	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
Mx: Mason-----	75	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
Drummond-----	15	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 0.61	Very limited Flooding Shrink-swell	1.00 1.00
Nd: Niotaze-----	65	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Shrink-swell	1.00
		Depth to saturated zone	0.98	Slope	0.96	Slope	1.00
		Slope	0.96	Depth to soft bedrock	0.64	Depth to saturated zone	0.98
Darnell-----	20	Somewhat limited Depth to soft bedrock Slope	1.00 0.96	Very limited Depth to soft bedrock Slope	1.00 0.96	Very limited Depth to soft bedrock Slope	1.00 1.00
Oa: Osage-----	85	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00
Oc: Osage-----	90	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Os:							
Osage-----	60	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00
Drummond-----	25	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Shrink-swell Depth to saturated zone	1.00 1.00 1.00 0.61	Very limited Flooding Shrink-swell	1.00 1.00
PIT:							
Pits-----	100	Not rated		Not rated		Not rated	
QUA:							
Quarry-----	100	Not rated		Not rated		Not rated	
So:							
Sogn-----	90	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50
St:							
Steedman-----	100	Very limited Shrink-swell Depth to saturated zone Slope	1.00 0.98 0.96	Very limited Depth to saturated zone Shrink-swell Slope Depth to soft bedrock	1.00 1.00 1.00 0.96 0.46	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00
Sv:							
Stephenville-----	85	Not limited		Somewhat limited Depth to soft bedrock	0.15	Not limited	
Sx:							
Stephenville-----	60	Not limited		Somewhat limited Depth to soft bedrock	0.15	Not limited	
Darnell-----	25	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
Ve:							
Verdigris-----	90	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
W:							
Water-----	100	Not rated		Not rated		Not rated	

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Very limited Shrink-swell Frost action Slope	1.00 0.50 0.04	Somewhat limited Too clayey Depth to soft bedrock Cutbanks cave Slope	0.32 0.20 0.10 0.04	Very limited Too clayey Depth to bedrock Slope	1.00 0.20 0.04
Sogn-----	30	Very limited Depth to hard bedrock Shrink-swell Frost action Slope	1.00 0.50 0.50 0.04	Very limited Depth to hard bedrock Cutbanks cave Slope	1.00 0.10 0.04	Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 1.00 0.04 0.00
035CC: Clime-----	60	Very limited Shrink-swell Frost action Slope	1.00 0.50 0.04	Somewhat limited Too clayey Cutbanks cave Depth to soft bedrock Slope	0.32 0.10 0.06 0.04	Very limited Too clayey Depth to bedrock Slope	1.00 0.06 0.04
Sogn-----	20	Very limited Depth to hard bedrock Shrink-swell Frost action Slope	1.00 0.50 0.50 0.04	Very limited Depth to hard bedrock Cutbanks cave Slope	1.00 0.10 0.04	Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 1.00 0.04 0.00
035LA: Labette-----	85	Very limited Shrink-swell Frost action Depth to hard bedrock	1.00 0.50 0.06	Very limited Depth to hard bedrock Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to bedrock	0.06
035MC: Martin, eroded----	90	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Not limited	
035RA: Reading-----	85	Very limited Frost action Shrink-swell Flooding	1.00 0.50 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
035SA: Smolan-----	90	Very limited Shrink-swell	1.00	Somewhat limited Cutbanks cave Too clayey	0.10 0.04	Not limited	
035SC: Smolan, eroded----	90	Very limited Shrink-swell Frost action	1.00 0.50	Somewhat limited Cutbanks cave Too clayey	0.10 0.04	Not limited	
035SD: Sogn-----	90	Very limited Depth to hard bedrock Shrink-swell Frost action	1.00 0.50 0.50	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Very limited Depth to bedrock Droughty Content of large stones	1.00 1.00 0.00
035TA: Tabler-----	95	Very limited Shrink-swell	1.00	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.95 0.32 0.10	Not limited	
049CD: Catoosa-----	90	Somewhat limited Shrink-swell Depth to hard bedrock	0.50 0.15	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.16

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049CF: Catoosa-----	55	Somewhat limited Depth to hard bedrock	0.79	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.80
Sogn-----	35	Shrink-swell Very limited Depth to hard bedrock	0.50 1.00	Cutbanks cave Very limited Depth to hard bedrock	0.10 1.00	Very limited Depth to bedrock	1.00
		Shrink-swell Frost action	0.50 0.50	Cutbanks cave	0.10	Droughty Content of large stones	1.00 0.00
049CK: Clime-----	100	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Shrink-swell Frost action	1.00 0.50	Too clayey Depth to soft bedrock	0.32 0.20	Depth to bedrock Content of large stones	0.20 0.00
				Cutbanks cave	0.10		
049CS: Clime-----	65	Very limited Shrink-swell Slope	1.00 0.84	Somewhat limited Slope	0.84	Very limited Too clayey	1.00
		Frost action	0.50	Depth to soft bedrock	0.35	Slope	0.84
Sogn-----	20	Very limited Depth to hard bedrock	1.00	Too clayey Cutbanks cave	0.32 0.10	Depth to bedrock	0.35
		Shrink-swell Frost action Slope	0.50 0.50 0.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
				Cutbanks cave	0.10	Droughty Slope	1.00 0.00
				Slope	0.00	Content of large stones	0.00
049EM: Eram-----	90	Very limited Shrink-swell	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	0.20	Depth to bedrock	0.20
				Too clayey Cutbanks cave	0.12 0.10		
049KD: Kenoma-----	90	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
049LA: Labette-----	90	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.46
		Frost action Depth to hard bedrock	0.50 0.46	Too clayey Cutbanks cave	0.12 0.10		
049LD: Labette-----	65	Very limited Shrink-swell	1.00	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to bedrock	0.46
		Frost action Depth to hard bedrock	0.50 0.46	Too clayey Cutbanks cave	0.12 0.10		
Dwight-----	35	Very limited Shrink-swell	1.00	Somewhat limited Depth to hard bedrock	0.96	Not limited	
		Frost action	0.50	Too clayey Cutbanks cave	0.76 0.10		
049ME: Martin, eroded-----	90	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Very limited Too clayey	1.00
049SH: Sogn-----	85	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
		Shrink-swell Frost action	0.50 0.50	Cutbanks cave	0.10	Droughty Content of large stones	1.00 0.00

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049ST: Steedman-----	85	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.84 0.75	Very limited Depth to saturated zone Slope Too clayey Cutbanks cave Depth to soft bedrock	1.00 0.84 0.32 0.10 0.06	Somewhat limited Slope Depth to saturated zone Content of large stones Depth to bedrock Gravel content	0.84 0.75 0.11 0.06 0.01
049VD: Verdigris-----	85	Very limited Flooding Shrink-swell	1.00 0.00	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
125BG: Bates-----	45	Not limited		Somewhat limited Depth to soft bedrock Cutbanks cave	0.35 0.10	Somewhat limited Depth to bedrock	0.35
Collinsville-----	40	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.63 0.10	Very limited Depth to bedrock Droughty Slope	1.00 0.98 0.63
125DB: Dennis-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to saturated zone	0.94
125EB: Eram-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.29 0.12 0.10	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
125ET: Eram-----	50	Very limited Shrink-swell Depth to saturated zone	1.00 0.19	Very limited Depth to saturated zone Too clayey Depth to soft bedrock Cutbanks cave	1.00 0.50 0.29 0.10	Somewhat limited Depth to bedrock Depth to saturated zone	0.29 0.19
Talihina-----	35	Very limited Depth to soft bedrock Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.84 0.19	Very limited Depth to soft bedrock Depth to saturated zone Slope Too clayey Cutbanks cave	1.00 1.00 0.84 0.32 0.10	Very limited Depth to bedrock Slope Droughty Depth to saturated zone	1.00 0.84 0.59 0.19
125KA: Kenoma-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.50 0.10	Very limited Depth to saturated zone	1.00
125LA: Lanton-----	95	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.75 0.50	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Somewhat limited Depth to saturated zone Flooding	0.75 0.60
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ba: Bates-----	85	Not limited		Very limited Cutbanks cave Depth to soft bedrock	1.00 0.15	Somewhat limited Depth to bedrock	0.16
Ca: Clareson-----	85	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06	Very limited Depth to hard bedrock Cutbanks cave Content of large stones Too clayey	1.00 0.10 0.06 0.04	Somewhat limited Content of large stones Depth to bedrock	0.20 0.10
Cs: Clareson-----	65	Very limited Shrink-swell Depth to hard bedrock Content of large stones	1.00 0.10 0.06	Very limited Depth to hard bedrock Cutbanks cave Content of large stones Too clayey	1.00 0.10 0.06 0.04	Somewhat limited Content of large stones Depth to bedrock	0.20 0.10
Sogn-----	35	Very limited Depth to hard bedrock Shrink-swell Frost action	1.00 0.50 0.50	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Very limited Depth to bedrock Droughty Content of large stones	1.00 1.00 0.00
Ct: Cleora-----	90	Very limited Flooding	1.00	Very limited Cutbanks cave Flooding	1.00 0.60	Somewhat limited Flooding	0.60
Cx: Clime-----	62	Very limited Shrink-swell Slope Frost action	1.00 1.00 0.50	Very limited Slope Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.64 0.32 0.10	Very limited Slope Too clayey Depth to bedrock Droughty	1.00 1.00 0.65 0.04
Sogn-----	25	Very limited Depth to hard bedrock Slope Shrink-swell Frost action	1.00 0.96 0.50 0.50	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.96 0.10	Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 1.00 1.00 0.96 0.00
Db: Dennis-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to saturated zone	0.94
Dc: Dennis-----	85	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to saturated zone	0.94
De: Dennis, eroded-----	85	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to saturated zone	0.94
DEE: Dennis-----	100	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.12 0.10	Somewhat limited Depth to saturated zone	0.94

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ds: Dennis-----	60	Very limited Shrink-swell Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Too clayey	1.00 0.12	Somewhat limited Depth to saturated zone	0.94
Dwight-----	23	Very limited Shrink-swell Frost action	1.00 0.50	Somewhat limited Too clayey Cutbanks cave	0.76 0.10	Not limited	
Ea: Eram-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.29 0.12 0.10	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
Ec: Eram-----	70	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.29 0.12 0.10	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
Collinsville-----	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Very limited Depth to bedrock Droughty Content of large stones	1.00 1.00 0.03
Iv: Ivan-----	90	Very limited Flooding Shrink-swell Frost action	1.00 0.50 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
Ke: Kenoma-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.50 0.10	Very limited Depth to saturated zone	1.00
Ln: Longford-----	90	Very limited Shrink-swell	1.00	Somewhat limited Depth to hard bedrock Cutbanks cave Too clayey	0.13 0.10 0.04	Not limited	
Lo: Longford, eroded---	90	Very limited Shrink-swell	1.00	Somewhat limited Depth to hard bedrock Cutbanks cave Too clayey	0.13 0.10 0.04	Not limited	
Lu: Lula-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to hard bedrock Cutbanks cave	0.77 0.10	Not limited	
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Not limited	
Mb: Martin-----	85	Very limited Frost action Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.32 0.10	Not limited	

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Mc: Martin-----	85	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Not limited	
Me: Martin, eroded----	85	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Not limited	
Ms: Martin-----	75	Very limited Frost action Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.32 0.10	Not limited	
Dwight-----	15	Very limited Shrink-swell Frost action	1.00 1.00 0.50	Somewhat limited Too clayey Cutbanks cave	0.76 0.10	Not limited	
Mt: Mason-----	85	Somewhat limited Shrink-swell Flooding	0.50 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
Mx: Mason-----	75	Somewhat limited Shrink-swell Flooding	0.50 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
Drummond-----	15	Very limited Shrink-swell Flooding	1.00 0.40	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.61 0.32 0.10	Not limited	
Ng: Niotaze-----	65	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.96 0.75	Very limited Depth to saturated zone Slope Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.96 0.64 0.12 0.10	Very limited Content of large stones Slope Depth to saturated zone Depth to bedrock Droughty	1.00 0.96 0.75 0.65 0.07
Darnell-----	20	Somewhat limited Depth to soft bedrock Slope	1.00 0.96	Very limited Depth to soft bedrock Slope Cutbanks cave	1.00 0.96 0.10	Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 1.00 0.96 0.03
Oa: Osage-----	85	Very limited Shrink-swell Ponding Depth to saturated zone Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Too clayey Cutbanks cave	1.00 1.00 0.60 0.32 0.10	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.60
Oc: Osage-----	90	Very limited Shrink-swell Ponding Depth to saturated zone Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Too clayey Cutbanks cave	1.00 1.00 0.60 0.32 0.10	Very limited Ponding Depth to saturated zone Too clayey Flooding	1.00 1.00 1.00 0.60
Os: Osage-----	60	Very limited Shrink-swell Ponding Depth to saturated zone Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Too clayey Cutbanks cave	1.00 1.00 0.60 0.32 0.10	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.60
Drummond-----	25	Very limited Flooding Shrink-swell	1.00 1.00	Somewhat limited Depth to saturated zone Flooding Too clayey Cutbanks cave	0.61 0.60 0.32 0.10	Somewhat limited Flooding	0.60

BUILDING SITE DEVELOPMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PIT: Pits-----	100	Not rated		Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Very limited Depth to hard bedrock Shrink-swell Frost action	1.00 0.50 0.50	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Very limited Depth to bedrock Droughty Content of large stones	1.00 0.00
St: Steedman-----	100	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.96 0.75	Very limited Depth to saturated zone Slope Depth to soft bedrock Too clayey Cutbanks cave	1.00 0.96 0.46 0.32 0.10	Somewhat limited Slope Depth to saturated zone Depth to bedrock Content of large stones Droughty	0.96 0.75 0.46 0.20 0.10
Sv: Stephenville-----	85	Not limited		Somewhat limited Depth to soft bedrock Cutbanks cave	0.15 0.10	Somewhat limited Depth to bedrock Content of large stones	0.16 0.03
Sx: Stephenville-----	60	Not limited		Somewhat limited Depth to soft bedrock Cutbanks cave	0.15 0.10	Somewhat limited Depth to bedrock Content of large stones	0.16 0.03
Darnell-----	25	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Cutbanks cave	1.00 0.10	Very limited Depth to bedrock Droughty Content of large stones	1.00 0.03
Ve: Verdigris-----	90	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
W: Water-----	100	Not rated		Not rated		Not rated	

CONSTRUCTION MATERIALS
Chautauqua County, Kansas

Construction Materials

The following tables give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated good, fair, or poor as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

The soils are rated as a probable or improbable source of sand and gravel. A rating of probable means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In these tables, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
015CS: Clime-----	67	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035CC: Clime-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035LA: Labette-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035MC: Martin, eroded-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035RA: Reading-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035SA: Smolan-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035SC: Smolan, eroded-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035SD: Sogn-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
035TA: Tabler-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049CD: Catoosa-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049CF: Catoosa-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049CK: Clime-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049CS: Clime-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Sogn-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049EM: Eram-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049KD: Kenoma-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049LA: Labette-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049LD: Labette-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049ME: Martin, eroded-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049SH: Sogn-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049ST: Steedman-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
049VD: Verdigris-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
125BG: Bates-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Collinsville-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
125DB: Dennis-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
125EB: Eram-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
125ET: Eram-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Talihina-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
125KA: Kenoma-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
125LA: Lanton-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
AED: Arents, Earthen Dam-	100	Not rated		Not rated	
Ba: Bates-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.06
Ca: Clareson-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cs: Clareson-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ct: Cleora-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.04 0.09
Cx: Clime-----	62	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sogn-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Db: Dennis-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dc: Dennis-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
De: Dennis, eroded-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
DEE: Dennis-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ds: Dennis-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	23	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Ea: Eram-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ec: Eram-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Collinsville-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Iv: Ivan-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ke: Kenoma-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ln: Longford-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Lo: Longford, eroded---	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Lu: Lula-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
M-W: Miscellaneous Water-	100	Not rated		Not rated	
Ma: Martin-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mb: Martin-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mc: Martin-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Me: Martin, eroded-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ms: Martin-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dwight-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mt: Mason-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Mx: Mason-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Drummond-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ng: Niotaze-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Darnell-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Oa: Osage-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Oc: Osage-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Os: Osage-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Drummond-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
PIT: Pits-----	100	Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated	
So: Sogn-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
St: Steedman-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sv: Stephenville-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Sx: Stephenville-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Darnell-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ve: Verdigris-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
W: Water-----	100	Not rated		Not rated	

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Poor Too clayey Droughty Depth to bedrock	0.00 0.71 0.79	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Depth to bedrock Slope	0.00 0.79 0.96
Sogn-----	30	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey Slope	0.00 0.93 0.96
035CC: Clime-----	60	Poor Too clayey Droughty Depth to bedrock	0.00 0.69 0.93	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Depth to bedrock Slope	0.00 0.93 0.96
Sogn-----	20	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey Slope	0.00 0.93 0.96
035LA: Labette-----	85	Poor Too clayey Depth to bedrock Too acid No water erosion limitation	0.00 0.93 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Rock fragments Too Clayey Depth to bedrock	0.00 0.00 0.93
035MC: Martin, eroded-----	90	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.88 0.95 0.99	Fair Shrink-swell	0.18	Poor Too Clayey	0.00
035RA: Reading-----	85	Fair Water erosion Too acid Too clayey	0.90 0.95 0.98	Fair Shrink-swell	0.89	Fair Too Clayey	0.89
035SA: Smolan-----	90	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.49	Poor Too Clayey	0.00
035SC: Smolan, eroded-----	90	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.49	Poor Too Clayey	0.00
035SD: Sogn-----	90	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
035TA: Tabler-----	95	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
049CD: Catoosa-----	90	Fair Too clayey Depth to bedrock Too acid No water erosion limitation	0.08 0.84 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.87	Fair Too Clayey Depth to bedrock	0.06 0.84

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049CF: Catoosa-----	55	Fair Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.08 0.21 0.82 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.87	Fair Too Clayey Depth to bedrock	0.06 0.21
Sogn-----	35	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
049CK: Clime-----	100	Poor Too clayey Depth to bedrock Low content of organic matter Droughty	0.00 0.79 0.88 0.91	Poor Depth to bedrock Slope Shrink-swell	0.00 0.00 0.12	Poor Slope Too Clayey Depth to bedrock	0.00 0.00 0.79
049CS: Clime-----	65	Poor Too clayey Droughty Depth to bedrock	0.00 0.39 0.65	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Slope Depth to bedrock	0.00 0.16 0.65
Sogn-----	20	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
049EM: Eram-----	90	Poor Too clayey Depth to bedrock Droughty Water erosion Too acid	0.00 0.79 0.82 0.90 0.95	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.12	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.79
049KD: Kenoma-----	90	Poor Too clayey Too acid Water erosion	0.00 0.84 0.90	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
049LA: Labette-----	90	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.54 0.87 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Rock fragments Too Clayey Depth to bedrock	0.00 0.00 0.54
049LD: Labette-----	65	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.54 0.87 0.95 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Rock fragments Too Clayey Depth to bedrock	0.00 0.00 0.54
Dwight-----	35	Poor Too clayey Water erosion Droughty	0.00 0.90 0.98	Fair Depth to bedrock Shrink-swell	0.04 0.12	Poor Too Clayey	0.00
049ME: Martin, eroded-----	90	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.50 0.95 0.99	Fair Shrink-swell	0.12	Poor Too Clayey	0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049SH: Sogn-----	85	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
049ST: Steedman-----	85	Poor Too clayey Droughty Too acid Low content of organic matter Depth to bedrock	0.00 0.51 0.84 0.88 0.93	Poor Depth to bedrock Shrink-swell Depth to saturated zone	0.00 0.12 0.14	Poor Too Clayey Depth to saturated zone Slope Depth to bedrock	0.00 0.14 0.16 0.93
049VD: Verdigris-----	85	Good		Fair Shrink-swell	0.95	Good	
125BG: Bates-----	45	Fair Too acid Depth to bedrock	0.54 0.65	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.65
Collinsville-----	40	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.00 0.68	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope	0.00 0.37
125DB: Dennis-----	90	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Depth to saturated zone Shrink-swell	0.04 0.28	Poor Too Clayey Depth to saturated zone	0.00 0.04
125EB: Eram-----	90	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.71 0.77 0.95 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.15	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.71
125ET: Eram-----	50	Poor Too clayey Depth to bedrock Droughty Too acid No water erosion limitation	0.00 0.71 0.77 0.84 0.99	Poor Depth to bedrock Shrink-swell Depth to saturated zone	0.00 0.19 0.53	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.53 0.71
Talihina-----	35	Poor Depth to bedrock Droughty Too clayey Too acid No water erosion limitation	0.00 0.00 0.00 0.00 0.97 0.99	Poor Depth to bedrock Shrink-swell Depth to saturated zone	0.00 0.07 0.53	Poor Depth to bedrock Too Clayey Slope Depth to saturated zone	0.00 0.00 0.16 0.53
125KA: Kenoma-----	90	Poor Too clayey Too acid Water erosion	0.00 0.84 0.90	Poor Depth to saturated zone Shrink-swell	0.00 0.17	Poor Too Clayey Depth to saturated zone	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
125LA: Lanton-----	95	Fair Low content of organic matter Too acid Too clayey No water erosion limitation	0.50 0.95 0.98 0.99	Fair Depth to saturated zone Shrink-swell	0.14 0.89	Fair Depth to saturated zone Too Clayey	0.14 0.89
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Ba: Bates-----	85	Fair Depth to bedrock Too acid Droughty	0.84 0.84 0.98	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.84
Ca: Clareson-----	85	Fair Droughty Too clayey Depth to bedrock Cobble content	0.42 0.68 0.90 0.94	Poor Depth to bedrock Shrink-swell Cobble content	0.00 0.30 0.38	Fair Too Clayey Rock fragments Depth to bedrock	0.67 0.68 0.90
Cs: Clareson-----	65	Fair Droughty Too clayey Depth to bedrock Cobble content	0.42 0.68 0.90 0.94	Poor Depth to bedrock Shrink-swell Cobble content	0.00 0.30 0.38	Fair Too Clayey Rock fragments Depth to bedrock	0.67 0.68 0.90
Sogn-----	35	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
Ct: Cleora-----	90	Fair Low content of organic matter	0.50	Good		Good	
Cx: Clime-----	62	Poor Too clayey Droughty Depth to bedrock	0.00 0.13 0.35	Poor Depth to bedrock Shrink-swell Slope	0.00 0.12 0.68	Poor Too Clayey Slope Depth to bedrock	0.00 0.00 0.35
Sogn-----	25	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Too Clayey	0.00 0.04 0.93
Db: Dennis-----	90	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.54 0.90	Fair Depth to saturated zone Shrink-swell	0.04 0.26	Poor Too Clayey Depth to saturated zone	0.00 0.04
Dc: Dennis-----	85	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Depth to saturated zone Shrink-swell	0.04 0.26	Poor Too Clayey Depth to saturated zone	0.00 0.04

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
De: Dennis, eroded-----	85	Poor Too clayey Low content of organic matter Too acid No water erosion limitation	0.00 0.50 0.74 0.99	Fair Depth to saturated zone Shrink-swell	0.04 0.15	Poor Too Clayey Depth to saturated zone	0.00 0.04
DEE: Dennis-----	100	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Depth to saturated zone Shrink-swell	0.04 0.30	Poor Too Clayey Depth to saturated zone	0.00 0.04
Ds: Dennis-----	60	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.50 0.74 0.90	Fair Depth to saturated zone Shrink-swell	0.04 0.26	Poor Too Clayey Depth to saturated zone	0.00 0.04
Dwight-----	23	Poor Too clayey Low content of organic matter Water erosion	0.00 0.50 0.90	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
Ea: Eram-----	90	Poor Too clayey Low content of organic matter Droughty Depth to bedrock Too acid No water erosion limitation	0.00 0.50 0.71 0.71 0.95 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.12	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.71
Ec: Eram-----	70	Poor Too clayey Droughty Depth to bedrock Too acid No water erosion limitation	0.00 0.71 0.71 0.95 0.99	Poor Depth to bedrock Depth to saturated zone Shrink-swell	0.00 0.00 0.12	Poor Too Clayey Depth to saturated zone Depth to bedrock	0.00 0.00 0.71
Collinsville-----	20	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.68	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.95
Iv: Ivan-----	90	Good		Fair Shrink-swell	0.90	Good	
Ke: Kenoma-----	90	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.24 0.84 0.90	Poor Depth to saturated zone Shrink-swell	0.00 0.14	Poor Too Clayey Depth to saturated zone	0.00 0.00
Ln: Longford-----	90	Poor Too clayey Low content of organic matter No water erosion limitation	0.00 0.82 0.99	Fair Shrink-swell Depth to bedrock	0.25 0.87	Poor Too Clayey	0.00

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Lo: Longford, eroded----	90	Poor Too clayey Low content of organic matter No water erosion limitation	0.00 0.82 0.99	Fair Shrink-swell Depth to bedrock	0.25 0.87	Poor Too Clayey	0.00
Lu: Lula-----	90	Fair Low content of organic matter Too clayey Too acid No water erosion limitation	0.50 0.68 0.95 0.99	Fair Depth to bedrock Shrink-swell	0.23 0.87	Fair Too Clayey Hard to reclaim Rock fragments	0.44 0.50 0.50
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.24 0.87	Poor Too Clayey	0.00
Mb: Martin-----	85	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to bedrock Depth to saturated zone	0.24 0.87 0.89	Poor Too Clayey Depth to saturated zone	0.00 0.89
Mc: Martin-----	85	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.24 0.87	Poor Too Clayey	0.00
Me: Martin, eroded----	85	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.12 0.87	Poor Too Clayey	0.00
Ms: Martin-----	75	Poor Too clayey Too acid No water erosion limitation	0.00 0.95 0.99	Fair Shrink-swell Depth to bedrock	0.24 0.87	Poor Too Clayey	0.00
Dwight-----	15	Poor Too clayey Low content of organic matter No water erosion limitation	0.00 0.50 0.99	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
MT: Mason-----	85	Fair Low content of organic matter Too acid No water erosion limitation	0.88 0.97 0.99	Fair Shrink-swell	0.87	Good	
Mx: Mason-----	75	Fair Low content of organic matter Too acid No water erosion limitation	0.88 0.97 0.99	Fair Shrink-swell	0.87	Good	

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Drummond-----	15	Poor Too clayey Low content of organic matter Droughty Water erosion	0.00 0.12 0.27 0.37	Fair		Poor Too Clayey Salinity	0.00 0.88
Nd: Niotaze-----	65	Poor Too clayey Droughty Depth to bedrock Too acid	0.00 0.10 0.35 0.74	Poor Depth to bedrock Shrink-swell Depth to saturated zone	0.00 0.12 0.14	Poor Too Clayey Slope Depth to saturated zone Depth to bedrock	0.00 0.04 0.14 0.35
Darnell-----	20	Poor Droughty Depth to bedrock Low content of organic matter Too acid	0.00 0.00 0.12 0.97	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Rock fragments	0.00 0.04 0.88
Oa: Osage-----	85	Fair Too clayey Too acid	0.18 0.97	Poor Depth to saturated zone Shrink-swell	0.00 0.00	Poor Depth to saturated zone Too Clayey	0.00 0.18
Oc: Osage-----	90	Poor Too clayey	0.00	Poor Depth to saturated zone Shrink-swell	0.00 0.00	Poor Too Clayey Depth to saturated zone	0.00 0.00
Os: Osage-----	60	Fair Too clayey Too acid	0.18 0.97	Poor Depth to saturated zone Shrink-swell	0.00 0.00	Poor Depth to saturated zone Too Clayey	0.00 0.18
Drummond-----	25	Poor Too clayey Droughty Water erosion Low content of organic matter	0.00 0.27 0.37 0.50	Fair Shrink-swell	0.41	Poor Too Clayey Salinity	0.00 0.88
PIT: Pits-----	100	Not rated		Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.98	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too Clayey	0.00 0.93
St: Steedman-----	100	Poor Too clayey Droughty Depth to bedrock Too acid Low content of organic matter	0.00 0.08 0.54 0.84 0.88	Poor Depth to bedrock Shrink-swell Depth to saturated zone	0.00 0.12 0.14	Poor Too Clayey Slope Depth to saturated zone Depth to bedrock	0.00 0.04 0.14 0.54
Sv: Stephenville-----	85	Fair Low content of organic matter Too acid Droughty Depth to bedrock	0.50 0.54 0.62 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock Too acid	0.84 0.98

CONSTRUCTION MATERIALS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sx: Stephenville-----	60	Fair Low content of organic matter Too acid Droughty Depth to bedrock	0.50 0.54 0.64 0.84	Poor Depth to bedrock	0.00	Fair Depth to bedrock Too acid	0.84 0.98
Darnell-----	25	Poor Droughty Depth to bedrock Low content of organic matter Too acid	0.00 0.00 0.12 0.97	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
Ve: Verdigris-----	90	Good		Fair Shrink-swell	0.88	Good	
W: Water-----	100	Not rated		Not rated		Not rated	

RECREATIONAL INTERPRETATIONS
Chautauqua County, Kansas

Recreation

The soils of the survey area are rated in the following tables according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Somewhat limited Too clayey Restricted permeability Slope	0.50 0.39 0.04	Somewhat limited Too clayey Restricted permeability Slope	0.50 0.39 0.04	Very limited Slope Too clayey Restricted permeability Depth to bedrock	1.00 0.50 0.39 0.20
Sogn-----	30	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope Content of large stones	1.00 1.00 0.00
035CC: Clime-----	60	Somewhat limited Too clayey Restricted permeability Slope	0.50 0.39 0.04	Somewhat limited Too clayey Restricted permeability Slope	0.50 0.39 0.04	Very limited Slope Too clayey Restricted permeability Depth to bedrock	1.00 0.50 0.39 0.06
Sogn-----	20	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Slope Content of large stones	1.00 1.00 0.00
035LA: Labette-----	85	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability Slope	0.39 0.00
035MC: Martin, eroded----	90	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Slope	0.94 0.87
035RA: Reading-----	85	Very limited Flooding	1.00	Not limited		Not limited	
035SA: Smolan-----	90	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability Slope	0.39 0.00
035SC: Smolan, eroded----	90	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Slope Restricted permeability	0.87 0.39
035SD: Sogn-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Content of large stones	1.00 0.87 0.00
035TA: Tabler-----	95	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
049CD: Catoosa-----	90	Not limited		Not limited		Not limited	
049CF: Catoosa-----	55	Not limited		Not limited		Somewhat limited Depth to bedrock Slope	0.80 0.50
Sogn-----	35	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Content of large stones	1.00 0.50 0.00
049CK: Clime-----	100	Very limited Slope Restricted permeability	1.00 0.39	Very limited Slope Restricted permeability	1.00 0.39	Very limited Slope Restricted permeability Depth to bedrock Content of large stones	1.00 0.39 0.20 0.00
049CS: Clime-----	65	Somewhat limited Slope	0.84	Somewhat limited Slope	0.84	Very limited Slope	1.00

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	20	Too clayey Restricted permeability	0.50 0.39	Too clayey Restricted permeability	0.50 0.39	Too clayey Restricted permeability Depth to bedrock	0.50 0.39 0.35
		Very limited Depth to bedrock Slope	1.00 0.00	Very limited Depth to bedrock Slope	1.00 0.00	Very limited Depth to bedrock Slope Content of large stones	1.00 1.00 0.00
049EM: Eram-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Slope	1.00 0.94 0.20 0.13
049KD: Kenoma-----	90	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability Slope	1.00 0.00
049LA: Labette-----	90	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Depth to bedrock Restricted permeability Slope	0.46 0.39 0.13
049LD: Labette-----	65	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability Slope	0.39 0.00
Dwight-----	35	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
049ME: Martin, eroded-----	90	Very limited Too clayey Restricted permeability	1.00 0.94	Very limited Too clayey Restricted permeability	1.00 0.94	Very limited Too clayey Restricted permeability Slope	1.00 0.94 0.87
049SH: Sogn-----	85	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Content of large stones	1.00 0.00 0.00
049ST: Steedman-----	85	Somewhat limited Depth to saturated zone Slope Restricted permeability Gravel content	0.98 0.84 0.39 0.01	Somewhat limited Slope Depth to saturated zone Restricted permeability Gravel content	0.84 0.75 0.39 0.01	Very limited Slope Gravel content Depth to saturated zone Restricted permeability Content of large stones	1.00 1.00 0.98 0.39 0.11
049VD: Verdigris-----	85	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
125BG: Bates-----	45	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15	Very limited Slope Depth to bedrock Restricted permeability	1.00 0.35 0.15
Collinsville-----	40	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 1.00
125DB: Dennis-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.13

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
125EB: Eram-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Slope	1.00 0.94 0.29 0.13
125ET: Eram-----	50	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.39	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.19	Very limited Slope Restricted permeability Depth to saturated zone Depth to bedrock	1.00 0.94 0.39 0.29
Talihina-----	35	Very limited Depth to bedrock Restricted permeability Slope Depth to saturated zone	1.00 0.94 0.84 0.39	Very limited Depth to bedrock Restricted permeability Slope Depth to saturated zone	1.00 0.94 0.84 0.19	Very limited Depth to bedrock Slope Restricted permeability Depth to saturated zone	1.00 1.00 0.94 0.39
125KA: Kenoma-----	90	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Restricted permeability Depth to saturated zone	1.00 1.00
125LA: Lanton-----	95	Very limited Flooding Depth to saturated zone Restricted permeability	1.00 0.98 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.75	Somewhat limited Depth to saturated zone Restricted permeability Flooding	0.98 0.94 0.60
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Ba: Bates-----	85	Not limited		Not limited		Somewhat limited Depth to bedrock Slope	0.16 0.13
Ca: Clareson-----	85	Somewhat limited Restricted permeability	0.60	Somewhat limited Restricted permeability	0.60	Somewhat limited Restricted permeability Content of large stones	0.60 0.20
Cs: Clareson-----	65	Somewhat limited Restricted permeability	0.60	Somewhat limited Restricted permeability	0.60	Somewhat limited Restricted permeability Content of large stones Slope	0.60 0.20 0.00
Sogn-----	35	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Content of large stones	1.00 0.00 0.00
CT: Cleora-----	90	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Cx: Clime-----	62	Very limited Slope Too clayey Restricted permeability	1.00 0.50 0.39	Very limited Slope Too clayey Restricted permeability	1.00 0.50 0.39	Very limited Slope Depth to bedrock Too clayey Restricted permeability	1.00 0.65 0.50 0.39
Sogn-----	25	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Slope Depth to bedrock Content of large stones	1.00 1.00 0.00

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Db: Dennis-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.00
Dc: Dennis-----	85	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.87
De: Dennis, eroded----	85	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.87
DEE: Dennis-----	100	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Slope Restricted permeability	1.00 1.00 0.94
Ds: Dennis-----	60	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Somewhat limited Restricted permeability Depth to saturated zone	0.94 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.00
Dwight-----	23	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
Ea: Eram-----	90	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Slope	1.00 0.94 0.00
Ec: Eram-----	70	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability	1.00 0.94	Very limited Depth to saturated zone Restricted permeability Slope Depth to bedrock	1.00 0.94 0.50 0.29
Collinsville-----	20	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Content of large stones	1.00 0.50 0.03
Iv: Ivan-----	90	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Ke: Kenoma-----	90	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Restricted permeability Depth to saturated zone	1.00 1.00
Ln: Longford-----	90	Somewhat limited Restricted permeability	0.05	Somewhat limited Restricted permeability	0.05	Somewhat limited Slope Restricted permeability	0.13 0.05
Lo: Longford, eroded----	90	Somewhat limited Restricted permeability	0.05	Somewhat limited Restricted permeability	0.05	Somewhat limited Slope Restricted permeability	0.13 0.05

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Lu: Lula-----	90	Not limited		Not limited		Not limited	
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94
Mb: Martin-----	85	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Slope	0.94 0.13
Mc: Martin-----	85	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Very limited Slope Restricted permeability	1.00 0.94
Me: Martin, eroded-----	85	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Slope	0.94 0.87
Ms: Martin-----	75	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability	0.94	Somewhat limited Restricted permeability Slope	0.94 0.00
Dwight-----	15	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
Mt: Mason-----	85	Very limited Flooding Restricted permeability	1.00 0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15
Mx: Mason-----	75	Very limited Flooding Restricted permeability	1.00 0.15	Somewhat limited Restricted permeability	0.15	Somewhat limited Restricted permeability	0.15
Drummond-----	15	Very limited Flooding Restricted permeability	1.00 0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Nd: Niotaze-----	65	Somewhat limited Depth to saturated zone Slope Restricted permeability Content of large stones	0.98 0.96 0.39 0.14	Somewhat limited Slope Depth to saturated zone Restricted permeability Content of large stones	0.96 0.75 0.39 0.14	Very limited Slope Content of large stones Depth to saturated zone Gravel content Depth to bedrock	1.00 1.00 0.98 0.97 0.65
Darnell-----	20	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Slope Depth to bedrock Content of large stones	1.00 1.00 0.03
Oa: Osage-----	85	Very limited Depth to saturated zone Flooding Ponding Restricted permeability	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Restricted permeability	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Restricted permeability Flooding	1.00 1.00 1.00 0.60
Oc: Osage-----	90	Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00	Very limited Depth to saturated zone	1.00

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Os: Osage-----	60	Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
		Too clayey	1.00			Flooding	0.60
		Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00	Very limited Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Drummond-----	25	Restricted permeability	1.00	Restricted permeability	1.00	Flooding	0.60
		Flooding	1.00	Somewhat limited Restricted permeability	0.45	Somewhat limited Flooding	0.60
		Restricted permeability	0.45			Restricted permeability	0.45
PIT: Pits-----	100	Not rated		Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
St: Steedman-----	100			Slope	0.96	Slope	0.00
				Depth to saturated zone	0.75	Content of large stones	0.00
		Very limited Slope	0.98	Very limited Slope	0.96	Very limited Slope	1.00
		Depth to saturated zone	0.96	Depth to saturated zone	0.75	Gravel content	1.00
Sv: Stephenville-----	85	Restricted permeability	0.39	Restricted permeability	0.39	Depth to saturated zone	0.98
		Gravel content	0.00	Gravel content	0.00	Depth to bedrock	0.46
						Restricted permeability	0.39
		Not limited		Not limited		Somewhat limited Depth to bedrock	0.16
Sx: Stephenville-----	60					Slope	0.13
						Content of large stones	0.03
		Not limited		Not limited		Somewhat limited Depth to bedrock	0.16
						Slope	0.13
Darnell-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Content of large stones	0.03
						Very limited Depth to bedrock	1.00
						Slope	0.13
						Content of large stones	0.03
Ve: Verdigris-----	90	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
W: Water-----	100	Not rated		Not rated		Not rated	

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
				Depth to bedrock	0.20
				Slope	0.04
Sogn-----	30	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.04
				Content of large stones	0.00
035CC: Clime-----	60	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
				Depth to bedrock	0.06
				Slope	0.04
Sogn-----	20	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.04
				Content of large stones	0.00
035LA: Labette-----	85	Not limited		Somewhat limited Depth to bedrock	0.06
035MC: Martin, eroded-----	90	Not limited		Not limited	
035RA: Reading-----	85	Not limited		Not limited	
035SA: Smolan-----	90	Not limited		Not limited	
035SC: Smolan, eroded-----	90	Not limited		Not limited	
035SD: Sogn-----	90	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Content of large stones	0.00
035TA: Tabler-----	95	Not limited		Not limited	
049CD: Catoosa-----	90	Not limited		Somewhat limited Depth to bedrock	0.16
049CF: Catoosa-----	55	Not limited		Somewhat limited Depth to bedrock	0.80
Sogn-----	35	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Content of large stones	0.00
049CK: Clime-----	100	Very limited Slope	1.00	Very limited Slope	1.00
				Depth to bedrock	0.20
				Content of large stones	0.00
049CS: Clime-----	65	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
				Slope	0.84
				Depth to bedrock	0.35
Sogn-----	20	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.00
				Content of large stones	0.00
049EM: Eram-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.20
049KD: Kenoma-----	90	Not limited		Not limited	
049LA: Labette-----	90	Not limited		Somewhat limited Depth to bedrock	0.46
049LD: Labette-----	65	Not limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Dwight-----	35	Not limited		Depth to bedrock	0.46
049ME:				Not limited	
Martin, eroded-----	90	Very limited Too clayey	1.00	Very limited Too clayey	1.00
049SH:					
Sogn-----	85	Not limited		Very limited Depth to bedrock	1.00
				Droughty	1.00
				Content of large stones	0.00
049ST:					
Steedman-----	85	Somewhat limited Depth to saturated zone	0.44	Somewhat limited Slope	0.84
				Depth to saturated zone	0.75
				Content of large stones	0.11
				Depth to bedrock	0.06
				Gravel content	0.01
049VD:					
Verdigris-----	85	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
125BG:					
Bates-----	45	Not limited		Somewhat limited Depth to bedrock	0.35
Collinsville-----	40	Not limited		Very limited Depth to bedrock	1.00
				Droughty	0.98
				Slope	0.63
125DB:					
Dennis-----	90	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
125EB:					
Eram-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
				Depth to bedrock	0.29
125ET:					
Eram-----	50	Not limited		Somewhat limited Depth to bedrock	0.29
				Depth to saturated zone	0.19
Talihina-----	35	Not limited		Very limited Depth to bedrock	1.00
				Slope	0.84
				Droughty	0.59
				Depth to saturated zone	0.19
125KA:					
Kenoma-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
125LA:					
Lanton-----	95	Somewhat limited Depth to saturated zone	0.44	Somewhat limited Depth to saturated zone	0.75
				Flooding	0.60
AED:					
Arents, Earthen Dam-	100	Not rated		Not rated	
Ba:					
Bates-----	85	Not limited		Somewhat limited Depth to bedrock	0.16
Ca:					
Clareson-----	85	Not limited		Somewhat limited Content of large stones	0.20
				Depth to bedrock	0.10
Cs:					
Clareson-----	65	Not limited		Somewhat limited Content of large stones	0.20
				Depth to bedrock	0.10
Sogn-----	35	Not limited		Very limited Depth to bedrock	1.00
				Droughty	1.00

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ct: Cleora-----	90	Not limited		Content of large stones	0.00
Cx: Clime-----	62	Somewhat limited Too clayey Slope	0.50 0.32	Somewhat limited Flooding	0.60
Sogn-----	25	Not limited		Very limited Slope Too clayey Depth to bedrock Droughty	1.00 1.00 0.65 0.04
Db: Dennis-----	90	Not limited		Very limited Depth to bedrock Droughty Slope Content of large stones	1.00 1.00 0.96 0.00
Dc: Dennis-----	85	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
De: Dennis, eroded----	85	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
DEE: Dennis-----	100	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Ds: Dennis-----	60	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Dwight-----	23	Not limited		Not limited	
Ea: Eram-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
Ec: Eram-----	70	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 0.29
Collinsville-----	20	Not limited		Very limited Depth to bedrock Droughty Content of large stones	1.00 1.00 0.03
Iv: Ivan-----	90	Not limited		Somewhat limited Flooding	0.60
Ke: Kenoma-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Ln: Longford-----	90	Not limited		Not limited	
Lo: Longford, eroded----	90	Not limited		Not limited	
Lu: Lula-----	90	Not limited		Not limited	
M-W: Miscellaneous Water-	100	Not rated		Not rated	
Ma: Martin-----	95	Not limited		Not limited	
Mb: Martin-----	85	Not limited		Not limited	
Mc: Martin-----	85	Not limited		Not limited	
Me: Martin, eroded----	85	Not limited		Not limited	
Ms: Martin-----	75	Not limited		Not limited	
Dwight-----	15	Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Mt: Mason-----	85	Not limited		Not limited	
Mx: Mason-----	75	Not limited		Not limited	
Drummond-----	15	Not limited		Not limited	
Nd: Niotaze-----	65	Somewhat limited		Very limited	
		Depth to saturated zone	0.44	Content of large stones	1.00
		Content of large stones	0.14	Slope	0.96
				Depth to saturated zone	0.75
				Depth to bedrock	0.65
				Droughty	0.07
Darnell-----	20	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Slope	0.96
				Content of large stones	0.03
Oa: Osage-----	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
				Flooding	0.60
Oc: Osage-----	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Too clayey	1.00	Too clayey	1.00
				Flooding	0.60
Os: Osage-----	60	Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
				Flooding	0.60
Drummond-----	25	Not limited		Somewhat limited	
				Flooding	0.60
PIT: Pits-----	100	Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated	
So: Sogn-----	90	Not limited		Very limited	
				Depth to bedrock	1.00
				Droughty	1.00
				Content of large stones	0.00
St: Steedman-----	100	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Slope	0.96
				Depth to saturated zone	0.75
				Depth to bedrock	0.46
				Content of large stones	0.20
				Droughty	0.10
Sv: Stephenville-----	85	Not limited		Somewhat limited	
				Depth to bedrock	0.16
				Content of large stones	0.03
Sx: Stephenville-----	60	Not limited		Somewhat limited	
				Depth to bedrock	0.16
				Content of large stones	0.03
Darnell-----	25	Not limited		Very limited	
				Depth to bedrock	1.00

RECREATIONAL INTERPRETATIONS--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Paths and trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ve: Verdigris-----	90	Not limited		Droughty Content of large stones	1.00 0.03
W: Water-----	100	Not rated		Somewhat limited Flooding	0.60
				Not rated	

WILDLIFE INTERPRETATIONS
Chautauqua County, Kansas

Use and Explanation of Wildlife Interpretations

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the development of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, water, and living space. If any one of these elements is missing, inadequate, or inaccessible, wildlife will be scarce or will not inhabit the area. If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, properly managing the existing plant cover, and fostering the natural establishment of desirable plants.

In the Wildlife Interpretations table, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

Suitability Ratings

The potential of the soil is rated good, fair, poor, or very poor.

Good - means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose.

Fair - means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.

Poor - means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and requires intensive effort.

Very Poor - means that limitations are very severe for the designated element or kind of wildlife habitat. Habitat is difficult to create, improve, or maintain in most places, and management is difficult and requires intensive effort.

Description of Wildlife Habitat Elements

Openland habitat consists of croplands, pastures, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kind of wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, killdeer, cottontail rabbit, red fox, and coyote.

Woodland habitat consists of hardwood or conifers, or a mixture of these and associated grasses, legumes and wild herbaceous plants. Examples of wildlife attracted to this habitat are wild turkey, thrushes, woodpeckers, owl, tree squirrels, raccoon, and deer.

Wetland habitat consists of water-tolerant plants in open, marshy or swampy, shallow water areas. Examples of wildlife attracted to this habitat are ducks, geese, herons, bitterns, rails, kingfishers, shorebirds, muskrat, mink, and beaver.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated good are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are fragrant sumac, chokecherry, American plum, sand plum, and garden currant.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, saltgrass, cordgrass, rushes, sedges, and cattails.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, red fox and coyote.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, deer, cottontail rabbit, prairie chicken, meadowlark, quail, and pheasant.

WILDLIFE INTERPRETATIONS
Chautauqua County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
015CS: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
035CC: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
035LA: LABETTE-----	Fair	Good	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
035MC: MARTIN-----	Good	Good	Good	Fair	Fair	Good	Poor	Poor	Good	Fair	Poor	Good
035RA: READING-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	---
035SA: SMOLAN-----	Good	Good	Fair	---	---	Fair	Poor	Fair	Good	---	Poor	Fair
035SC: SMOLAN-----	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
035SD: SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
035TA: TABLER-----	Good	Good	Fair	---	---	Fair	Poor	Poor	Good	---	Poor	Fair
049CD: CATOOSA-----	Fair	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
049CF: CATOOSA-----	Fair	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
049CK: CLIME-----	Poor	Fair	Fair	---	---	Poor	---	Poor	Fair	---	Very poor	Fair
049CS: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
049EM: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
049KD: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
049LA: LABETTE-----	Fair	Good	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
049LD: LABETTE-----	Fair	Good	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
049ME: MARTIN-----	Fair	Good	Good	Fair	Fair	Good	Poor	Very poor	Good	Fair	Very poor	Good
049SH: SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor

WILDLIFE INTERPRETATIONS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
049ST: STEDMAN-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
049VD: VERDIGRIS-----	Poor	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor	Good
125BG: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Poor	Very poor	Very poor	Fair
125DB: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
125EB: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
125ET: ERAM-----	Fair	Good	Good	Good	Good	---	Very poor	Very poor	Good	Good	Very poor	Good
TALIHINA-----	Poor	Poor	Fair	Poor	Poor	---	Very poor	Very poor	Poor	Poor	Very poor	Fair
125KA: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
125LA: LANTON-----	Fair	Good	Fair	Good	Good	Good	Fair	Good	Fair	Good	Fair	---
AED: ARENTS, EARTHEN DAM-----	---	---	---	---	---	---	---	---	---	---	---	---
Ba: BATES-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Good
Ca: CLARESON-----	Fair	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Fair
Cs: CLARESON-----	Fair	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
Ct: CLEORA-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
Cx: CLIME-----	Poor	Fair	Fair	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Fair
SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
Db: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
Dc: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
De: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
DEE: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
Ds: DENNIS-----	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
Ea: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
Ec: ERAM-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
COLLINSVILLE----	Very poor	Poor	Poor	Very poor	Very poor	---	Very poor	Very poor	Poor	Very poor	Very poor	---
Iv: IVAN-----	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
Ke: KENOMA-----	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Good	Fair	Poor	Fair
Ln: LONGFORD-----	Good	Good	Fair	---	---	Fair	Poor	Fair	Good	---	Poor	Fair
Lo: LONGFORD-----	Good	Good	Fair	---	---	Fair	Poor	Fair	Good	---	Poor	Fair
Lu: LULA-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
M-W: MISCELLANEOUS WATER-----	---	---	---	---	---	---	---	---	---	---	---	---
Ma: MARTIN-----	Good	Good	Good	Fair	Fair	Good	Poor	Poor	Good	Fair	Poor	Good
Mb: MARTIN-----	Good	Good	Good	Fair	Fair	Good	Poor	Poor	Good	Fair	Poor	Good
Mc: MARTIN-----	Fair	Good	Good	Fair	Fair	Good	Poor	Very poor	Good	Fair	Very poor	Good
Me: MARTIN-----	Fair	Good	Good	Fair	Fair	Good	Poor	Very poor	Good	Fair	Very poor	Good
Ms: MARTIN-----	Good	Good	Good	Fair	Fair	Good	Poor	Poor	Good	Fair	Poor	Good
DWIGHT-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
Mt: MASON-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
Mx: MASON-----	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor	---
DRUMMOND-----	Poor	Fair	Fair	---	Poor	Poor	Fair	Fair	Fair	---	Fair	Poor
Nd: NIOTAZE-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
DARNELL-----	Poor	Poor	Fair	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Fair
Oa: OSAGE-----	Fair	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
Oc: OSAGE-----	Fair	Fair	Fair	Fair	Fair	---	Poor	Good	Fair	Fair	Fair	---
Os: OSAGE-----	Fair	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
DRUMMOND-----	---	---	---	---	---	---	---	---	---	---	---	---
PIT: PITS-----	---	---	---	---	---	---	---	---	---	---	---	---
QUA: QUARRY-----	---	---	---	---	---	---	---	---	---	---	---	---

WILDLIFE INTERPRETATIONS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
So: SOGN-----	Very poor	Very poor	Poor	---	---	Poor	Very poor	Very poor	Very poor	---	Very poor	Poor
St: STEEDMAN-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Sv: STEPHENVILLE----	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
Sx: STEPHENVILLE----	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
DARNELL-----	Poor	Poor	Fair	---	---	Fair	Very poor	Very poor	Poor	---	Very poor	Fair
Ve: VERDIGRIS-----	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
W: WATER-----	---	---	---	---	---	---	---	---	---	---	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND
Chautauqua County, Kansas

Use and Explanation of Pastureland and Hayland Interpretations

This subsection provides information concerning the suitability of soils for the production of pasture and hayland. This subsection may contain pasture and hayland suitability groupings, land capability and yield estimates, yield estimates for individual grasses or legumes, or other information pertaining to the production of forage.

Pasture and Hayland Suitability Groupings

Soils are placed in pasture and hayland groups according to their suitability for the production of forage. The soils in each group are enough alike to be suited to the same grasses or legumes, to have similar limitations and hazards, to require similar management, and to have similar productivity and other responses to management. Thus, the pasture and hayland suitability group is a convenient way of grouping the soils for their management. If used, these groupings are identified and described in other reports in the subsection.

Yield Estimates

The average yields per acre that can be expected of the principal pasture or hayland crops, under a high level of management, are presented in this subsection. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall or other climatic factors. The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

Under good management, proper grazing is essential for the production of high quality forage, stand survival, and erosion control. Proper grazing helps plants maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation are also important management practices.

The Pasture and Hayland table show yield estimates in tons per acre and animal unit months for pasture and hayland groups. An animal unit month is the amount of forage required by one animal unit (AU) for 30 days. One animal unit (AU) is one (1000 pound) mature cow and a calf up to weaning age (usually six months of age) or their equivalent. The Natural Resources Conservation Service uses 900 pounds of air dry forage as the amount needed to meet this requirement. To maintain a healthy and vigorous plant community, the degree of use should never be greater than 50 percent. Therefore only 25 percent of the total biomass grown is considered consumed by the grazing animal. Animal Unit Months can be converted to air dry pounds per acre production by multiplying the AUM by 30 days, then by 30 pounds per day, and then by four. This figure is the amount of total forage production.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil in the Nontechnical Description section. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
015CS: Clime-----	6e	---	---	---
Sogn-----	---	---	---	---
035CC: Clime-----	6e	---	---	---
Sogn-----	7s	---	---	---
035LA: Labette-----	2e	---	---	---
035MC: Martin, eroded-----	4e	---	---	---
035RA: Reading-----	1	---	---	---
035SA: Smolan-----	2e	2e	---	---
035SC: Smolan, eroded-----	4e	---	---	---
035SD: Sogn-----	7s	---	---	---
035TA: Tabler-----	2s	---	---	---
049CD: Catoosa-----	2e	---	---	---
049CF: Catoosa-----	6e	---	---	---
Sogn-----	7s	---	---	---
049CK: Clime-----	7e	---	---	---
049CS: Clime-----	6e	---	---	---
Sogn-----	7s	---	---	---
049EM: Eram-----	3e	---	---	---
049KD: Kenoma-----	3e	---	---	---
049LA: Labette-----	2e	---	---	---
049LD: Labette-----	3e	---	---	---
Dwight-----	4s	---	---	---
049ME: Martin, eroded-----	4e	---	---	---
049SH: Sogn-----	7s	---	---	---
049ST: Steedman-----	6e	---	---	---
049VD: Verdigris-----	5w	---	---	---
125BG: Bates-----	6e	---	4.30	---
Collinsville-----	7s	---	---	---
125DB: Dennis-----	2e	---	---	---

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
125EB: Eram-----	3e	---	---	---
125ET: Eram-----	6e	---	---	---
Talihina-----	7s	---	---	---
125KA: Kenoma-----	2s	---	---	---
125LA: Lanton-----	2w	---	---	---
AED: Arents, Earthen Dam-----	8	---	---	---
Ba: Bates-----	2e	---	---	---
Ca: Clareson-----	3s	---	---	---
Cs: Clareson-----	6s	---	---	---
Sogn-----	7	---	---	---
Ct: Cleora-----	2w	---	---	---
Cx: Clime-----	6e	---	---	---
Sogn-----	7	---	---	---
Db: Dennis-----	2e	---	---	---
Dc: Dennis-----	3e	---	---	---
De: Dennis, eroded-----	4e	---	---	---
DEE: Dennis-----	3e	---	---	---
Ds: Dennis-----	4s	---	---	---
Dwight-----	4s	---	---	---
Ea: Eram-----	3e	---	---	---
Ec: Eram-----	6e	---	---	---
Collinsville-----	6	---	---	---
Iv: Ivan-----	2w	---	---	---
Ke: Kenoma-----	2s	---	---	---
Ln: Longford-----	2e	---	---	---
Lo: Longford, eroded-----	3e	---	---	---
Lu: Lula-----	2e	---	---	---
M-W: Miscellaneous Water-----	---	---	---	---

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of nonirrigated and irrigated management by component. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)
Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Map symbol and soil name	Land capability		Alfalfa hay	
	N	I	N	I
			Tons	Tons
Ma: Martin-----	2s	---	---	---
Mb: Martin-----	2e	---	4.20	---
Mc: Martin-----	3e	---	---	---
Me: Martin, eroded-----	4e	---	---	---
Ms: Martin-----	4s	---	---	---
Dwight-----	4s	---	---	---
Mt: Mason-----	1	---	---	---
Mx: Mason-----	3s	---	---	---
Drummond-----	5s	---	---	---
Nd: Niotaze-----	6e	---	---	---
Darnell-----	6s	---	---	---
Oa: Osage-----	2w	---	---	---
Oc: Osage-----	3w	---	---	---
Os: Osage-----	4s	---	---	---
Drummond-----	---	---	---	---
PIT: Pits-----	---	---	---	---
QUA: Quarry-----	---	---	---	---
So: Sogn-----	7s	---	---	---
St: Steedman-----	6e	---	---	---
Sv: Stephenville-----	2e	---	---	---
Sx: Stephenville-----	6e	---	---	---
Darnell-----	4s	---	---	---
Ve: Verdigris-----	2w	---	---	---
W: Water-----	---	---	---	---

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County, Kansas

A Conservation Tree/Shrub Suitability Group (CTSG), formerly Windbreak Suitability Group, is a physiographic unit or area having similar climatic and edaphic characteristics that control the selection and height growth of trees and shrubs.

In this table, the Conservation Tree and Shrub Grouping is expressed as a group index number. The group index for Conservation Tree and Shrub groups (CTSG) are a guide for species best suited for different kinds of soil and for prediction height, growth, and effectiveness. The groupings can be used when selection woody plants for windbreaks, wildlife plantings riparian buffers, reforestation, other environmental plantings, recreation, landscaping, wetland restoration or enhancement and critical area plantings. CTSG's are developed to assure satisfactory species selection and adaptation to specific conditions of soil, climate and physiography. CTSG's are a guide for selection species best suited for different kinds of soil and prediction height growth and effectiveness.

All soil series mapped in the state have been placed in 10 groups of similar soil characteristics. Groups 1, 2, 3, 4, 6, and 9 are further divided into subgroups. In addition, all groups provide information by Major Land Resource Areas.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters a tree or shrub may be well or poorly suited because of soil characteristics. Each tree or shrub also has definable potentials of height growth depending on the factors just mentioned. Accurate definitions of potential heights are necessary for proper windbreak planning and design.

Windbreaks protect livestock, buildings, roads and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low-growing and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not grow trees originally. Knowledge of how trees perform on such land can be gained only by observing and recording their performance where trees have been planted and survived. The problem is compounded by the fact that many favorite windbreak species are not indigenous to the areas in which they are planted.

The Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups shows the adapted species listing for each group index number. Showing the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates are based on measurements and observation of established plantings that have been given adequate care. This information should be used to determine the placement of a windbreak, the area protected and the arrangement of species.

A number of attributes are included in the CTSG species tables for each group number found in this section of the Field Office Technical Guide. These attributes were rated subjectively and assigned a relative value to further assist those unfamiliar with individual species characteristics or desirability for the intended use. Definitions and explanations can be found. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery. See part 537 of the National Forestry Manual for additional information.

In the Tree and Shrub Management table interpretive ratings are given for various aspects of forest and conservation tree and shrub management. Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately well suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest and conservation tree and shrub management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet. Also, in the Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups.

Ratings in the columns suitability for hand planting and suitability for mechanical planting are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column suitability for mechanical site preparation (surface) are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 1-foot is considered in the ratings.

Ratings in the column suitability for mechanical site preparation (deep) are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column potential for seedling mortality are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality. See the National Forestry Manual, Subpart B for criteria used in rating management concerns. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
015CS: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Available water
Sogn-----	10	Unsuited Restrictive layer Rock fragments	Slope Unsuited Restrictive layer Rock fragments Slope	Unsuited Restrictive layer Rock fragments	Unsuited Restrictive layer	High Available water
035CC: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Available water
Sogn-----	10	Unsuited Restrictive layer	Slope Unsuited Restrictive layer Slope	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
035LA: Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Rock fragments	Well suited	Well suited	Moderate Available water
035MC: Martin, eroded-----	4C	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
035RA: Reading-----	1	Well suited	Well suited	Well suited	Well suited	Low
035SA: Smolan-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
035SC: Smolan, eroded-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	Low
035SD: Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer Slope	Unsuited Restrictive layer	Unsuited Restrictive layer	Moderate Available water
035TA: Tabler-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Available water
049CD: Catoosa-----	6D	Well suited	Well suited	Well suited	Poorly suited Restrictive layer	Low
049CF: Catoosa-----	6D	Well suited	Well suited	Well suited	Poorly suited Restrictive layer	Low
Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
049CK: Clime-----	8	Moderately suited Stickiness	Poorly suited Slope Stickiness	Poorly suited Slope Stickiness	Poorly suited Slope	Low
049CS: Clime-----	8	Moderately suited Stickiness	Moderately suited Slope Stickiness	Poorly suited Stickiness	Well suited	Low
Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer Slope	Unsuited Restrictive layer	Unsuited Restrictive layer	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
049EM: Eram-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
049KD: Kenoma-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
049LA: Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
049LD: Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Restrictive layer	Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
049ME: Martin, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
049SH: Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
049ST: Steedman-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope Rock fragments	Poorly suited Stickiness	Well suited	Low
049VD: Verdigris-----	1	Well suited	Well suited	Well suited	Well suited	Low
125BG: Bates-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Collinsville-----	10	Moderately suited Rock fragments	Poorly suited Rock fragments Slope	Poorly suited Rock fragments	Well suited	Low
125DB: Dennis-----	4C	Well suited	Well suited	Well suited	Well suited	High Wetness
125EB: Eram-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
125ET: Eram-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Talihina-----	10	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
125KA: Kenoma-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
125LA: Lanton-----	1	Well suited	Well suited	Well suited	Well suited	Low
AED: Arents, Earthen Dam-		Not rated	Not rated	Not rated	Not rated	Not rated
Ba: Bates-----	6D	Well suited	Well suited	Well suited	Well suited	Low
Ca: Clareson-----	6D	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited Rock fragments Restrictive layer	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Cs: Clareson-----	6D	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Poorly suited	Low
Sogn-----	10	Unsuited Restrictive layer	Rock fragments Unsuited Restrictive layer	Unsuited Restrictive layer	Rock fragments Restrictive layer Unsuited Restrictive layer	Low
Ct: Cleora-----	1	Well suited	Well suited	Well suited	Well suited	Low
Cx: Clime-----	8	Moderately suited Stickiness	Poorly suited	Poorly suited	Poorly suited	Low
Sogn-----	10	Unsuited Restrictive layer	Slope Stickiness Unsuited Restrictive layer Slope	Slope Stickiness Unsuited Restrictive layer	Slope Unsuited Restrictive layer	Low
Db: Dennis-----	4C	Well suited	Well suited	Well suited	Well suited	High Wetness
Dc: Dennis-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	High Wetness
De: Dennis, eroded-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	High Wetness
DEE: Dennis-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	High Wetness
Ds: Dennis-----	4C	Well suited	Well suited	Well suited	Well suited	High Wetness Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness Low
Ea: Eram-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
Ec: Eram-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness Low
Collinsville-----	10	Well suited	Moderately suited Rock fragments	Well suited	Well suited	High Wetness Low
Iv: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
Ke: Kenoma-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Ln: Longford-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Lo: Longford, eroded----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Lu: Lula-----	3	Well suited	Well suited	Well suited	Well suited	Low
M-W: Miscellaneous Water-		Not rated	Not rated	Not rated	Not rated	Not rated
Ma: Martin-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Mb: Martin-----	4C	Moderately suited	Moderately suited	Well suited	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Mc: Martin-----	4C	Stickiness Moderately suited Stickiness	Stickiness Moderately suited Slope Stickiness	Well suited	Well suited	Low
Me: Martin, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Ms: Martin-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Mt: Mason-----	1	Well suited	Well suited	Well suited	Well suited	Low
Mx: Mason-----	1	Well suited	Well suited	Well suited	Well suited	Low
Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Salinity
Nd: Niotaze-----	6D	Moderately suited Stickiness	Poorly suited Rock fragments Slope	Poorly suited Rock fragments	Well suited	Low
Darnell-----	10	Well suited	Stickiness Moderately suited Slope Rock fragments	Well suited	Well suited	Low
Oa: Osage-----	2	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
Oc: Osage-----	2	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Os: Osage-----	2	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Salinity
PIT: Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
QUA: Quarry-----		Not rated	Not rated	Not rated	Not rated	Not rated
So: Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
St: Steedman-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope Rock fragments	Poorly suited Stickiness	Well suited	Low
Sv: Stephenville-----	6D	Well suited	Moderately suited Rock fragments	Well suited	Well suited	Low
Sx: Stephenville-----	6D	Well suited	Moderately suited Rock fragments	Well suited	Well suited	Low
Darnell-----	10	Well suited	Moderately suited Rock fragments	Well suited	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Chautauqua County,
Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Ve: Verdigris-----	1	Well suited	Well suited	Well suited	Well suited	Low
W: Water-----		Not rated	Not rated	Not rated	Not rated	Not rated

ENGINEERING INDEX PROPERTIES
Chautauqua County, Kansas

Engineering Index Properties table gives the engineering classifications and the range of index properties for the layers of each soil in the survey area. Depth to the upper and lower boundaries of each layer is indicated. Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. Loam, for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, gravelly. Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1998) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1998). The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection. If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in Engineering Index Properties table.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

ENGINEERING INDEX PROPERTIES--Continued
Chautauqua County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
015CS: Clime-----	0-9 9-33 33-37	Silty clay Silty clay Unweathered bedrock	CH CH, CL	A-7-6 A-7	0 0	0-5 0	90-100 95-100	90-100 95-100	85-100 95-100	80-95 85-95	50-60 45-65	25-35 20-40
Sogn-----	0-7 7-11	Silty clay loam Unweathered bedrock	CH, CL, MH, ML	A-6, A-7	0 ---	0-10 ---	85-100 ---	85-100 ---	85-100 ---	70-100 ---	25-55 ---	10-25 ---
035CC: Clime-----	0-8 8-20 20-36 36-40	Silty clay Silty clay Silty clay Unweathered bedrock	CH CH, CL, MH CH, CL, MH	A-7-6 A-7 A-7	0 0 0	0-5 0 0	90-100 95-100 95-100	90-100 95-100 95-100	85-100 95-100 95-100	80-95 85-95 85-95	50-60 45-65 45-60	25-35 20-40 20-30
Sogn-----	0-10 10-14	Silty clay loam Unweathered bedrock	CH, CL, MH, ML	A-6, A-7	0 ---	0-10 ---	85-100 ---	85-100 ---	85-100 ---	70-100 ---	25-55 ---	10-25 ---
035LA: Labette-----	0-7 7-36 36-40	Silty clay loam Silty clay Unweathered bedrock	CL CH, CL, GC, SC, MH	A-6, A-7 A-7-6	0 0	0 0-20	85-100 55-80	85-100 50-75	75-100 50-75	68-95 45-70	35-50 45-60	15-25 20-35
035MC: Martin, eroded-	0-9 9-15 15-60	Silty clay loam Silty clay loam Silty clay	CL CL CH, CL	A-6, A-7 A-6, A-7 A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	35-45 35-45 40-70	15-25 15-25 25-40
035RA: Reading-----	0-14 14-50 50-60	Silt loam Silty clay loam Silty clay loam	CL CL CL, MH	A-6 A-6, A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	90-100 95-100 95-100	80-90 85-95 80-95	30-35 35-45 40-50	10-15 15-20 20-30
035SA: Smolan-----	0-8 8-15 15-40 40-60	Silty clay loam Silty clay loam Silty clay Silty clay loam	CL CL CH CL	A-7 A-6, A-7 A-7 A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 95-100	85-100 85-100 90-100 90-100	42-50 35-50 50-65 42-50	22-28 15-28 28-40 22-28
035SC: Smolan, eroded-	0-6 6-15 15-40 40-60	Silty clay loam Silty clay loam Silty clay Silty clay loam	CL CL CH CL	A-7 A-6, A-7 A-7 A-7	0 0 0 0	0 0 0 0	100 100 100 100	100 100 100 100	95-100 95-100 95-100 95-100	85-100 85-100 90-100 90-100	42-50 35-50 50-65 42-50	22-28 15-28 28-40 22-28
035SD: Sogn-----	0-10 10-14	Silty clay loam Unweathered bedrock	CH, CL, MH, ML	A-6, A-7	0 ---	0-10 ---	85-100 ---	85-100 ---	85-100 ---	70-100 ---	25-55 ---	10-25 ---
035TA: Tabler-----	0-8 8-48 48-60	Silty clay loam Silty clay Silty clay	CL CH, CL CH, CL	A-6, A-7 A-7 A-6, A-7	0 0 0	0 0 0	100 100 96-100	100 100 96-100	96-100 96-100 92-100	80-98 90-99 80-99	32-43 41-65 38-60	11-20 18-35 15-35
049CD: Catoosa-----	0-10 10-34 34-38	Silt loam Silty clay loam Unweathered bedrock	CL CL	A-4, A-6 A-6, A-7	0 0	0 0	100 85-100	100 85-100	96-100 85-100	65-97 70-98	30-37 33-48	8-14 12-22
049CF: Catoosa-----	0-9 9-26 26-30	Silt loam Silty clay loam Unweathered bedrock	CL CL	A-4, A-6 A-6, A-7	0 0	0 0	100 85-100	100 85-100	96-100 85-100	65-97 70-98	30-37 33-48	8-14 12-22
Sogn-----	0-8 8-12	Silty clay loam Unweathered bedrock	CH, CL, MH, ML	A-6, A-7	0 ---	0-10 ---	85-100 ---	85-100 ---	85-100 ---	70-100 ---	25-55 ---	10-25 ---
049CK: Clime-----	0-2 2-10 10-27 27-33 33-37	Stony silty clay loam Silty clay loam Silty clay Silty clay Unweathered bedrock	CL CH, CL CH, CL CH, CL	A-7-6 A-7-6 A-7 A-7	1-5 0 0 0	1-5 0-3 0 0	85-100 95-100 95-100 95-100	80-100 95-100 95-100 95-100	75-100 95-100 95-100 95-100	70-95 85-95 85-95 85-95	40-50 40-60 45-65 45-60	20-25 20-35 20-40 20-30
049CS: Clime-----	0-10 10-24 24-31 31-35	Silty clay Silty clay Silty clay Unweathered bedrock	CH CH, CL CH, CL	A-7-6 A-7 A-7	0 0 0	0-5 0 0	90-100 95-100 95-100	90-100 95-100 95-100	85-100 95-100 95-100	80-95 85-95 85-95	50-60 45-65 45-60	25-35 20-40 20-30
Sogn-----	0-8 8-12	Silty clay loam Unweathered bedrock	CH, CL, MH, ML	A-6, A-7	0 ---	0-10 ---	85-100 ---	85-100 ---	85-100 ---	70-100 ---	25-55 ---	10-25 ---

ENGINEERING INDEX PROPERTIES--Continued
Chautauqua County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
049EM: Eram-----	In											
	0-10	Silt loam	CL	A-4, A-6	0	0	85-100	85-100	85-100	70-95	30-37	8-14
	10-33	Silty clay	CH, CL, MH	A-6, A-7	0	0	95-100	95-100	90-100	80-98	37-65	15-35
	33-37	Weathered bedrock			---	---	---	---	---	---	---	---
049KD: Kenoma-----												
	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	85-100	85-100	85-100	25-40	3-18
	8-50	Silty clay	CH	A-7	0	0	85-100	85-100	85-100	85-100	50-75	30-48
	50-60	Silty clay loam	CH, CL	A-7	0	0	85-100	85-100	75-100	75-95	45-65	25-44
049LA: Labette-----												
	0-9	Silty clay loam	CL	A-6, A-7	0	0	85-100	85-100	75-100	68-95	35-50	15-25
	9-30	Silty clay	CH, CL, GC, SC, MH	A-7-6	0	0-20	55-80	50-75	50-75	45-70	45-60	20-35
	30-34	Unweathered bedrock			---	---	---	---	---	---	---	---
049LD: Labette-----												
	0-9	Silty clay loam	CL	A-6, A-7	0	0	85-100	85-100	75-100	68-95	35-50	15-25
	9-30	Silty clay loam	CH, CL, GC, SC, MH	A-7-6	0	0-20	55-80	50-75	50-75	45-70	45-60	20-35
	30-34	Unweathered bedrock			---	---	---	---	---	---	---	---
Dwight-----												
	0-4	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	5-15
	4-27	Silty clay	CH	A-7	0	0	100	100	95-100	90-100	50-70	25-40
	27-42	Silty clay	CH, CL	A-7	0	0	100	100	95-100	90-100	45-60	25-40
	42-46	Unweathered bedrock			---	---	---	---	---	---	---	---
049ME: Martin, eroded-												
	0-7	Silty clay	CH, CL	A-7	0	0	100	100	95-100	80-100	40-70	25-40
	7-60	Silty clay	CH, CL	A-7	0	0	100	100	95-100	80-100	40-70	25-40
049SH: Sogn-----												
	0-8	Silty clay loam	CH, CL, MH, ML	A-6, A-7	0	0-10	85-100	85-100	85-100	70-100	25-55	10-25
	8-12	Unweathered bedrock			---	---	---	---	---	---	---	---
049ST: Steedman-----												
	0-7	Stony loam	CL, GC, SC	A-2, A-6	1-5	0-15	60-95	50-90	40-90	30-70	30-35	10-15
	7-36	Silty clay	CH	A-7	0	0	95-100	95-100	90-100	80-95	55-70	33-45
	36-40	Weathered bedrock			---	---	---	---	---	---	---	---
049VD: Verdigris-----												
	0-27	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	65-100	22-35	2-13
	27-60	Silt loam	CL	A-4, A-6, A-7	0	0	100	100	95-100	80-100	30-45	8-23
125BG: Bates-----												
	0-15	Loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-100	80-100	55-90	20-40	3-15
	15-27	Loam	CL, ML, SC, SM	A-7-5, A-7, A-5, A-4, A-6, A-7-6	0	0	85-100	75-100	75-100	45-85	25-45	8-20
	27-31	Clay loam	ML, CL, SC, SM	A-7-5, A-7, A-6, A-5, A-2-7, A-2-6, A-2-5, A-2-4, A-2, A-4, A-7-6	0	0-15	70-100	70-100	50-100	20-70	20-45	8-28
	31-35	Weathered bedrock			---	---	---	---	---	---	---	---
Collinsville---												
	0-11	Fine sandy loam	CL, SC, CL-ML, ML, SC-SM, SM	A-2, A-2-4, A-4	---	0-15	85-100	85-100	75-95	30-60	15-32	NP-10
	11-17	Fine sandy loam	GM, GC-GM, GC, CL, ML, SC, SM, SC-SM, CL-ML	A-1-b, A-1, A-2-4, A-2, A-4	---	0-45	40-100	40-100	35-95	15-85	15-30	NP-10
	17-21	Unweathered bedrock			---	---	---	---	---	---	---	---
125DB: Dennis-----												
	0-13	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
	13-19	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	19-60	Silty clay	CH, CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
125EB: Eram-----												
	0-11	Silty clay loam	CL	A-6, A-7	0	0	85-100	85-100	85-100	70-95	33-48	12-25
	11-32	Silty clay	CH, CL	A-6, A-7	0	0	95-100	95-100	90-100	80-98	37-65	15-35
	32-36	Weathered bedrock			---	---	---	---	---	---	---	---
125ET: Eram-----												
	0-11	Silty clay loam	MH, CL, CH, ML	A-7-5, A-7, A-6, A-7-6	0	0	85-100	85-100	85-100	70-95	33-55	12-30
	11-32	Silty clay	MH, CL, CH, ML	A-7-5, A-7, A-6, A-7-6	0	0	95-100	90-100	85-100	80-98	37-70	15-45
	32-36	Weathered bedrock			---	---	---	---	---	---	---	---
Talihina-----												
	0-7	Silty clay loam	MH, CL, CH, ML	A-7-5, A-7, A-6, A-7-6	---	0-15	87-100	87-100	85-100	70-98	37-60	15-35
	7-14	Silty clay	MH, CL, CH, ML	A-7-5, A-7, A-6, A-7-6	---	0-15	87-100	87-100	85-100	70-98	37-65	15-38
	14-17	Silty clay	MH, CL, CH, ML	A-7-5, A-7, A-6, A-7-6	---	0-15	87-100	87-100	85-100	70-98	37-65	15-38
	17-21	Weathered bedrock			---	---	---	---	---	---	---	---

ENGINEERING INDEX PROPERTIES--Continued
Chautauqua County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
125KA: Kenoma-----	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	85-100	85-100	85-100	25-40	3-18
	12-60	Silty clay	CH	A-7	0	0	85-100	85-100	85-100	85-100	50-75	30-48
125LA: Lanton-----	0-12	Silty clay loam	CL	A-6, A-7	0	0	100	100	98-100	90-97	33-42	12-19
	12-32	Silty clay loam	CL	A-6, A-7	0	0	100	100	98-100	90-98	33-42	12-19
	32-60	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	98-100	90-98	33-55	12-30
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---	---	---	---	---	---
Ba: Bates-----	0-16	Fine sandy loam	ML, SM	A-4	0	0	90-100	85-100	80-100	40-55	15-30	NP-5
	16-28	Sandy clay loam	CL, ML, SC, SM	A-4, A-6, A-7	0	0	85-100	85-100	80-100	45-85	25-45	3-20
	28-34	Gravelly sandy clay loam	SC, SC-SM	A-2, A-4, A-6	0	0-15	70-90	70-90	50-80	20-40	20-35	5-15
	34-38	Unweathered bedrock			---	---	---	---	---	---	---	---
Ca: Clareson-----	0-17	Silty clay loam	CL	A-4, A-6	---	0-25	90-100	90-100	85-95	85-95	43-56	22-33
	17-29	Flaggy silty clay	CL	A-6, A-7	---	0-65	90-100	90-100	85-95	85-95	51-66	28-41
	29-35	Flaggy silty clay	CH, CL	A-7	---	50-85	85-100	85-100	80-95	80-95	51-66	28-41
	35-39	Unweathered bedrock			---	---	---	---	---	---	---	---
Cs: Clareson-----	0-17	Silty clay loam	CL	A-4, A-6	---	0-25	90-100	90-100	85-95	85-95	43-56	22-33
	17-29	Flaggy silty clay	CL	A-6, A-7	---	0-65	90-100	90-100	85-95	85-95	51-66	28-41
	29-35	Flaggy silty clay	CH, CL	A-7	---	50-85	85-100	85-100	80-95	80-95	51-66	28-41
	35-39	Unweathered bedrock			---	---	---	---	---	---	---	---
Sogn-----	0-10	Silty clay loam	CH, CL, MH, ML	A-6, A-7	0	0-10	85-100	85-100	85-100	70-100	25-55	10-25
	10-14	Unweathered bedrock			---	---	---	---	---	---	---	---
Ct: Cleora-----	0-18	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	98-100	94-100	36-60	15-26	NP-7
	18-44	Fine sandy loam	CL, ML, SC, SM	A-4	0	0	100	98-100	94-100	36-85	15-31	NP-10
	44-84	Stratified loamy fine sand to loam	ML, SC, SM, CL	A-2, A-4	0	0	100	98-100	90-100	15-85	15-31	NP-10
Cx: Clime-----	0-10	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	10-18	Silty clay	CH, CL	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	18-28	Silty clay	CH, CL	A-7	0	0	95-100	95-100	95-100	85-95	45-60	20-30
	28-32	Unweathered bedrock			---	---	---	---	---	---	---	---
Sogn-----	0-10	Silty clay loam	CH, CL, MH, ML	A-6, A-7	0	0-10	85-100	85-100	85-100	70-100	25-55	10-25
	10-14	Unweathered bedrock			---	---	---	---	---	---	---	---
Db: Dennis-----	0-14	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
	14-19	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	19-76	Silty clay loam	CH, CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
Dc: Dennis-----	0-14	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
	14-19	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	19-76	Silty clay loam	CH, CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
De: Dennis, eroded-	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	98-100	94-100	75-98	33-48	13-25
	7-12	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	12-76	Silty clay	CH, CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
DEE: Dennis-----	0-13	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
	13-20	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	20-60	Silty clay	CH, CL, MH	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
Ds: Dennis-----	0-14	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	20-37	1-15
	14-19	Silty clay loam	CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	33-48	13-25
	19-76	Silty clay loam	CH, CL	A-6, A-7	0	0	98-100	98-100	94-100	75-98	37-65	15-35
Dwight-----	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	3-15
	5-22	Silty clay	CH	A-7	0	0	100	100	95-100	90-100	50-70	25-40
	22-60	Silty clay	CH, CL	A-7	0	0	100	100	95-100	85-100	45-60	25-40
Ea: Eram-----	0-8	Silty clay loam	CL	A-6, A-7	0	0	85-100	85-100	85-100	70-95	33-48	12-25
	8-32	Silty clay	CH, CL	A-6, A-7	0	0	95-100	95-100	90-100	80-98	37-65	15-35
	32-36	Weathered bedrock			---	---	---	---	---	---	---	---

ENGINEERING INDEX PROPERTIES--Continued
Chautauqua County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
Ec: Eram-----	0-8 8-32 32-36	Silty clay loam Silty clay Weathered bedrock	CL CH, CL	A-6, A-7 A-6, A-7	0 0	0	85-100 95-100	85-100 95-100	85-100 90-100	70-95 80-98	33-48 37-65	12-25 15-35
Collinsville---	0-12 12-16	Loam Unweathered bedrock	CL, CL-ML, ML	A-4	---	0-15	85-100	85-100	75-95	55-85	22-30	2-10
Iv: Ivan-----	0-16 16-80	Silt loam Silty clay loam	CL CL	A-4, A-6 A-4, A-6, A-7	0 0	0	95-100 95-100	95-100 95-100	90-100 90-100	70-100 65-100	25-40 25-45	7-20 7-25
Ke: Kenoma-----	0-11 11-38 38-84	Silt loam Silty clay Silty clay	CL, CL-ML, ML CH CH, CL	A-4, A-6 A-7 A-7	0 0 0	0	85-100 85-100 85-100	85-100 85-100 85-100	85-100 85-100 75-100	85-100 85-100 75-95	25-40 50-75 45-65	3-18 30-48 25-44
Ln: Longford-----	0-8 8-13 13-48 48-54 54-58	Silty clay loam Silty clay loam Silty clay Silty clay loam Unweathered bedrock	CL CL CH, CL CL	A-7 A-7 A-7-6 A-6, A-7-6	0 0 0 0	0	100 100 100 100	95-100 95-100 95-100 95-100	90-100 90-100 90-100 90-100	85-95 85-95 85-95 85-95	45-50 45-50 50-65 45-50	25-30 25-30 30-40 25-30
Lo: Longford, erode	0-8 8-13 13-48 48-54 54-58	Silty clay loam Silty clay loam Silty clay Silty clay loam Unweathered bedrock	CL CL CH, CL CL	A-7 A-7 A-7-6 A-6, A-7-6	0 0 0 0	0	100 100 100 100	95-100 95-100 95-100 95-100	90-100 90-100 90-100 90-100	85-95 85-95 85-95 85-95	45-50 45-50 50-65 45-50	25-30 25-30 30-40 25-30
Lu: Lula-----	0-10 10-17 17-46 46-50	Silt loam Silty clay loam Silty clay loam Unweathered bedrock	CL, CL-ML, ML CL CL CL	A-4, A-6 A-4, A-6, A-7 A-6, A-7	0 0 0	0-30	100 100 85-100	100 100 85-100	96-100 96-100 80-100	65-97 65-98 70-98	21-37 30-43 33-50	1-15 9-20 12-26
M-W: Miscellaneous Water-----	---	---	---	---	---	---	---	---	---	---	---	---
Ma: Martin-----	0-12 12-18 18-54 54-58	Silty clay loam Silty clay loam Silty clay Unweathered bedrock	CL CL CH, CL	A-6, A-7 A-6, A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	35-45 35-45 40-70	15-25 15-25 25-40
Mb: Martin-----	0-12 12-18 18-54 54-58	Silty clay loam Silty clay loam Silty clay Unweathered bedrock	CL CL CH, CL	A-6, A-7 A-6, A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	43-56 43-56 56-71	22-33 22-33 33-45
Mc: Martin-----	0-12 12-18 18-54 54-58	Silty clay loam Silty clay loam Silty clay Unweathered bedrock	CL CL CH, CL	A-6, A-7 A-6, A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	35-45 35-45 40-70	15-25 15-25 25-40
Me: Martin, eroded-	0-7 7-10 10-54 54-58	Silty clay loam Silty clay loam Silty clay Unweathered bedrock	CL CL CH, CL	A-6, A-7 A-6, A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	35-45 35-45 40-70	15-25 15-25 25-40
Ms: Martin-----	0-12 12-18 18-54 54-58	Silty clay loam Silty clay loam Silty clay Unweathered bedrock	CL CL CL, CH	A-6, A-7 A-6, A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	80-100 80-100 80-100	35-45 35-45 40-70	15-25 15-25 25-40
Dwight-----	0-5 5-22 22-60	Silty clay loam Silty clay Silty clay	CL CH CH, CL	A-6 A-7 A-7	0 0 0	0	100 100 100	100 100 100	95-100 95-100 95-100	85-100 90-100 80-100	30-40 50-70 45-60	10-15 25-40 25-40
Mt: Mason-----	0-8 8-72	Silt loam Silty clay loam	CL, ML CL	A-4, A-6 A-4, A-6, A-7	0 0	0	100 98-100	100 98-100	96-100 96-100	65-98 65-98	30-37 30-43	8-13 9-20
Mx: Mason-----	0-8 8-72	Silt loam Silty clay loam	CL, ML CL	A-4, A-6 A-4, A-6, A-7	0 0	0	100 98-100	100 98-100	96-100 96-100	65-98 65-98	30-37 30-43	8-13 9-20
Drummond-----	0-8 8-30 30-60	Silt loam Clay loam Variable	CL, CL-ML, ML CH, CL	A-4, A-6 A-6, A-7	0 0	0	100 100	100 100	96-100 96-100	65-97 80-98	22-39 35-60	3-15 15-35

ENGINEERING INDEX PROPERTIES--Continued
Chautauqua County, Kansas

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
Nd: Niotaze-----	In											
	0-10	Cobbly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1, A-2-4, A-4	0	25-50	50-75	50-75	35-60	15-45	15-26	NP-7
	10-28	Silty clay	CH, CL	A-6, A-7-6	0	0	95-100	95-100	90-100	90-100	35-65	15-40
	28-32	Unweathered bedrock			---	---	---	---	---	---	---	---
Darnell-----	0-5	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0	0-15	90-100	90-100	85-100	30-60	15-30	NP-10
	5-14	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0	0-10	70-100	70-100	60-100	25-60	15-30	NP-10
	14-18	Weathered bedrock			---	---	---	---	---	---	---	---
Oa: Osage-----	0-20	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	20-30
	20-88	Silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-80	20-50
Oc: Osage-----	0-20	Silty clay	CH	A-7	0	0	100	100	100	95-100	50-75	30-55
	20-88	Silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-80	20-50
Os: Osage-----	0-20	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	20-30
	20-88	Silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-80	20-50
Drummond-----	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	22-39	3-15
	8-30	Clay loam	CH, CL	A-6, A-7	0	0	100	100	96-100	80-98	35-60	15-35
	30-34	Variable			---	---	---	---	---	---	---	---
PIT: Pits-----	---	---	---	---	---	---	---	---	---	---	---	---
QUA: Quarry-----	---	---	---	---	---	---	---	---	---	---	---	---
So: Sogn-----	0-10	Silty clay loam	CH, CL, MH, ML	A-6, A-7	0	0-10	85-100	85-100	85-100	70-100	25-55	10-25
	10-14	Unweathered bedrock			---	---	---	---	---	---	---	---
St: Steedman-----	0-6	Gravelly clay loam	CL, GC, SC	A-6	1-5	0-20	60-95	---	45-95	35-70	35-40	15-20
	6-30	Clay	CH	A-7	0	0	95-100	95-100	90-100	80-95	55-70	33-45
	30-34	Weathered bedrock			---	---	---	---	---	---	---	---
Sv: Stephenville---	0-12	Fine sandy loam	CL, ML, SC, SM	A-4	0	0-15	85-100	85-100	80-100	36-60	15-30	NP-10
	12-34	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	98-100	90-100	36-65	20-37	7-16
	34-38	Weathered bedrock			---	---	---	---	---	---	---	---
Sx: Stephenville---	0-9	Fine sandy loam	CL, ML, SC, SM	A-4	0	0-15	85-100	85-100	80-100	36-60	15-30	NP-10
	9-38	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	98-100	90-100	36-65	20-37	7-16
	38-42	Weathered bedrock			---	---	---	---	---	---	---	---
Darnell-----	0-5	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0	0-15	90-100	90-100	85-100	30-60	15-30	NP-10
	5-14	Fine sandy loam	CL, ML, SC, SM	A-2, A-4	0	0-10	70-100	70-100	60-100	25-60	15-30	NP-10
	14-18	Weathered bedrock			---	---	---	---	---	---	---	---
Ve: Verdigris-----	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	65-100	22-35	2-13
	12-68	Silty clay loam	CL	A-4, A-6, A-7	0	0	100	100	95-100	80-100	30-45	8-23
W: Water-----	---	---	---	---	---	---	---	---	---	---	---	---

Physical Properties table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth moving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In Physical Properties table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the Physical Properties table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to

wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Explanation of Wind Erodibility Groups

Soil erodibility by wind is directly related to the percentage of dry non-erodible surface soil aggregates larger than 0.84 mm in diameter. From this percentage, the wind erodibility index (I-factor) is determined. The I-factor is an expression of the stability of these soil aggregates against breakdown by tillage and abrasion from wind erosion. Soils are placed in Wind Erodibility Groups (WEG) having similar percentages of dry soil aggregates larger than 0.84 mm as shown in the following table.

WEG	Properties of Soil Surface Layer	Dry Soil Aggregates >0.84mm Percent	Wind Erodibility Index T/AC/Yr (I)
1	Very fine sand, fine sand, sand, or coarse sand	1	310 1/
		2	250
		3	220
		5	180
		7	160
		10	134
		2	Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, organic soil materials.
3	Very fine sandy loam, fine sandy loam, sandy loam, or coarse sandy loam.	25	86
4	Clay, silty clay, non-calcareous clay loam, or silty clay loam with >35 percent clay content.	25	86
4L	Calcareous 2/ loam, silt loam, clay loam, or silty clay loam.	25	86
5	Non-calcareous loam and silt loam with <20 percent clay content, or sandy clay loam, sandy clay, and hemic 3/ organic soil materials.	40	56
6	Non-calcareous loam and silt loam with >20 percent clay content, or non-calcareous clay loam with <35 percent clay content.	45	48
7	Silt, non-calcareous silty clay loam with >35 percent clay content and fibric 3/ organic soil material.	50	38
8	Soils not suitable for cultivation due to coarse fragments or wetness; wind erosion is not a problem.	--	0

1/ The "I" values for WEG 1 vary from 160 for coarse sands to 310 for very fine sands. Use an "I" of 220 as an average figure. For coarser sand that has gravel, use a lower figure. For a soil that has no gravel and very fine sand, use a higher figure. (Modification for coarse fragments is preparation.)

2/ Calcareous is a strongly or violently effervescent reaction to cold dilute (1N) HCL.

3/ See Soil Taxonomy for definition.

PHYSICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Permeability (Ksat) in/hr	Available water capacity In/in	Linear extensibility Pct	Organic matter Pct	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
015CS: Clime-----	0-9	5-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	6.0-8.9	1.0-4.0	.28	.28	3	4	86
	9-33	5-15	30-50	35-60	1.35-1.50	0.06-0.20	0.12-0.18	6.0-8.9	0.5-2.0	.28	.28			
	33-37													
Sogn-----	0-7	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	7-11													
035CC: Clime-----	0-8	5-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	3.0-5.9	1.0-4.0	.28	.28	3	4	86
	8-20	5-15	30-50	35-60	1.35-1.50	0.06-0.20	0.12-0.18	6.0-8.9	1.0-3.0	.28	.28			
	20-36	5-15	30-50	35-60	1.40-1.50	0.06-0.20	0.10-0.14	6.0-8.9	0.5-2.0	.32	.32			
	36-40													
Sogn-----	0-10	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	10-14													
035LA: Labette-----	0-7	1-12	50-70	28-40	1.35-1.45	0.20-0.60	0.17-0.23	3.0-5.9	2.0-4.0	.37	.37	2	7	38
	7-36	1-12	40-60	35-55	1.40-1.50	0.06-0.20	0.12-0.19	6.0-8.9	1.0-2.0	.37	.64			
	36-40													
035MC: Martin, eroded-----	0-9	1-10	50-70	27-40	1.35-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	9-15	1-10	50-70	27-40	1.35-1.40	0.20-0.60	0.18-0.20	3.0-5.9	1.0-3.0	.37	.37			
	15-60	1-10	35-60	40-55	1.40-1.50	0.06-0.20	0.12-0.18	6.0-8.9	0.5-1.0	.37	.37			
035RA: Reading-----	0-14	1-15	50-75	18-27	1.35-1.40	0.60-2.00	0.22-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	14-50	1-15	50-70	27-35	1.40-1.50	0.20-2.00	0.18-0.20	3.0-5.9	0.5-3.0	.43	.43			
	50-60	1-15	40-65	30-42	1.40-1.50	0.20-2.00	0.13-0.20	3.0-5.9	0.5-1.0	.43	.43			
035SA: Smolan-----	0-8	5-15	50-75	18-35	1.30-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	8-15	5-15	50-75	18-35	1.30-1.40	0.20-0.60	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37			
	15-40	5-15	40-65	35-50	1.30-1.45	0.06-0.20	0.12-0.18	6.0-8.9	0.5-2.0	.37	.37			
	40-60	5-15	50-60	27-35	1.30-1.40	0.20-0.60	0.18-0.20	3.0-5.9	0.1-1.0	.37	.37			
035SC: Smolan, eroded-----	0-6	5-15	50-75	18-35	1.30-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	6-15	5-15	50-75	18-35	1.30-1.40	0.20-0.60	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37			
	15-40	5-15	40-65	35-50	1.30-1.45	0.06-0.20	0.12-0.18	6.0-8.9	0.5-2.0	.37	.37			
	40-60	5-15	50-60	27-35	1.30-1.40	0.20-0.60	0.18-0.20	3.0-5.9	0.1-1.0	.37	.37			
035SD: Sogn-----	0-10	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	10-14													
035TA: Tabler-----	0-8	10-30	50-60	27-35	1.30-1.60	0.20-0.60	0.15-0.22	3.0-5.9	1.0-3.0	.37	.37	5	7	38
	8-48	5-20	30-50	40-55	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.2-2.0	.37	.37			
	48-60	5-30	30-50	35-55	1.35-1.65	0.00-0.06	0.12-0.22	6.0-8.9	0.0-0.1	.37	.37			
049CD: Catoosa-----	0-10	1-10	50-75	15-26	1.20-1.35	0.60-2.00	0.15-0.24	1.5-4.5	1.0-3.0	.37	.37	2	6	48
	10-34	1-25	45-65	25-39	1.30-1.40	0.60-2.00	0.15-0.22	3.0-5.9	0.5-2.0	.32	.32			
	34-38													
049CF: Catoosa-----	0-9	1-10	50-75	15-26	1.20-1.35	0.60-2.00	0.15-0.24	1.5-4.5	1.0-3.0	.37	.37	2	6	48
	9-26	1-25	45-65	25-39	1.30-1.40	0.60-2.00	0.15-0.22	3.0-5.9	0.5-2.0	.32	.32			
	26-30													
Sogn-----	0-8	1-20	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.37	1	4L	86
	8-12													
049CK: Clime-----	0-2	5-15	40-60	32-50	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.28	.32	3	8	0
	2-10	5-15	40-60	32-50	1.35-1.45	0.20-0.60	0.12-0.23	3.0-5.9	0.5-2.0	.28	.28			
	10-27	5-15	30-50	35-60	1.35-1.50	0.06-0.20	0.09-0.20	6.0-8.9	0.5-1.0	.28	.28			
	27-33	5-15	30-50	35-60	1.40-1.50	0.06-0.20	0.08-0.20	6.0-8.9	0.1-0.5	.28	.28			
	33-37													
049CS: Clime-----	0-10	5-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	3.0-5.9	1.0-4.0	.28	.28	3	4	86
	10-24	5-15	30-50	35-60	1.35-1.50	0.06-0.20	0.12-0.18	6.0-8.9	1.0-4.0	.28	.28			
	24-31	5-15	30-50	35-50	1.40-1.50	0.06-0.20	0.10-0.14	6.0-8.9	0.5-1.5	.32	.32			
	31-35													
Sogn-----	0-8	1-20	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	8-12													
049EM: Eram-----	0-10	1-20	50-75	18-26	1.20-1.30	0.20-2.00	0.15-0.20	1.5-4.5	1.0-3.0	.43	.43	3	6	48
	10-33	1-25	30-60	35-55	1.35-1.55	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	33-37													
049KD: Kenoma-----	0-8	1-10	50-75	18-27	1.20-1.40	0.20-0.60	0.22-0.24	1.5-4.5	2.0-5.0	.43	.43	3	6	48
	8-50	1-10	30-60	40-60	1.30-1.50	0.00-0.06	0.10-0.15	6.0-8.9	0.4-2.0	.32	.32			
	50-60	1-10	40-60	30-50	1.30-1.50	0.06-0.20	0.18-0.20	6.0-8.9	0.2-0.5	.32	.32			
049LA: Labette-----	0-9	1-12	50-70	28-40	1.35-1.45	0.20-0.60	0.17-0.23	3.0-5.9	2.0-4.0	.37	.37	2	7	38
	9-30	1-12	40-60	35-55	1.40-1.50	0.06-0.20	0.12-0.19	6.0-8.9	1.0-2.0	.37	.64			
	30-34													

PHYSICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
049LD: Labette-----	0-9	1-12	50-70	28-40	1.35-1.45	0.20-0.60	0.17-0.23	3.0-5.9	2.0-4.0	.37	.37	2	7	38
	9-30	1-12	40-60	35-55	1.40-1.50	0.06-0.20	0.12-0.19	6.0-8.9	1.0-2.0	.37	.64			
	30-34													
Dwight-----	0-4	1-10	60-75	18-27	1.20-1.35	0.60-2.00	0.21-0.24	3.0-5.9	2.0-4.0	.43	.43	2	6	48
	4-27	1-10	30-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-8.9	1.0-2.0	.32	.32			
	27-42	1-10	35-60	35-50	1.30-1.40	0.06-0.20	0.10-0.15	6.0-8.9	0.5-1.0	.32	.32			
	42-46													
049ME: Martin, eroded-----	0-7	1-10	45-70	40-50	1.35-1.45	0.06-0.20	0.12-0.18	6.0-8.9	1.0-2.0	.28	.28	5	4	86
	7-60	1-10	35-60	40-55	1.40-1.50	0.06-0.20	0.12-0.18	6.0-8.9	0.2-1.0	.37	.37			
049SH: Sogn-----	0-8	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	8-12													
049ST: Steedman-----	0-7	10-45	28-50	18-27	1.30-1.50	0.60-2.00	0.14-0.22	0.0-2.9	0.5-3.0	.24	.37	3	8	0
	7-36	5-45	20-45	40-55	1.35-1.60	0.06-0.20	0.09-0.13	6.0-8.9	0.5-1.0	.32	.32			
	36-40													
049VD: Verdigris----	0-27	5-20	50-75	15-27	1.30-1.40	0.60-2.00	0.20-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	27-60	5-20	50-75	18-35	1.40-1.60	0.60-2.00	0.17-0.22	3.0-5.9	0.5-1.5	.32	.32			
125BG: Bates-----	0-15	44	37	15-27	1.40-1.50	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	3	5	56
	15-27	41	35	18-35	1.40-1.60	0.60-2.00	0.15-0.19	0.0-2.9	1.0-3.0	.28	.32			
	27-31	39	25	18-40	1.40-1.50	0.20-0.60	0.14-0.16	0.0-2.9	0.5-1.0	.20	.43			
	31-35													
Collinsville-	0-11	67	20	5-20	1.30-1.60	2.00-6.00	0.09-0.15	0.0-2.9	1.0-3.0	.20	.20	1	3	86
	11-17	67	20	5-20	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.5-2.0	.20	.20			
	17-21													
125DB: Dennis-----	0-13	27	54	10-27	1.30-1.55	0.60-2.00	0.15-0.20	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	13-19	20	49	27-35	1.45-1.70	0.20-0.60	0.15-0.20	3.0-5.9	0.5-2.0	.37	.37			
	19-60	7	48	35-55	1.35-1.65	0.06-0.20	0.15-0.20	6.0-8.9	0.0-1.0	.37	.37			
125EB: Eram-----	0-11	19	48	27-40	1.30-1.60	0.20-0.60	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	3	7	38
	11-32	7	48	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	32-36								0.0-0.0					
125ET: Eram-----	0-11	19	48	27-40	1.30-1.60	0.20-0.60	0.15-0.20	3.0-5.9	1.0-3.0	.37	.37	3	7	38
	11-32	6	44	35-55	1.35-1.65	0.06-0.20	0.10-0.18	6.0-8.9	0.5-2.0	.37	.37			
	32-36													
Talihina----	0-7	8	55	35-40	1.30-1.60	0.06-0.20	0.15-0.19	6.0-8.9	1.0-3.0	.37	.37	2	4	86
	7-14	7	48	35-50	1.30-1.60	0.06-0.20	0.15-0.19	6.0-8.9	1.0-3.0	.37	.37			
	14-17	5	47	35-55	1.30-1.60	0.06-0.20	0.15-0.19	6.0-8.9	1.0-3.0	.37	.37			
	17-21													
125KA: Kenoma-----	0-12	25	53	18-27	1.35-1.45	0.20-0.60	0.22-0.24	0.0-2.9	2.0-4.0	.43	.43	3	6	48
	12-60	5	45	40-60	1.40-1.50	0.00-0.06	0.10-0.15	6.0-8.9	0.0-2.0	.32	.32			
125LA: Lanton-----	0-12	7	62	27-35	1.30-1.60	0.20-0.60	0.18-0.22	0.0-2.9	1.0-5.0	.37	.37	5	7	38
	12-32	7	62	27-35	1.45-1.70	0.20-0.60	0.18-0.22	3.0-5.9	0.5-3.0	.37	.37			
	32-60	8	55	30-45	1.35-1.65	0.06-0.20	0.12-0.18	3.0-5.9	0.0-1.0	.32	.32			
AED: Arents, Earthen Dam- Ba:-----	---													
Bates-----	0-16	52-70	20-35	5-15	1.40-1.50	2.00-6.00	0.15-0.18	0.0-2.9	1.0-3.0	.20	.20	3	3	86
	16-28	45-65	10-28	20-35	1.50-1.60	0.60-2.00	0.15-0.19	0.0-2.9	0.5-2.0	.28	.32			
	28-34	45-65	10-28	20-30	1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.2-0.8	.20	.43			
	34-38													
Ca: Clareson-----	0-17	1-10	50-70	27-40	1.25-1.35	0.60-2.00	0.16-0.22	3.0-5.9	1.0-4.0	.32	.32	2	7	38
	17-29	1-10	40-60	35-50	1.35-1.45	0.00-0.60	0.04-0.07	6.0-8.9	1.0-3.0	.24	.43			
	29-35	1-10	40-60	35-50	1.35-1.45	0.00-0.60	0.04-0.07	6.0-8.9	0.5-2.0	.24	.64			
	35-39													
Cs: Clareson-----	0-17	1-10	50-70	27-40	1.25-1.35	0.60-2.00	0.16-0.22	3.0-5.9	1.0-4.0	.32	.32	2	7	38
	17-29	1-10	40-60	35-50	1.35-1.45	0.00-0.60	0.04-0.07	6.0-8.9	1.0-3.0	.24	.43			
	29-35	1-10	40-60	35-50	1.35-1.45	0.00-0.60	0.04-0.07	6.0-8.9	0.5-2.0	.24	.64			
	35-39													
Sogn-----	0-10	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.37	1	4L	86
	10-14													
Ct: Cleora-----	0-18	52-80	1-35	10-18	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	18-44	52-80	1-35	10-18	1.40-1.70	2.00-6.00	0.11-0.20	0.0-2.9	0.5-2.0	.32	.32			
	44-84	30-85	1-40	5-18	1.40-1.70	2.00-6.00	0.07-0.20	0.0-2.9	0.2-1.0	.32	.32			
Cx: Clime-----	0-10	5-15	40-50	40-50	1.35-1.45	0.06-0.20	0.12-0.14	3.0-5.9	1.0-4.0	.28	.28	3	4	86
	10-18	5-15	30-50	35-60	1.35-1.50	0.06-0.20	0.12-0.18	6.0-8.9	1.0-4.0	.28	.28			
	18-28	5-15	30-50	35-60	1.40-1.50	0.06-0.20	0.10-0.14	6.0-8.9	0.5-2.0	.32	.32			
	28-32													
Sogn-----	0-10	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	10-14													

PHYSICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas: Published

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Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Db: Dennis-----	0-14 14-19 19-76	10-30 10-25 10-20	50-70 45-65 30-55	10-27 27-35 35-55	1.25-1.35 1.35-1.45 1.35-1.55	0.60-2.00 0.20-0.60 0.06-0.20	0.15-0.20 0.15-0.20 0.15-0.20	1.5-4.5 3.0-5.9 6.0-8.9	1.0-3.0 0.5-2.0 0.1-1.0	.43 .37 .37	.43 .37 .37	5	6	48
Dc: Dennis-----	0-14 14-19 19-76	10-30 10-25 10-20	50-70 45-65 30-55	10-27 27-35 35-55	1.25-1.35 1.35-1.45 1.35-1.55	0.60-2.00 0.20-0.60 0.06-0.20	0.15-0.20 0.15-0.20 0.12-0.20	1.5-4.5 3.0-5.9 6.0-8.9	1.0-3.0 1.0-2.0 0.1-1.0	.43 .37 .37	.43 .37 .37	5	6	48
De: Dennis, eroded-----	0-7 7-12 12-76	10-30 10-25 10-20	50-65 45-65 30-55	27-35 27-35 35-55	1.30-1.40 1.35-1.45 1.35-1.55	0.20-0.60 0.20-0.60 0.06-0.20	0.15-0.20 0.15-0.20 0.12-0.20	3.0-5.9 3.0-5.9 6.0-8.9	1.0-3.0 1.0-2.0 0.1-1.0	.37 .37 .37	.37 .37 .37	5	7	38
DEE: Dennis-----	0-13 13-20 20-60	10-30 10-25 10-20	50-70 45-65 30-55	10-27 27-35 35-55	1.25-1.35 1.35-1.45 1.35-1.55	0.60-2.00 0.20-0.60 0.06-0.20	0.15-0.20 0.15-0.20 0.12-0.20	0.0-2.9 3.0-5.9 6.0-8.9	1.0-3.0 1.0-2.0 0.1-1.0	.43 .37 .37	.43 .37 .37	5	6	48
Ds: Dennis-----	0-14 14-19 19-76	10-30 10-25 10-20	50-70 45-65 30-55	10-27 27-35 35-55	1.25-1.35 1.35-1.45 1.35-1.55	0.60-2.00 0.20-0.60 0.06-0.20	0.15-0.20 0.15-0.20 0.12-0.20	1.5-4.5 3.0-5.9 6.0-8.9	1.0-3.0 1.0-2.0 0.1-1.0	.43 .37 .37	.43 .37 .37	5	6	48
Dwight-----	0-5 5-22 22-60	1-10 1-10 1-10	60-75 30-50 35-60	18-27 45-60 35-50	1.30-1.35 1.30-1.40 1.30-1.40	0.60-2.00 0.00-0.06 0.06-0.20	0.21-0.24 0.10-0.14 0.09-0.16	3.0-5.9 6.0-8.9 6.0-8.9	2.0-4.0 0.5-2.0 0.1-1.0	.43 .32 .32	.43 .32 .32	5	6	48
Ea: Eram-----	0-8 8-32 32-36	1-20 1-25 ---	50-70 30-60 ---	27-40 35-55 ---	1.30-1.60 1.35-1.65 ---	0.20-0.60 0.06-0.20 ---	0.15-0.20 0.10-0.18 ---	3.0-5.9 6.0-8.9 ---	1.0-3.0 0.1-1.0 ---	.37 .37 ---	.37 .37 ---	3	7	38
Ec: Eram-----	0-8 8-32 32-36	1-20 1-25 ---	50-70 30-60 ---	27-40 35-55 ---	1.30-1.40 1.35-1.55 ---	0.20-0.60 0.06-0.20 ---	0.15-0.20 0.10-0.18 ---	3.0-5.9 6.0-8.9 ---	1.0-3.0 0.5-1.5 ---	.37 .37 ---	.37 .37 ---	3	7	38
Collinsville-	0-12 12-16	30-52	28-50	7-20	1.30-1.55	2.00-6.00	0.13-0.20	0.0-2.9	1.0-3.0	.32	.32	1	5	56
Iv: Ivan-----	0-16 16-80	1-20 1-20	50-75 45-75	16-27 18-35	1.30-1.45 1.35-1.55	0.60-2.00 0.60-2.00	0.22-0.24 0.19-0.22	1.5-4.5 3.0-5.9	2.0-4.0 1.0-3.0	.32 .32	.32 .32	5	4L	86
Ke: Kenoma-----	0-11 11-38 38-84	1-10 1-10 1-10	50-75 30-60 40-60	18-27 40-60 30-50	1.20-1.40 1.30-1.50 1.30-1.50	0.20-0.60 0.00-0.06 0.06-0.20	0.22-0.24 0.10-0.15 0.18-0.20	1.5-4.5 6.0-8.9 6.0-8.9	2.0-5.0 0.4-2.0 0.2-0.5	.43 .32 .32	.43 .32 .32	3	6	48
Ln: Longford----	0-8 8-13 13-48 48-54 54-58	1-20 1-20 1-20 1-20 ---	50-65 50-65 40-60 50-65 ---	27-35 27-35 35-50 27-35 ---	1.30-1.40 1.30-1.40 1.35-1.50 1.30-1.40 ---	0.20-0.60 0.20-0.60 0.01-0.60 0.20-0.60 ---	0.21-0.23 0.21-0.23 0.14-0.20 0.18-0.20 ---	3.0-5.9 3.0-5.9 6.0-8.9 3.0-5.9 ---	2.0-4.0 1.0-3.0 0.5-1.5 0.2-0.4 ---	.37 .32 .32 .32 ---	.37 .32 .32 .32 ---	3	7	38
Lo: Longford, eroded-----	0-8 8-13 13-48 48-54 54-58	1-20 1-20 1-20 1-20 ---	50-65 50-65 40-60 50-65 ---	27-35 27-35 35-50 27-35 ---	1.30-1.40 1.30-1.40 1.35-1.50 1.30-1.40 ---	0.20-0.60 0.20-0.60 0.01-0.60 0.20-0.60 ---	0.21-0.23 0.21-0.23 0.14-0.20 0.18-0.20 ---	3.0-5.9 3.0-5.9 6.0-8.9 3.0-5.9 ---	1.0-3.0 1.0-3.0 0.5-1.5 0.2-0.4 ---	.37 .32 .32 .32 ---	.37 .32 .32 .32 ---	3	7	38
Lu: Lula-----	0-10 10-17 17-46 46-50	1-10 1-15 1-15 ---	50-75 45-65 40-60 ---	15-27 18-35 27-35 ---	1.30-1.55 1.45-1.70 1.45-1.70 ---	0.60-2.00 0.60-2.00 0.60-2.00 ---	0.16-0.20 0.16-0.20 0.16-0.20 ---	0.0-2.9 3.0-5.9 3.0-5.9 ---	1.0-3.0 1.0-2.0 0.1-1.0 ---	.37 .37 .32 ---	.37 .37 .32 ---	3	6	48
M-W: Miscellaneous Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ma: Martin-----	0-12 12-18 18-54 54-58	1-10 1-10 1-10 ---	50-70 50-70 35-60 ---	27-40 27-40 40-55 ---	1.35-1.40 1.35-1.40 1.40-1.50 ---	0.20-0.60 0.20-0.60 0.06-0.20 ---	0.21-0.23 0.18-0.20 0.12-0.18 ---	3.0-5.9 3.0-5.9 6.0-8.9 ---	2.0-4.0 1.0-3.0 0.5-2.0 ---	.37 .37 .37 ---	.37 .37 .37 ---	4	7	38
Mb: Martin-----	0-12 12-18 18-54 54-58	1-10 1-10 1-10 ---	50-70 50-70 35-60 ---	27-40 27-40 40-55 ---	1.35-1.40 1.35-1.40 1.40-1.50 ---	0.20-0.60 0.20-0.60 0.06-0.20 ---	0.21-0.23 0.18-0.20 0.12-0.18 ---	3.0-5.9 3.0-5.9 6.0-8.9 ---	2.0-4.0 1.0-3.0 0.5-2.0 ---	.37 .37 .37 ---	.37 .37 .37 ---	4	7	38
Mc: Martin-----	0-12 12-18 18-54 54-58	1-10 1-10 1-10 ---	50-70 50-70 35-60 ---	27-40 27-40 40-55 ---	1.35-1.40 1.35-1.40 1.40-1.50 ---	0.20-0.60 0.20-0.60 0.06-0.20 ---	0.21-0.23 0.18-0.20 0.12-0.18 ---	3.0-5.9 3.0-5.9 6.0-8.9 ---	2.0-4.0 1.0-3.0 0.5-2.0 ---	.37 .37 .37 ---	.37 .37 .37 ---	4	7	38
Me: Martin, eroded-----	0-7 7-10 10-54 54-58	1-10 1-10 1-10 ---	50-70 50-70 35-60 ---	27-40 27-40 40-55 ---	1.35-1.40 1.35-1.40 1.40-1.50 ---	0.20-0.60 0.20-0.60 0.06-0.20 ---	0.21-0.23 0.18-0.20 0.12-0.18 ---	3.0-5.9 3.0-5.9 6.0-8.9 ---	2.0-4.0 1.0-3.0 0.5-2.0 ---	.37 .37 .37 ---	.37 .37 .37 ---	4	7	38

PHYSICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas: Published

(Single entries under "Sand and Silt" are a representative percentage are calculated using an algorithm. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Ms:														
Martin-----	0-12	1-10	50-70	27-40	1.35-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	4	7	38
	12-18	1-10	50-70	27-40	1.35-1.40	0.20-0.60	0.18-0.20	3.0-5.9	1.0-3.0	.37	.37			
	18-54	1-10	35-60	40-55	1.40-1.50	0.06-0.20	0.12-0.18	6.0-8.9	0.5-2.0	.37	.37			
	54-58													
Dwight-----	0-5	1-10	60-75	27-32	1.20-1.35	0.60-2.00	0.21-0.24	3.0-5.9	2.0-4.0	.37	.43	5	7	38
	5-22	1-10	30-50	45-60	1.30-1.40	0.00-0.06	0.10-0.14	6.0-8.9	1.0-3.0	.32	.32			
	22-60	1-10	35-60	35-50	1.30-1.40	0.06-0.20	0.09-0.16	6.0-8.9	0.1-1.0	.32	.32			
Mt:														
Mason-----	0-8	1-10	50-75	12-27	1.30-1.50	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	8-72	1-10	45-70	20-35	1.40-1.70	0.20-0.60	0.16-0.20	3.0-5.9	0.5-1.0	.37	.37			
Mx:														
Mason-----	0-8	1-10	50-75	12-27	1.30-1.50	0.60-2.00	0.16-0.20	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	8-72	1-10	45-70	20-35	1.40-1.70	0.20-0.60	0.16-0.20	3.0-5.9	0.5-1.0	.37	.37			
Drummond----	0-8	1-20	50-70	20-30	1.35-1.55	0.60-2.00	0.11-0.18	0.0-2.9	0.5-1.0	.43	.43	2	6	48
	8-30	1-30	40-60	35-60	1.40-1.65	0.00-0.06	0.09-0.17	6.0-8.9	0.0-1.0	.55	.55			
	30-60													
Nd:														
Niotaze-----	0-10	55-75	10-50	5-20	1.35-1.45	0.57-5.95	0.06-0.11	0.0-2.9	1.0-3.0	.20	.64	3	8	0
	10-28	3-40	30-65	35-55	1.35-1.45	0.06-0.20	0.10-0.20	6.0-8.9	0.5-1.5	.28	.28			
	28-32													
Darnell-----	0-5	52-80	1-30	10-20	1.30-1.65	2.00-6.00	0.12-0.16	0.0-2.9	0.3-1.0	.24	.24	2	3	86
	5-14	35-80	1-30	10-25	1.40-1.70	2.00-6.00	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	14-18													
Oa:														
Osage-----	0-20	1-5	40-65	32-40	1.30-1.40	0.00-0.06	0.21-0.23	6.0-8.9	1.0-4.0	.32	.32	5	4	86
	20-88	1-5	35-60	35-60	1.40-1.50	0.00-0.06	0.08-0.12	9.0-25.0	0.5-2.0	.28	.28			
Oc:														
Osage-----	0-20	1-5	40-60	40-50	1.30-1.40	0.00-0.06	0.12-0.14	9.0-25.0	1.0-4.0	.28	.28	5	4	86
	20-88	1-5	35-60	35-60	1.40-1.50	0.00-0.06	0.08-0.12	9.0-25.0	0.5-2.0	.28	.28			
Os:														
Osage-----	0-20	1-5	50-65	32-40	1.30-1.40	0.00-0.06	0.21-0.23	6.0-8.9	1.0-4.0	.32	.32	5	7	38
	20-88	1-5	35-60	35-60	1.40-1.50	0.00-0.06	0.08-0.12	9.0-25.0	0.5-2.0	.28	.28			
Drummond----	0-8			20-30	1.35-1.55	0.60-2.00	0.11-0.18	0.0-2.9	0.5-1.0	.43	.43	2	6	48
	8-30			35-60	1.40-1.65	0.00-0.06	0.09-0.17	6.0-8.9	0.3-1.0	.55	.55			
	30-34								0.1-0.5	---	---			
PIT:														
Pits-----	---													
QUA:														
Quarry-----	---													
So:														
Sogn-----	0-10	1-15	50-70	27-35	1.15-1.20	0.60-2.00	0.17-0.22	3.0-5.9	1.0-3.0	.32	.32	1	4L	86
	10-14													
St:														
Steedman----	0-6	20-45	20-50	27-35	1.30-1.50	0.60-2.00	0.10-0.19	3.0-5.9	0.5-3.0	.20	.28	3	8	0
	6-30	10-45	20-45	40-55	1.35-1.60	0.06-0.20	0.09-0.13	6.0-8.9	0.5-1.0	.32	.32			
	30-34													
Sv:														
Stephenville-	0-12	55-80	10-50	10-20	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24	3	3	86
	12-34	45-75	10-45	18-35	1.50-1.70	0.60-2.00	0.11-0.17	0.0-2.9	0.2-0.9	.32	.32			
	34-38													
Sx:														
Stephenville-	0-9	55-80	10-50	10-20	1.30-1.60	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24	3	3	86
	9-38	45-75	10-45	18-35	1.50-1.70	0.60-2.00	0.11-0.17	0.0-2.9	0.2-0.9	.32	.32			
	38-42													
Darnell-----	0-5	52-80	1-30	10-20	1.30-1.65	2.00-6.00	0.12-0.16	0.0-2.9	0.3-1.0	.24	.24	2	3	86
	5-14	35-80	1-30	10-25	1.40-1.70	2.00-6.00	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	14-18													
Ve:														
Verdigris----	0-12	5-20	50-75	15-27	1.30-1.40	0.60-2.00	0.20-0.24	1.5-4.5	2.0-4.0	.32	.32	5	6	48
	12-68	5-20	50-75	18-35	1.40-1.60	0.60-2.00	0.17-0.22	3.0-5.9	0.5-1.5	.32	.32			
W:														
Water-----	---													

CHEMICAL PROPERTIES OF THE SOILS
Chautauqua County, Kansas

The Chemical Properties table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils. Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. Soils having a high cation-exchange capacity can retain cations. The ability to retain cations helps to prevent the pollution of ground water.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water and can be dissolved and removed by water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

CHEMICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm	
015CS:							
Clime-----	0-9	16-33	6.6-8.4	5-10	0	0	0
	9-33	14-39	7.4-8.4	5-10	0	0	0
	33-37	---	---	---	---	---	---
Sogn-----	0-7	11-23	6.1-8.4	0	0	0	0
	7-11	---	---	---	---	---	---
035CC:							
Clime-----	0-8	16-33	6.6-8.4	5-10	0	0	0
	8-20	14-39	7.4-8.4	5-10	0	0	0
	20-36	14-32	7.4-8.4	10-15	0	0	0
	36-40	---	---	---	---	---	---
Sogn-----	0-10	11-23	6.1-8.4	0	0	0	0
	10-14	---	---	---	---	---	---
035LA:							
Labette-----	0-7	12-27	5.6-6.5	0	0	0	0
	7-36	14-34	5.6-8.4	0	0	0	0
	36-40	---	---	---	---	---	---
035MC:							
Martin, eroded--	0-9	11-27	5.6-6.5	0	0	0	0
	9-15	10-24	5.6-7.3	0	0	0	0
	15-60	16-33	5.6-7.8	0	0	0	0
035RA:							
Reading-----	0-14	8.0-19	5.6-6.5	0	0	0	0
	14-50	11-23	5.6-6.5	0	0	0	0
	50-60	12-26	6.1-8.4	0	0	0	0
035SA:							
Smolan-----	0-8	11-24	5.6-7.3	0	0	0	0
	8-15	11-24	5.6-7.3	0	0	0	0
	15-40	14-30	5.6-7.8	0	0	0	0
	40-60	10-21	6.6-7.8	0-5	0	0	0
035SC:							
Smolan, eroded--	0-6	11-24	5.6-7.3	0	0	0	0
	6-15	11-24	5.6-7.3	0	0	0	0
	15-40	14-30	5.6-7.8	0	0	0	0
	40-60	10-21	6.6-7.8	0-5	0	0	0
035SD:							
Sogn-----	0-10	10-21	6.1-8.4	0	0	0	0
	10-14	---	---	---	---	---	---
035TA:							
Tabler-----	0-8	11-23	5.6-8.4	0	0	0	0
	8-48	16-33	6.1-8.4	0	0	0	0
	48-60	14-33	7.4-8.4	0	0	0	0
049CD:							
Catoosa-----	0-10	6.0-18	5.6-6.5	0	0	0	0
	10-34	12-24	5.1-7.3	0	0	0	0
	34-38	---	---	---	---	---	---
049CF:							
Catoosa-----	0-9	6.0-18	5.6-6.5	0	0	0	0
	9-26	10-24	5.1-7.3	0	0	0	0
	26-30	---	---	---	---	---	---
Sogn-----	0-8	11-23	6.1-8.4	0	0	0	0
	8-12	---	---	---	---	---	---
049CK:							
Clime-----	0-2	13-27	6.6-8.4	5-10	0	0	0
	2-10	13-31	6.6-8.4	5-10	0	0	0
	10-27	14-37	7.4-8.4	5-10	0	0	0
	27-33	14-30	7.4-8.4	10-15	0	0	0
	33-37	---	---	---	---	---	---
049CS:							
Clime-----	0-10	16-33	6.6-8.4	5-10	0	0	0
	10-24	14-39	7.4-8.4	5-10	0	0	0
	24-31	14-32	7.4-8.4	10-15	0	0	0
	31-35	---	---	---	---	---	---
Sogn-----	0-8	11-23	6.1-8.4	0	0	0	0
	8-12	---	---	---	---	---	---
049EM:							
Eram-----	0-10	7.0-18	5.6-6.5	0	0	0	0
	10-33	14-33	5.1-7.3	0	0	0	0
	33-37	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm	
049KD: Kenoma-----	0-8	8.0-19	5.1-6.5	0	0	0.0-2.0	0
	8-50	16-36	5.1-7.8	0	0	0.0-2.0	0
	50-60	12-30	6.1-8.4	0	0	0.0-4.0	0
049LA: Labette-----	0-9	12-27	5.6-6.5	0	0	0	0
	9-30	14-34	5.6-8.4	0	0	0	0
	30-34	---	---	---	---	---	---
049LD: Labette-----	0-9	12-27	5.6-6.5	0	0	0	0
	9-30	14-34	5.6-8.4	0	0	0	0
	30-34	---	---	---	---	---	---
Dwight-----	0-4	8.0-19	5.6-7.3	0	0	0.0-2.0	0
	4-27	18-36	6.1-8.4	0	0	0.0-4.0	0
	27-42	14-30	6.6-8.4	0	0	0.0-8.0	0
	42-46	---	---	---	---	---	---
049ME: Martin, eroded--	0-7	16-31	5.6-6.5	0	0	0	0
	7-60	16-33	5.6-7.8	0	0	0	0
049SH: Sogn-----	0-8	11-23	6.1-8.4	0	0	0	0
	8-12	---	---	---	---	---	---
049ST: Steedman-----	0-7	7.0-18	5.1-6.5	0	0	0	0
	7-36	16-34	5.6-8.4	0-1	0	0	0
	36-40	---	---	---	---	---	---
049VD: Verdigris-----	0-27	6.0-19	5.6-7.3	0	0	0	0
	27-60	7.0-21	5.6-7.3	0	0	0	0
125BG: Bates-----	0-15	8.0-24	5.1-6.5	0	0	0	0
	15-27	9.0-27	5.1-6.5	0	0	0	0
	27-31	8.0-26	5.1-6.5	0	0	0	0
	31-35	---	---	---	---	---	---
Collinsville----	0-11	4.0-18	4.5-6.5	---	---	---	---
	11-17	3.0-16	4.5-6.5	---	---	---	---
	17-21	---	---	---	---	---	---
125DB: Dennis-----	0-13	4.0-18	5.1-6.0	0	0	0	0
	13-19	11-23	5.1-6.0	0	0	0	0
	19-60	14-33	5.1-8.4	0	0	0	0
125EB: Eram-----	0-11	11-26	5.6-6.5	---	---	0	---
	11-32	14-33	5.1-7.3	---	---	0	---
	32-36	---	---	---	---	---	---
125ET: Eram-----	0-11	13-30	5.6-6.5	0	0	0	0
	11-32	15-37	5.1-7.3	0	0	0	0
	32-36	---	---	---	---	---	---
Talihina-----	0-7	16-30	5.1-7.8	0	0	0	0
	7-14	16-36	5.1-7.8	0	0	0	0
	14-17	16-39	5.1-7.8	0	0	0	0
	17-21	---	---	---	---	---	---
125KA: Kenoma-----	0-12	8.0-19	5.1-6.5	0	0	0.0-2.0	0
	12-60	16-36	5.1-7.8	0	0	0.0-2.0	0
125LA: Lanton-----	0-12	11-24	5.6-6.5	0	0	0	0
	12-32	10-21	5.6-6.5	0	0	0	0
	32-60	12-27	6.6-7.3	0	0	0	0
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---
Ba: Bates-----	0-16	2.0-10	5.1-6.5	0	0	0	0
	16-28	7.0-21	5.1-6.5	0	0	0	0
	28-34	7.0-18	5.1-6.5	0	0	0	0
	34-38	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm	
Ca:							
Clareson-----	0-17	6.0-21	5.6-7.3	0	0	0	0
	17-29	10-24	5.6-7.3	0	0	0	0
	29-35	14-30	5.6-7.3	0	0	0	0
	35-39	---	---	---	---	---	---
Cs:							
Clareson-----	0-17	6.0-21	5.6-7.3	0	0	0	0
	17-29	10-24	5.6-7.3	0	0	0	0
	29-35	14-30	5.6-7.3	0	0	0	0
	35-39	---	---	---	---	---	---
Sogn-----	0-10	11-23	6.1-8.4	0	0	0	0
	10-14	---	---	---	---	---	---
Ct:							
Cleora-----	0-18	4.0-13	5.6-7.3	0	0	0	0
	18-44	4.0-11	5.6-7.3	0	0	0	0
	44-84	2.0-11	5.6-7.3	0	0	0	0
Cx:							
Clime-----	0-10	16-33	6.6-8.4	5-10	0	0	0
	10-18	14-39	7.4-8.4	5-10	0	0	0
	18-28	14-32	7.4-8.4	10-15	0	0	0
	28-32	---	---	---	---	---	---
Sogn-----	0-10	11-23	6.1-8.4	---	0	0	0
	10-14	---	---	---	---	---	---
Db:							
Dennis-----	0-14	4.0-18	5.1-6.0	0	0	0	0
	14-19	---	4.5-6.0	0	0	0	0
	19-76	14-33	5.1-8.4	0	0	0	0
Dc:							
Dennis-----	0-14	4.0-18	5.1-6.0	0	0	0	0
	14-19	11-23	5.1-6.0	0	0	0	0
	19-76	14-33	5.1-8.4	0	0	0	0
De:							
Dennis, eroded--	0-7	11-23	5.1-6.0	0	0	0	0
	7-12	11-23	5.1-6.0	0	0	0	0
	12-76	14-33	5.1-8.4	0	0	0	0
DEE:							
Dennis-----	0-13	4.0-18	5.1-6.0	0	0	0	0
	13-20	11-23	5.1-6.0	0	0	0	0
	20-60	14-33	5.1-8.4	0	0	0	0
Ds:							
Dennis-----	0-14	4.0-18	5.1-6.0	0	0	0	0
	14-19	11-23	5.1-6.0	0	0	0	0
	19-76	14-33	5.1-8.4	0	0	0	0
Dwight-----	0-5	8.0-19	5.6-7.3	0	0	0.0-2.0	0
	5-22	18-36	6.1-8.4	0	0	0.0-4.0	0
	22-60	14-30	6.6-8.4	0	0	0.0-8.0	0
Ea:							
Eram-----	0-8	11-26	5.6-6.5	0	0	0	0
	8-32	14-33	5.1-7.3	0	0	0	0
	32-36	---	---	---	---	---	---
Ec:							
Eram-----	0-8	11-26	5.6-6.5	0	0	0	0
	8-32	14-33	5.1-7.3	0	0	0	0
	32-36	---	---	---	---	---	---
Collinsville----	0-12	3.0-14	4.5-6.5	0	0	0	0
	12-16	---	---	---	---	---	---
Iv:							
Ivan-----	0-16	7.0-19	7.4-8.4	0-2	0	0	0
	16-80	7.0-21	7.9-8.4	1-5	0	0	0
Ke:							
Kenoma-----	0-11	8.0-19	5.1-6.5	0	0	0.0-2.0	0
	11-38	16-36	5.1-7.8	0	0	0.0-2.0	0
	38-84	12-30	6.1-8.4	0	0	0.0-4.0	0
Ln:							
Longford-----	0-8	11-24	5.6-7.3	0	0	0	0
	8-13	11-23	5.6-7.3	0	0	0	0
	13-48	11-31	6.1-7.3	0	0	0	0
	48-54	11-22	6.1-7.8	0	0	0	0
	54-58	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm	
Lo:							
Longford, eroded	0-8	11-24	5.6-7.3	0	0	0	0
	8-13	11-23	5.6-7.3	0	0	0	0
	13-48	14-31	6.1-7.3	0	0	0	0
	48-54	11-22	6.1-7.8	0	0	0	0
	54-58	---	---	---	---	---	---
Lu:							
Lula-----	0-10	6.0-18	5.6-6.5	0	0	0	0
	10-17	7.0-21	5.6-6.5	0	0	0	0
	17-46	10-21	5.1-7.3	0	0	0	0
	46-50	---	---	---	---	---	---
M-W:							
Miscellaneous Water-----	---	---	---	---	---	---	---
Ma:							
Martin-----	0-12	11-27	5.6-6.5	0	0	0	0
	12-18	10-24	5.6-7.3	0	0	0	0
	18-54	16-33	5.6-7.8	5-15	0	0	0
	54-58	---	---	---	---	---	---
Mb:							
Martin-----	0-12	11-27	5.6-6.5	0	0	0	0
	12-18	10-24	5.6-7.3	0	0	0	0
	18-54	16-33	5.6-7.8	0	0	0	0
	54-58	---	---	---	---	---	---
Mc:							
Martin-----	0-12	11-27	5.6-6.5	0	0	0	0
	12-18	10-24	5.6-7.3	0	0	0	0
	18-54	16-33	5.6-7.8	0	0	0	0
	54-58	---	---	---	---	---	---
Me:							
Martin, eroded--	0-7	11-27	5.6-6.5	0	0	0	0
	7-10	10-24	5.6-7.3	0	0	0	0
	10-54	16-33	5.6-7.8	0	0	0	0
	54-58	---	---	---	---	---	---
Ms:							
Martin-----	0-12	11-27	5.6-6.5	0	0	0	0
	12-18	10-24	5.6-7.3	0	0	0	0
	18-54	16-33	5.6-7.8	0	0	0	0
	54-58	---	---	---	---	---	---
Dwight-----	0-5	11-21	5.6-7.3	0	0	0.0-2.0	0
	5-22	18-36	6.1-8.4	0	0	0.0-4.0	0
	22-60	14-30	6.6-8.4	0	0	0.0-8.0	0
Mt:							
Mason-----	0-8	5.0-18	5.1-7.3	0	0	0	0
	8-72	8.0-21	4.5-7.8	0	0	0	0
Mx:							
Mason-----	0-8	5.0-18	5.1-7.3	0	0	0	0
	8-72	8.0-21	4.5-7.8	0	0	0	0
Drummond-----	0-8	8.0-19	6.1-8.4	---	---	0.0-4.0	---
	8-30	14-36	7.4-9.0	---	---	2.0-8.0	---
	30-60	---	---	---	---	---	---
Nd:							
Niotaze-----	0-10	2.0-13	5.1-6.0	0	0	0	0
	10-28	14-33	4.5-7.3	0	0	0	0
	28-32	---	---	---	---	---	---
Darnell-----	0-5	4.0-13	5.1-7.3	0	0	0	0
	5-14	4.0-15	5.1-7.3	0	0	0	0
	14-18	---	---	---	---	---	---
Oa:							
Osage-----	0-20	14-27	5.1-7.3	---	---	---	---
	20-88	14-36	5.6-7.8	---	---	---	---
Oc:							
Osage-----	0-20	16-33	5.1-7.8	---	---	---	---
	20-88	14-36	5.6-7.8	---	---	---	---
Os:							
Osage-----	0-20	14-27	5.1-7.3	0	0	0	0
	20-88	14-38	5.6-7.8	0	0	0	0
Drummond-----	0-8	8.0-19	6.1-8.4	0	0	0.0-4.0	0
	8-30	14-36	7.4-9.0	0	0	2.0-8.0	0
	30-34	---	---	---	---	---	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
Chautauqua County, Kansas

Map symbol and soil name	Depth	Cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100g	pH	Pct	Pct	mmhos/cm	
PIT:							
Pits-----	---	---	---	---	---	---	---
QUA:							
Quarry-----	---	---	---	---	---	---	---
So:							
Sogn-----	0-10 10-14	10-21 ---	6.1-8.4 ---	0 ---	0 ---	0 ---	0 ---
St:							
Steedman-----	0-6 6-30 30-34	11-23 16-34 ---	5.1-6.5 5.6-8.4 ---	0 0-1 ---	0 0 ---	0 0 ---	0 0 ---
Sv:							
Stephenville----	0-12 12-34 34-38	4.0-13 --- ---	5.1-6.5 4.5-6.0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
Sx:							
Stephenville----	0-9 9-38 38-42	4.0-13 7.0-21 ---	5.1-6.5 4.5-6.0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
Darnell-----	0-5 5-14 14-18	4.0-13 4.0-15 ---	5.1-7.3 5.1-7.3 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
Ve:							
Verdigris-----	0-12 12-68	6.0-19 7.0-21	5.6-7.3 5.6-7.3	0 0	0 0	0 0	0 0
W:							
Water-----	---	---	---	---	---	---	---

WATER FEATURES
Chautauqua County, Kansas

The Water Features table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations. Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The months in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The Water Features table indicates, by month, depth to the top (upper limit) and base (lower limit) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The Water Features table indicates surface water depth and the duration and frequency of ponding. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. None means that ponding is not probable; rare that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); occasional that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and frequent that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as extremely brief if 0.1 hour to 4 hours, very brief if 4 hours to 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. None means that flooding is not probable; very rare that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); rare that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); occasional that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); frequent that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and very frequent that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
015CS: Clime-----	C		Ft	Ft	Ft				
Sogn-----	D		---	---	---	---	---	---	---
035CC: Clime-----	C		---	---	---	---	---	---	---
Sogn-----	D		---	---	---	---	---	---	---
035LA: Labette-----	C		---	---	---	---	---	---	---
035MC: Martin, eroded-----	C		---	---	---	---	---	---	---
035RA: Reading-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
035SA: Smolan-----	C		---	---	---	---	---	---	---
035SC: Smolan, eroded-----	C		---	---	---	---	---	---	---
035SD: Sogn-----	D		---	---	---	---	---	---	---
035TA: Tabler-----	D	January	2.5-3.5	>6.0	---	---	---	---	None
		February	2.5-3.5	>6.0	---	---	---	---	None
		March	2.5-3.5	>6.0	---	---	---	---	None
		April	2.5-3.5	>6.0	---	---	---	---	None
		October	2.5-3.5	>6.0	---	---	---	---	None
		November	2.5-3.5	>6.0	---	---	---	---	None
		December	2.5-3.5	>6.0	---	---	---	---	None
049CD: Catoosa-----	B		---	---	---	---	---	---	---
049CF: Catoosa-----	B		---	---	---	---	---	---	---
Sogn-----	D		---	---	---	---	---	---	---
049CK: Clime-----	C		---	---	---	---	---	---	---
049CS: Clime-----	C		---	---	---	---	---	---	---
Sogn-----	D		---	---	---	---	---	---	---
049EM: Eram-----	C	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
049KD: Kenoma-----	D	January	6.0	1.0-1.5	---	---	---	---	None
		February	6.0	1.0-1.5	---	---	---	---	None
		March	6.0	1.0-1.5	---	---	---	---	None
		November	6.0	1.0-1.5	---	---	---	---	None
		December	6.0	1.0-1.5	---	---	---	---	None
049LA: Labette-----	C		---	---	---	---	---	---	---
049LD:			---	---	---	---	---	---	---

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Labette-----	C		---	---	---	---	---	---	---
Dwight-----	D		---	---	---	---	---	---	---
049ME: Martin, eroded-----	C		---	---	---	---	---	---	---
049SH: Sogn-----	D		---	---	---	---	---	---	---
049ST: Steedman-----	C		---	---	---	---	---	---	---
		January	1.0-2.0	3.0-4.0	---	---	---	---	None
		February	1.0-2.0	3.0-4.0	---	---	---	---	None
		March	1.0-2.0	3.0-4.0	---	---	---	---	None
		April	1.0-2.0	3.0-4.0	---	---	---	---	None
		November	1.0-2.0	3.0-4.0	---	---	---	---	None
		December	1.0-2.0	3.0-4.0	---	---	---	---	None
049VD: Verdigris-----	B		---	---	---	---	---	---	Rare
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Frequent
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
		October	---	---	---	---	---	Very brief	Frequent
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
125BG: Bates-----	B		---	---	---	---	---	---	---
Collinsville-----	D		---	---	---	---	---	---	---
125DB: Dennis-----	C		---	---	---	---	---	---	---
		January	1.0-1.5	2.0-3.0	---	---	---	---	None
		February	1.0-1.5	2.0-3.0	---	---	---	---	None
		March	1.0-1.5	2.0-3.0	---	---	---	---	None
		April	1.0-1.5	2.0-3.0	---	---	---	---	None
		December	1.0-1.5	2.0-3.0	---	---	---	---	None
125EB: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
125ET: Eram-----	C		---	---	---	---	---	---	---
		January	0.5-2.3	1.5-3.3	---	---	---	---	None
		February	0.5-2.3	1.5-3.3	---	---	---	---	None
		March	0.5-2.3	1.5-3.3	---	---	---	---	None
		April	0.5-2.3	1.5-3.3	---	---	---	---	None
		December	0.5-2.3	1.5-3.3	---	---	---	---	None
Talihina-----	D		---	---	---	---	---	---	---
		January	0.5-2.3	1.0-3.3	---	---	---	---	None
		February	0.5-2.3	1.0-3.3	---	---	---	---	None
		March	0.5-2.3	1.0-3.3	---	---	---	---	None
		April	0.5-2.3	1.0-3.3	---	---	---	---	None
		December	0.5-2.3	1.0-3.3	---	---	---	---	None
125KA: Kenoma-----	D		---	---	---	---	---	---	---
		January	0.5-1.5	1.0-1.5	---	---	---	---	None
		February	0.5-1.5	1.0-1.5	---	---	---	---	None
		March	0.5-1.5	1.0-1.5	---	---	---	---	None
		November	0.5-1.5	1.0-1.5	---	---	---	---	None
		December	0.5-1.5	1.0-1.5	---	---	---	---	None
125LA:			---	---	---	---	---	---	---

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Lanton-----	C	January	1.0-2.0	2.0-3.5	---	---	---	---	None
		February	1.0-2.0	2.0-3.5	---	---	---	---	None
		March	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		April	1.0-2.0	2.0-3.5	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	1.0-2.0	2.0-3.5	---	---	---	---	None
		December	1.0-2.0	2.0-3.5	---	---	---	---	None
Ba: Bates-----	B		---	---	---	---	---	---	
Ca: Clareson-----	C		---	---	---	---	---	---	
Cs: Clareson-----	C		---	---	---	---	---	---	
Sogn-----	D		---	---	---	---	---	---	
Ct: Cleora-----	B	January	---	---	---	---	---	Rare	
		February	---	---	---	---	---	Rare	
		March	---	---	---	---	Very brief	Occasional	
		April	---	---	---	---	Very brief	Occasional	
		May	---	---	---	---	Very brief	Occasional	
		June	---	---	---	---	Very brief	Occasional	
		July	---	---	---	---	Very brief	Occasional	
		August	---	---	---	---	Very brief	Occasional	
		September	---	---	---	---	Very brief	Occasional	
		October	---	---	---	---	Very brief	Occasional	
		November	---	---	---	---	---	Rare	
		December	---	---	---	---	---	Rare	
Cx: Clime-----	C		---	---	---	---	---	---	
Sogn-----	D		---	---	---	---	---	---	
Db: Dennis-----	C	January	1.0-1.5	2.0-3.0	---	---	---	None	
		February	1.0-1.5	2.0-3.0	---	---	---	None	
		March	1.0-1.5	2.0-3.0	---	---	---	None	
		April	1.0-1.5	2.0-3.0	---	---	---	None	
		December	1.0-1.5	2.0-3.0	---	---	---	None	
Dc: Dennis-----	C	January	1.0-1.5	2.0-3.0	---	---	---	None	
		February	1.0-1.5	2.0-3.0	---	---	---	None	
		March	1.0-1.5	2.0-3.0	---	---	---	None	
		April	1.0-1.5	2.0-3.0	---	---	---	None	
		December	1.0-1.5	2.0-3.0	---	---	---	None	
De: Dennis, eroded-----	C	January	1.0-1.5	2.0-3.0	---	---	---	None	
		February	1.0-1.5	2.0-3.0	---	---	---	None	
		March	1.0-1.5	2.0-3.0	---	---	---	None	
		April	1.0-1.5	2.0-3.0	---	---	---	None	
		December	1.0-1.5	2.0-3.0	---	---	---	None	
DEE: Dennis-----	C	January	1.0-1.5	2.0-3.0	---	---	---	None	
		February	1.0-1.5	2.0-3.0	---	---	---	None	
		March	1.0-1.5	2.0-3.0	---	---	---	None	
		April	1.0-1.5	2.0-3.0	---	---	---	None	
		December	1.0-1.5	2.0-3.0	---	---	---	None	
Ds: Dennis-----	C	January	1.0-1.5	2.0-3.0	---	---	---	None	
		February	1.0-1.5	2.0-3.0	---	---	---	None	
		March	1.0-1.5	2.0-3.0	---	---	---	None	
		April	1.0-1.5	2.0-3.0	---	---	---	None	
		December	1.0-1.5	2.0-3.0	---	---	---	None	
Dwight-----	D		---	---	---	---	---	---	
Ea:			---	---	---	---	---	---	

WATER FEATURES--Continued
Chautauqua County, Kansas

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Eram-----	C	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Ec: Eram-----	C	January	0.5-1.5	1.5-2.5	---	---	---	---	None
		February	0.5-1.5	1.5-2.5	---	---	---	---	None
		March	0.5-1.5	1.5-2.5	---	---	---	---	None
		April	0.5-1.5	1.5-2.5	---	---	---	---	None
		November	0.5-1.5	1.5-2.5	---	---	---	---	None
		December	0.5-1.5	1.5-2.5	---	---	---	---	None
Collinsville-----	D								
Iv: Ivan-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Ke: Kenoma-----	D	January	0.5-1.5	1.0-1.5	---	---	---	---	None
		February	0.5-1.5	1.0-1.5	---	---	---	---	None
		March	0.5-1.5	1.0-1.5	---	---	---	---	None
		November	0.5-1.5	1.0-1.5	---	---	---	---	None
		December	0.5-1.5	1.0-1.5	---	---	---	---	None
Ln: Longford-----	C								
Lo: Longford, eroded-----	C								
Lu: Lula-----	B								
Ma: Martin-----	C								
Mb: Martin-----	C	January	2.0-3.0	2.0-3.0	---	---	---	---	None
		February	2.0-3.0	2.0-3.0	---	---	---	---	None
		March	2.0-3.0	2.0-3.0	---	---	---	---	None
		April	2.0-3.0	2.0-3.0	---	---	---	---	None
		December	2.0-3.0	2.0-3.0	---	---	---	---	None
Mc: Martin-----	C								
Me: Martin, eroded-----	C								
Ms: Martin-----	C								
Dwight-----	D								
Mt: Mason-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Mx:									

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Mason-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Drummond-----	D	January	2.0-6.0	>6.0	---	---	---	---	Rare
		February	2.0-6.0	>6.0	---	---	---	---	Rare
		March	2.0-6.0	>6.0	---	---	---	---	Rare
		April	2.0-6.0	>6.0	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	2.0-6.0	>6.0	---	---	---	---	Rare
		December	2.0-6.0	>6.0	---	---	---	---	Rare
Nd: Niotaze-----	C	January	1.0-2.0	0.5-1.5	---	---	---	---	None
		February	1.0-2.0	0.5-1.5	---	---	---	---	None
		March	1.0-2.0	0.5-1.5	---	---	---	---	None
		April	1.0-2.0	0.5-1.5	---	---	---	---	None
		May	1.0-2.0	0.5-1.5	---	---	---	---	None
		June	1.0-2.0	0.5-1.5	---	---	---	---	None
		November	1.0-2.0	0.5-1.5	---	---	---	---	None
		December	1.0-2.0	0.5-1.5	---	---	---	---	None
Darnell-----	C		---	---	---	---	---	---	---
Oa: Osage-----	D	January	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		February	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		March	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		April	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		May	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		December	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
Oc: Osage-----	D	January	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		February	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		March	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		April	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		May	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		December	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
Os: Osage-----	D	January	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		February	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		March	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		April	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		May	0.0-1.0	>6.0	---	Long	Occasional	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	0.0-1.0	>6.0	---	Long	Occasional	---	Rare
		December	0.0-1.0	>6.0	---	Long	Occasional	---	Rare

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Drummond-----	D	January	2.0-6.0	>6.0	---	---	---	---	Rare
		February	2.0-6.0	>6.0	---	---	---	---	Rare
		March	2.0-6.0	>6.0	---	---	---	Brief	Occasional
		April	2.0-6.0	>6.0	---	---	---	Brief	Occasional
		May	2.0-6.0	>6.0	---	---	---	Brief	Occasional
		June	---	---	---	---	---	Brief	Occasional
		July	---	---	---	---	---	Brief	Occasional
		August	---	---	---	---	---	Brief	Occasional
		September	---	---	---	---	---	Brief	Occasional
		October	---	---	---	---	---	Brief	Occasional
		November	2.0-6.0	>6.0	---	---	---	---	Rare
		December	2.0-6.0	>6.0	---	---	---	---	Rare
PIT:									
Pits-----	---		---	---	---	---	---	---	---
QUA:									
Quarry-----	---		---	---	---	---	---	---	---
So:									
Sogn-----	D		---	---	---	---	---	---	---
St:									
Steedman-----	C	January	1.0-2.0	3.0-4.0	---	---	---	---	None
		February	1.0-2.0	3.0-4.0	---	---	---	---	None
		March	1.0-2.0	3.0-4.0	---	---	---	---	None
		April	1.0-2.0	3.0-4.0	---	---	---	---	None
		November	1.0-2.0	3.0-4.0	---	---	---	---	None
		December	1.0-2.0	3.0-4.0	---	---	---	---	None
Sv:									
Stephenville-----	B		---	---	---	---	---	---	---
Sx:									
Stephenville-----	B		---	---	---	---	---	---	---
Darnell-----	C		---	---	---	---	---	---	---
Ve:									
Verdigris-----	B	January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
		October	---	---	---	---	---	Very brief	Occasional
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
W:									
Water-----	---		---	---	---	---	---	---	---

The following table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A restrictive layer is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

SOIL FEATURES--Continued
Chautauqua County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
015CS: Clime-----	20-40	In Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
035CC: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
035LA: Labbette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
035MC: Martin, eroded--	---	---	---	---	High	High	Low
035RA: Reading-----	---	---	---	---	High	Moderate	Low
035SA: Smolan-----	---	---	---	---	Low	Moderate	Low
035SC: Smolan, eroded--	---	---	---	---	Moderate	Moderate	Low
035SD: Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
035TA: Tabler-----	---	---	---	---	---	High	Low
049CD: Catoosa-----	20-40	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
049CF: Catoosa-----	20-40	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
049CK: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
049CS: Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
049EM: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
049KD: Kenoma-----	---	---	---	---	---	High	Moderate
049LA: Labbette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
049LD: Labbette-----	20-40	Bedrock (lithic)	---	Indurated	Moderate	High	Low
Dwight-----	40-60	Bedrock (lithic)	---	Indurated	Moderate	High	Moderate
049ME: Martin, eroded--	---	---	---	---	High	High	Low
049SH: Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
049ST: Steedman-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Moderate
049VD: Verdigris-----	---	---	---	---	---	Low	Low
125BG: Bates-----	20-40	Bedrock (paralithic)	---	Moderately cemented	---	Low	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
125DB: Dennis-----	---	---	---	---	---	High	Moderate
125EB: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
125ET: Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
Talihina-----	10-20	Bedrock (paralithic)	---	Weakly cemented	---	High	Moderate
125KA: Kenoma-----	---	---	---	---	---	High	Moderate
125LA: Lanton-----	---	---	---	---	None	High	Moderate
AED: Arents, Earthen Dam-----	---	---	---	---	---	---	---
Ba: Bates-----	20-40	Bedrock (paralithic)	---	Weakly cemented	---	Low	Moderate
Ca: Clareson-----	20-40	Bedrock (lithic)	---	Indurated	---	High	Moderate
Cs: Clareson-----	20-40	Bedrock (lithic)	---	Indurated	---	High	Moderate
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Ct: Cleora-----	---	---	---	---	---	Low	Moderate

SOIL FEATURES--Continued
Chautauqua County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Cx:		In	In				
Clime-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Moderate	High	Low
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
Db:							
Dennis-----	---	---	---	---	---	High	Moderate
Dc:							
Dennis-----	---	---	---	---	---	High	Moderate
De:							
Dennis, eroded--	---	---	---	---	---	High	Moderate
DEE:							
Dennis-----	---	---	---	---	---	High	Moderate
Ds:							
Dennis-----	---	---	---	---	---	High	Moderate
Dwight-----	---	---	---	---	Moderate	High	Moderate
Ea:							
Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Ec:							
Eram-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Collinsville----	4-20	Bedrock (lithic)	---	Strongly cemented	---	Low	Moderate
Iv:							
Ivan-----	---	---	---	---	Moderate	Low	Low
Ke:							
Kenoma-----	---	---	---	---	---	High	Moderate
Ln:							
Longford-----	40-60	Bedrock (lithic)	---	Indurated	Low	High	Low
Lo:							
Longford, eroded	40-60	Bedrock (lithic)	---	Indurated	Low	High	Low
Lu:							
Lula-----	40-60	Bedrock (lithic)	---	Indurated	---	Moderate	Moderate
M-W:							
Miscellaneous Water-----	---	---	---	---	---	---	---
Ma:							
Martin-----	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
Mb:							
Martin-----	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
Mc:							
Martin-----	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
Me:							
Martin, eroded--	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
Ms:							
Martin-----	40-60	Bedrock (paralithic)	---	Weakly cemented	High	High	Low
Dwight-----	---	---	---	---	Moderate	High	Moderate
Mt:							
Mason-----	---	---	---	---	---	Moderate	Moderate
Mx:							
Mason-----	---	---	---	---	---	Moderate	Moderate
Drummond-----	---	---	---	---	None	High	High
Nd:							
Niotaze-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	High	Moderate
Darnell-----	10-20	Bedrock (paralithic)	---	Moderately cemented	None	Low	Moderate
Oa:							
Osage-----	---	---	---	---	---	High	Moderate
Oc:							
Osage-----	---	---	---	---	---	High	Moderate
Os:							
Osage-----	---	---	---	---	---	High	Moderate
Drummond-----	---	---	---	---	None	---	---
PIT:							
Pits-----	---	---	---	---	---	---	---
QUA:							
Quarry-----	---	---	---	---	---	---	---
So:							
Sogn-----	4-20	Bedrock (lithic)	---	Indurated	Moderate	Low	Low
St:							
Steedman-----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Moderate
Sv:							
Stephenville----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Moderate
Sx:							
Stephenville----	20-40	Bedrock (paralithic)	---	Weakly cemented	None	Moderate	Moderate
Darnell-----	10-20	Bedrock (paralithic)	---	Moderately cemented	None	Low	Moderate
Ve:							
Verdigris-----	---	---	---	---	---	Low	Low

SOIL FEATURES--Continued
Chautauqua County, Kansas

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
W: Water-----	---	In ---	In ---	---	Low	---	---

WATER MANAGEMENT
Chautauqua County, Kansas

The soils of the survey area are rated in the Water Management table according to limitations that affect their suitability for water management. Soils are rated for pond reservoir areas, drainage, irrigation, terraces and diversions, and grassed waterways. Restrictive features that affect each soil for the specified use is also provided in the table.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Moderately limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Limited indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but generally require special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate to high maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Limitation class terms, such as very limited or limited, etc., limitation ratings, and numerical ratings are shown for each soil feature listed. As many as three soil features may be listed for each soil component if applicable. The overall limitation rating for the soil component is based on the most severe limitation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects traffic ability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditch banks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a very limited hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, which conduct surface water to outlets at a non-erosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
015CS: Clime-----	Limitation: deep to water	Limitation: percs slowly slope	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
035CC: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim slope depth to rock	Limitation: area reclaim slope depth to rock
035LA: Labette-----	Limitation: deep to water	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily depth to rock	Limitation: area reclaim erodes easily depth to rock
035MC: Martin, eroded--	Limitation: frost action percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
035RA: Reading-----	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
035SA: Smolan-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
035SC: Smolan, eroded--	Limitation: deep to water	Limitation: erodes easily percs slowly slope	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
035SD: Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim depth to rock
035TA: Tabler-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
049CD: Catoosa-----	Limitation: deep to water	Limitation: rooting depth thin layer	Limitation: area reclaim erodes easily depth to rock	Limitation: area reclaim erodes easily depth to rock
049CF: Catoosa-----	Limitation: deep to water	Limitation: rooting depth slope thin layer	Limitation: erodes easily thin layer depth to rock	Limitation: area reclaim erodes easily depth to rock
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim depth to rock
049CK: Clime-----	Limitation: deep to water	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope	Limitation: percs slowly slope thin layer
049CS: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: area reclaim percs slowly slope	Limitation: area reclaim percs slowly slope
Sogn-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim depth to rock
049EM: Eram-----	Limitation: percs slowly thin layer	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
049KD: Kenoma-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
049LA: Labette-----	Limitation: deep to water	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily depth to rock	Limitation: area reclaim erodes easily depth to rock
049LD: Labette-----	Limitation: deep to water	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily depth to rock	Limitation: area reclaim erodes easily depth to rock
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
049ME: Martin, eroded--	Limitation: frost action percs slowly slope	Limitation: slope slow intake wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
049SH: Sogn-----	Limitation: deep to water	Limitation: thin layer	Limitation: area reclaim depth to rock	Limitation: area reclaim depth to rock
049ST: Steedman-----	Limitation: area reclaim percs slowly slope	Limitation: percs slowly slope wetness	Limitation: area reclaim slope wetness	Limitation: area reclaim slope wetness
049VD: Verdigris-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
125BG: Bates-----	Limitation: deep to water	Limitation: slope thin layer	Limitation: area reclaim	Limitation: area reclaim
Collinsville----	Limitation: deep to water	Limitation: slope thin layer	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
125DB: Dennis-----	Limitation: percs slowly	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
125EB: Eram-----	Limitation: percs slowly thin layer	Limitation: erodes easily percs slowly thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
125ET: Eram-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily wetness	Limitation: area reclaim erodes easily wetness
Talihina-----	Limitation: percs slowly slope thin layer	Limitation: percs slowly slope wetness	Limitation: area reclaim erodes easily slope	Limitation: erodes easily slope wetness
125KA: Kenoma-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
125LA: Lanton-----	Limitation: flooding percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
AED: Arents, Earthen Dam-----	---	---	---	---
Ba: Bates-----	Limitation: deep to water	Limitation: soil blowing depth to rock	Limitation: soil blowing depth to rock	Limitation: depth to rock
Ca: Clareson-----	Limitation: deep to water	Limitation: large stones percs slowly droughty	Limitation: large stones percs slowly depth to rock	Limitation: large stones depth to rock droughty
Cs: Clareson-----	Limitation: deep to water	Limitation: large stones percs slowly droughty	Limitation: large stones percs slowly depth to rock	Limitation: large stones depth to rock droughty

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Sogn----- Ct: Cleora-----	Limitation: deep to water	Limitation: depth to rock	Limitation: depth to rock	Limitation: depth to rock
Cx: Clime-----	Limitation: deep to water	Limitation: flooding soil blowing	Limitation: soil blowing	Favorable
Sogn-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope depth to rock
Db: Dennis-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Dc: Dennis-----	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
De: Dennis, eroded--	Limitation: percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
DEE: Dennis-----	Limitation: percs slowly slope	Limitation: percs slowly rooting depth wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly rooting depth
Ds: Dennis-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
Ea: Eram-----	Limitation: percs slowly depth to rock	Limitation: percs slowly wetness depth to rock	Limitation: erodes easily wetness depth to rock	Limitation: erodes easily wetness depth to rock
Ec: Eram-----	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope wetness	Limitation: erodes easily wetness depth to rock	Limitation: erodes easily wetness depth to rock
Collinsville---	Limitation: deep to water	Limitation: slope soil blowing depth to rock	Limitation: soil blowing depth to rock	Limitation: depth to rock
Iv: Ivan-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
Ke: Kenoma-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Ln: Longford-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
Lo: Longford, eroded	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
Lu: Lula-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily large stones	Limitation: erodes easily large stones
M-W: Miscellaneous Water-----	---	---	---	---
Ma: Martin-----	Limitation: frost action percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Mb: Martin-----	Limitation: frost action percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Mc: Martin-----	Limitation: frost action percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Me: Martin, eroded--	Limitation: frost action percs slowly slope	Limitation: percs slowly slope wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Ms: Martin-----	Limitation: frost action percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Dwight-----	Limitation: deep to water	Limitation: erodes easily excess sodium percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily excess sodium percs slowly
Mt: Mason-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Mx: Mason-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
Drummond-----	Limitation: excess sodium percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium droughty
Nd: Niotaze-----	Limitation: percs slowly slope depth to rock	Limitation: slope wetness droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope wetness
Darnell-----	Limitation: deep to water	Limitation: slope soil blowing depth to rock	Limitation: slope soil blowing depth to rock	Limitation: slope depth to rock
Oa: Osage-----	Limitation: flooding percs slowly	Limitation: flooding percs slowly wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
Oc: Osage-----	Limitation: flooding percs slowly	Limitation: percs slowly slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
Os: Osage-----	Limitation: flooding percs slowly	Limitation: flooding percs slowly wetness	Limitation: percs slowly wetness	Limitation: percs slowly wetness
Drummond-----	Limitation: excess sodium flooding percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium droughty
PIT: Pits-----	---	---	---	---
QUA: Quarry-----	---	---	---	---
So: Sogn-----	Limitation: deep to water	Limitation: depth to rock	Limitation: depth to rock	Limitation: depth to rock
St: Steedman-----	Limitation: percs slowly slope depth to rock	Limitation: slope wetness droughty	Limitation: slope wetness depth to rock	Limitation: slope wetness droughty
Sv: Stephenville---	Limitation: deep to water	Limitation: soil blowing depth to rock	Limitation: soil blowing depth to rock	Limitation: depth to rock
Sx: Stephenville---	Limitation: deep to water	Limitation: slope soil blowing depth to rock	Limitation: soil blowing depth to rock	Limitation: depth to rock

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Features affecting--			
	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Darnell-----	Limitation: deep to water	Limitation: slope soil blowing depth to rock	Limitation: soil blowing depth to rock	Limitation: depth to rock
Ve: Verdigris-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
W: Water-----	---	---	---	---

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Somewhat limited Depth to bedrock	0.06	Somewhat limited Thin layer Hard to pack	0.77 0.50	Very limited Deep to water	1.00
Sogn-----	30	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
035CC: Clime-----	60	Somewhat limited Depth to bedrock	0.03	Somewhat limited Thin layer Hard to pack	0.66 0.24	Very limited Deep to water	1.00
Sogn-----	20	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
035LA: Labette-----	85	Somewhat limited Depth to bedrock	0.66	Somewhat limited Thin layer Hard to pack	0.66 0.28	Very limited Deep to water	1.00
035MC: Martin, eroded-----	90	Not limited		Somewhat limited Hard to pack	0.61	Very limited Deep to water	1.00
035RA: Reading-----	85	Somewhat limited Seepage	0.57	Somewhat limited Piping	0.04	Very limited Deep to water	1.00
035SA: Smolan-----	90	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack	0.42	Very limited Deep to water	1.00
035SC: Smolan, eroded-----	90	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack	0.42	Very limited Deep to water	1.00
035SD: Sogn-----	90	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
035TA: Tabler-----	95	Not limited		Somewhat limited Depth to saturated zone Hard to pack	0.43 0.19	Very limited Deep to water	1.00
049CD: Catoosa-----	90	Somewhat limited Depth to bedrock Seepage	0.74 0.70	Somewhat limited Thin layer Piping	0.74 0.18	Very limited Deep to water	1.00
049CF: Catoosa-----	55	Somewhat limited Depth to bedrock Seepage	0.95 0.70	Somewhat limited Thin layer Piping	0.95 0.18	Very limited Deep to water	1.00
Sogn-----	35	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
049CK: Clime-----	100	Somewhat limited Slope Depth to bedrock	0.28 0.06	Somewhat limited Thin layer Hard to pack	0.77 0.38	Very limited Deep to water	1.00
049CS: Clime-----	65	Somewhat limited Depth to bedrock Slope	0.09 0.01	Somewhat limited Thin layer Hard to pack	0.83 0.35	Very limited Deep to water	1.00
Sogn-----	20	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
049EM: Eram-----	90	Somewhat limited		Very limited		Very limited	

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049KD: Kenoma-----	90	Depth to bedrock	0.06	Depth to saturated zone Thin layer Hard to pack	1.00 0.77 0.12	Deep to water	1.00
		Not limited		Somewhat limited Hard to pack	0.98	Very limited Deep to water	1.00
049LA: Labette-----	90	Somewhat limited Depth to bedrock	0.86	Somewhat limited Thin layer Hard to pack	0.86 0.28	Very limited Deep to water	1.00
049LD: Labette-----	65	Somewhat limited Depth to bedrock	0.86	Somewhat limited Thin layer Hard to pack	0.86 0.28	Very limited Deep to water	1.00
Dwight-----	35	Somewhat limited Depth to bedrock	0.37	Somewhat limited Hard to pack Thin layer	0.72 0.37	Very limited Deep to water	1.00
049ME: Martin, eroded-----	90	Not limited		Somewhat limited Hard to pack	0.72	Very limited Deep to water	1.00
049SH: Sogn-----	85	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
049ST: Steedman-----	85	Somewhat limited Depth to bedrock	0.03	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.99 0.66	Very limited Deep to water	1.00
		Slope	0.01				
049VD: Verdigris-----	85	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.85	Very limited Deep to water	1.00
125BG: Bates-----	45	Somewhat limited Seepage Depth to bedrock	0.70 0.09	Somewhat limited Thin layer Piping	0.83 0.33	Very limited Deep to water	1.00
Collinsville-----	40	Very limited Seepage Depth to bedrock Slope	1.00 1.00 0.00	Very limited Thin layer Seepage	1.00 0.09	Very limited Deep to water	1.00
125DB: Dennis-----	90	Not limited		Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
125EB: Eram-----	90	Somewhat limited Depth to bedrock	0.08	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.81 0.11	Very limited Deep to water	1.00
125ET: Eram-----	50	Somewhat limited Depth to bedrock	0.08	Very limited Hard to pack Depth to saturated zone Thin layer	1.00 1.00 0.81	Very limited Deep to water	1.00
Talihina-----	35	Very limited Seepage Depth to bedrock	1.00 0.58	Very limited Thin layer Depth to saturated zone	1.00 1.00	Very limited Deep to water	1.00
		Slope	0.01	Hard to pack	0.86		
125KA: Kenoma-----	90	Not limited		Very limited		Very limited	

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer- fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
125LA: Lanton-----	95	Somewhat limited Seepage	0.05	Depth to saturated zone Hard to pack	1.00 0.98	Very limited Deep to water	1.00
				Very limited Depth to saturated zone Piping	1.00 0.04		
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Ba: Bates-----	85	Somewhat limited Seepage Depth to bedrock	0.70 0.05	Very limited Piping Thin layer Seepage	1.00 0.74 0.06	Very limited Deep to water	1.00
Ca: Clareson-----	85	Somewhat limited Depth to bedrock Seepage	0.69 0.01	Somewhat limited Hard to pack Thin layer Content of large stones	0.76 0.70 0.06	Very limited Deep to water	1.00
Cs: Clareson-----	65	Somewhat limited Depth to bedrock Seepage	0.69 0.01	Somewhat limited Hard to pack Thin layer Content of large stones	0.76 0.70 0.06	Very limited Deep to water	1.00
Sogn-----	35	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
Ct: Cleora-----	90	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.09	Very limited Deep to water	1.00
Cx: Clime-----	62	Somewhat limited Depth to bedrock Slope	0.17 0.10	Somewhat limited Thin layer Hard to pack	0.91 0.27	Very limited Deep to water	1.00
Sogn-----	25	Very limited Seepage Depth to bedrock Slope	1.00 1.00 0.02	Very limited Thin layer	1.00	Very limited Deep to water	1.00
Db: Dennis-----	90	Not limited		Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Dc: Dennis-----	85	Not limited		Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
De: Dennis, eroded-----	85	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.12	Very limited Deep to water	1.00
DEE: Dennis-----	100	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00
Ds: Dennis-----	60	Not limited		Very limited Depth to saturated zone	1.00	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Dwight-----	23	Not limited		Somewhat limited Hard to pack	0.72	Very limited Deep to water	1.00
Ea: Eram-----	90	Somewhat limited Depth to bedrock	0.08	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.81 0.12	Very limited Deep to water	1.00
Ec: Eram-----	70	Somewhat limited Depth to bedrock	0.08	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.81 0.12	Very limited Deep to water	1.00
Collinsville-----	20	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Piping Thin layer	1.00 1.00	Very limited Deep to water	1.00
Iv: Ivan-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.36	Very limited Deep to water	1.00
Ke: Kenoma-----	90	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 0.91	Very limited Deep to water	1.00
Ln: Longford-----	90	Somewhat limited Seepage Depth to bedrock	0.05 0.03	Somewhat limited Hard to pack Thin layer	0.79 0.03	Very limited Deep to water	1.00
Lo: Longford, eroded----	90	Somewhat limited Seepage Depth to bedrock	0.05 0.03	Somewhat limited Hard to pack Thin layer	0.79 0.03	Very limited Deep to water	1.00
Lu: Lula-----	90	Somewhat limited Seepage Depth to bedrock	0.70 0.22	Somewhat limited Thin layer Piping	0.22 0.07	Very limited Deep to water	1.00
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.52 0.03	Very limited Deep to water	1.00
Mb: Martin-----	85	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Depth to saturated zone Thin layer	0.92 0.86 0.03	Very limited Slow refill Cutbanks cave Deep to water	1.00 0.10 0.06
Mc: Martin-----	85	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.52 0.03	Very limited Deep to water	1.00
Me: Martin, eroded-----	85	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.72 0.03	Very limited Deep to water	1.00
Ms: Martin-----	75	Somewhat limited Depth to bedrock	0.00	Somewhat limited Hard to pack Thin layer	0.52 0.03	Very limited Deep to water	1.00
Dwight-----	15	Not limited		Somewhat limited		Very limited	

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Mt: Mason-----	85	Somewhat limited Seepage	0.05	Hard to pack	0.72	Deep to water	1.00
Mx: Mason-----	75	Somewhat limited Seepage	0.05	Somewhat limited Piping	0.59	Very limited Deep to water	1.00
Drummond-----	15	Not limited		Not limited		Somewhat limited Deep to water Cutbanks cave Salty water	0.81 0.10 0.01
Nd: Niotaze-----	65	Somewhat limited Depth to bedrock Slope	0.17 0.02	Very limited Depth to saturated zone Thin layer Hard to pack	1.00 0.91 0.28	Very limited Slow refill Cutbanks cave	1.00 0.10
Darnell-----	20	Very limited Seepage Depth to bedrock Slope	1.00 0.69 0.02	Very limited Thin layer Seepage	1.00 0.07	Very limited Deep to water	1.00
Oa: Osage-----	85	Not limited		Very limited Ponding Depth to saturated zone Hard to pack	1.00 1.00 0.79	Very limited Slow refill Cutbanks cave	1.00 0.10
Oc: Osage-----	90	Not limited		Very limited Ponding Depth to saturated zone Hard to pack	1.00 1.00 0.92	Very limited Slow refill Cutbanks cave	1.00 0.10
Os: Osage-----	60	Not limited		Very limited Ponding Depth to saturated zone Hard to pack	1.00 1.00 0.79	Very limited Slow refill Cutbanks cave	1.00 0.10
Drummond-----	25	Not limited		Not limited		Somewhat limited Deep to water Cutbanks cave Salty water	0.81 0.10 0.01
PIT: Pits-----	100	Not rated		Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Very limited Seepage Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Deep to water	1.00
St: Steedman-----	100	Somewhat limited Depth to bedrock Slope	0.11 0.02	Very limited Depth to saturated zone Hard to pack Thin layer	1.00 0.99 0.86	Very limited Deep to water	1.00
Sv: Stephenville-----	85	Somewhat limited Seepage Depth to bedrock	0.70 0.05	Somewhat limited Piping Thin layer	0.98 0.74	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Pond Reservoir Area		Embankments, Dikes, and Levees		Excavated Ponds (Aquifer-fed)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sx: Stephenville-----	60	Somewhat limited Seepage Depth to bedrock	0.70 0.05	Somewhat limited Piping Thin layer Seepage	0.03 0.95 0.74 0.03	Very limited Deep to water	1.00
Darnell-----	25	Very limited Seepage Depth to bedrock	1.00 0.69	Very limited Thin layer Seepage	1.00 0.07	Very limited Deep to water	1.00
Ve: Verdigris-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.46	Very limited Deep to water	1.00
W: Water-----	100	Not rated		Not rated		Not rated	

SANITARY FACILITIES
Chautauqua County, Kansas

Sanitary Facilities

The following tables show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A trench sanitary landfill is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

SANITARY FACILITIES
Chautauqua County, Kansas

In an area sanitary landfill, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Very limited Restricted permeability Depth to bedrock Slope	1.00 1.00 0.04	Very limited Depth to soft bedrock Slope	1.00 1.00
Sogn-----	30	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to hard bedrock Slope	1.00 1.00
035CC: Clime-----	60	Very limited Restricted permeability Depth to bedrock Slope	1.00 1.00 0.04	Very limited Depth to soft bedrock Slope	1.00 1.00
Sogn-----	20	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to hard bedrock Slope	1.00 1.00
035LA: Labette-----	85	Very limited Restricted permeability Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 0.00
035MC: Martin, eroded-----	90	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
035RA: Reading-----	85	Somewhat limited Restricted permeability Flooding	0.68 0.40	Somewhat limited Flooding Seepage	0.40 0.32
035SA: Smolan-----	90	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
035SC: Smolan, eroded-----	90	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
035SD: Sogn-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00 0.67
035TA: Tabler-----	95	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
049CD: Catoosa-----	90	Very limited Depth to bedrock Restricted permeability	1.00 0.50	Very limited Depth to hard bedrock Seepage	1.00 0.50
049CF: Catoosa-----	55	Very limited Depth to bedrock Restricted permeability	1.00 0.50	Very limited Depth to hard bedrock Seepage Slope	1.00 0.50 0.33
Sogn-----	35	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00 0.33
049CK: Clime-----	100	Very limited Restricted permeability Depth to bedrock Slope	1.00 1.00 1.00	Very limited Depth to soft bedrock Slope	1.00 1.00
049CS: Clime-----	65	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	20	Depth to bedrock	1.00	Slope	1.00
		Slope	0.84	Very limited	
		Very limited		Depth to hard bedrock	1.00
049EM: Eram-----	90	Depth to bedrock	1.00	Slope	1.00
		Slope	0.00	Very limited	
		Very limited		Depth to soft bedrock	1.00
049KD: Kenoma-----	90	Depth to bedrock	1.00	Slope	0.09
		Slope	1.00	Very limited	
		Restricted permeability	1.00	Depth to saturated zone	
049LA: Labette-----	90	Depth to bedrock	1.00	Somewhat limited	
		Slope	1.00	Slope	0.00
		Restricted permeability	1.00	Very limited	
049LD: Labette-----	65	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	0.09
		Very limited		Very limited	
Dwight-----	35	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	0.00
		Very limited		Somewhat limited	
049ME: Martin, eroded-----	90	Depth to bedrock	0.99	Depth to hard bedrock	0.96
		Slope	1.00	Slope	0.00
		Very limited		Somewhat limited	
049SH: Sogn-----	85	Depth to bedrock	1.00	Slope	0.67
		Slope	1.00	Very limited	
		Very limited		Depth to hard bedrock	1.00
049ST: Steedman-----	85	Depth to bedrock	1.00	Slope	0.00
		Slope	1.00	Very limited	
		Restricted permeability	1.00	Depth to soft bedrock	1.00
049VD: Verdigris-----	85	Depth to bedrock	1.00	Slope	1.00
		Slope	0.84	Depth to saturated zone	0.00
		Very limited		Very limited	
125BG: Bates-----	45	Depth to bedrock	1.00	Flooding	1.00
		Slope	1.00	Restricted permeability	0.50
		Very limited		Seepage	0.50
Collinsville-----	40	Depth to bedrock	1.00	Very limited	
		Slope	0.63	Depth to soft bedrock	1.00
		Very limited		Slope	1.00
125DB: Dennis-----	90	Depth to bedrock	1.00	Seepage	0.50
		Slope	1.00	Very limited	
		Very limited		Depth to hard bedrock	1.00
125EB: Eram-----	90	Depth to bedrock	1.00	Seepage	1.00
		Slope	1.00	Slope	1.00
		Very limited		Somewhat limited	
125ET: Eram-----	50	Depth to bedrock	1.00	Slope	0.09
		Slope	1.00	Very limited	
		Very limited		Depth to soft bedrock	1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Talihina-----	35	Restricted permeability	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.25
		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
125KA: Kenoma-----	90	Slope	0.84	Depth to saturated zone	0.25
		Very limited		Not limited	
125LA: Lanton-----	95	Restricted permeability	1.00		
		Depth to saturated zone	1.00		
		Very limited		Very limited	
AED: Arents, Earthen Dam-----	100	Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	0.00
		Depth to saturated zone	1.00		
Ba: Bates-----	85	Not rated		Not rated	
		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
Ca: Clareson-----	85	Restricted permeability	0.50	Seepage	0.50
				Slope	0.09
		Very limited		Very limited	
Cs: Clareson-----	65	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	1.00		
		Content of large stones	0.06		
Sogn-----	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.00
Ct: Cleora-----	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
Cx: Clime-----	62	Seepage	1.00	Seepage	1.00
		Very limited		Very limited	
		Restricted permeability	1.00	Depth to soft bedrock	1.00
Sogn-----	25	Depth to bedrock	1.00	Slope	1.00
		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
Db: Dennis-----	90	Slope	0.96	Slope	1.00
		Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.00
Dc: Dennis-----	85	Depth to saturated zone	1.00		
		Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.67

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
De: Dennis, eroded-----	85	Depth to saturated zone	1.00	Somewhat limited Slope	0.67
		Very limited Restricted permeability	1.00		
		Depth to saturated zone	1.00		
DEE: Dennis-----	100	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.91
		Depth to saturated zone	1.00		
Ds: Dennis-----	60	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to saturated zone	1.00		
Dwight-----	23	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
Ea: Eram-----	90	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock Slope	1.00
		Depth to bedrock	1.00		
		Depth to saturated zone	1.00		
Ec: Eram-----	70	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock Slope	1.00
		Depth to bedrock	1.00		
		Depth to saturated zone	1.00		
Collinsville-----	20	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00
Iv: Ivan-----	90	Very limited Flooding	1.00	Very limited Flooding Seepage	1.00
		Restricted permeability	0.50		
Ke: Kenoma-----	90	Very limited Restricted permeability	1.00	Not limited	
		Depth to saturated zone	1.00		
Ln: Longford-----	90	Very limited Restricted permeability	1.00	Somewhat limited Depth to hard bedrock Slope	0.13
		Depth to bedrock	0.59		
Lo: Longford, eroded----	90	Very limited Restricted permeability	1.00	Somewhat limited Depth to hard bedrock Slope	0.13
		Depth to bedrock	0.59		
Lu: Lula-----	90	Somewhat limited Depth to bedrock	0.91	Somewhat limited Depth to hard bedrock Seepage	0.77
		Restricted permeability	0.50		
M-W: Miscellaneous Water-	100	Not rated		Not rated	
Ma: Martin-----	95	Very limited Restricted permeability	1.00	Somewhat limited Depth to soft bedrock	0.13
		Depth to bedrock	0.59		
Mb: Martin-----	85	Very limited Restricted permeability	1.00	Very limited Depth to saturated zone	1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Mc: Martin-----	85	Depth to saturated zone	1.00	Depth to soft bedrock	0.13
		Depth to bedrock	0.59	Slope	0.09
Me: Martin, eroded-----	85	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.91
		Depth to bedrock	0.59	Depth to soft bedrock	0.13
Ms: Martin-----	75	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.67
		Depth to bedrock	0.59	Depth to soft bedrock	0.13
Dwight-----	15	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Depth to bedrock	0.59	Depth to soft bedrock	0.13
Mt: Mason-----	85	Very limited Restricted permeability	1.00	Somewhat limited Flooding	0.40
		Flooding	0.40		
Mx: Mason-----	75	Very limited Restricted permeability	1.00	Somewhat limited Flooding	0.40
		Flooding	0.40		
Drummond-----	15	Very limited Restricted permeability	1.00	Somewhat limited Depth to saturated zone	0.71
		Depth to saturated zone	1.00	Flooding	0.40
Nd: Niotaze-----	65	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
Darnell-----	20	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.96	Very limited Depth to soft bedrock	1.00
Oa: Osage-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	1.00
Oc: Osage-----	90	Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
Os: Osage-----	60	Very limited Flooding	1.00	Very limited Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	1.00
Drummond-----	25	Ponding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Very limited		Very limited	

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	0.71
		Depth to saturated zone	1.00		
PIT: Pits-----	100	Not rated		Not rated	
QUA: Quarry-----	100	Not rated		Not rated	
So: Sogn-----	90	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00 0.00
St: Steedman-----	100	Very limited Restricted permeability Depth to bedrock Depth to saturated zone Slope	1.00 1.00 1.00 0.96	Very limited Depth to soft bedrock Slope Depth to saturated zone	1.00 1.00 0.00
Sv: Stephenville-----	85	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage	1.00 0.50
		Restricted permeability	0.50	Slope	0.09
Sx: Stephenville-----	60	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 0.50 0.09
Darnell-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 1.00 0.09
Ve: Verdigris-----	90	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
W: Water-----	100	Not rated		Not rated	

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Very limited Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Too clayey Hard to compact Slope	1.00 1.00 1.00 0.04
Sogn-----	30	Very limited Depth to bedrock Seepage Too clayey Slope	1.00 1.00 0.50 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Hard to compact Too clayey Slope	1.00 1.00 0.50 0.04
035CC: Clime-----	60	Very limited Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Too clayey Hard to compact Slope	1.00 1.00 1.00 0.04
Sogn-----	20	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.04	Very limited Depth to bedrock Slope	1.00 0.04	Very limited Depth to bedrock Hard to compact Too acid Seepage Slope	1.00 1.00 1.00 1.00 0.04
035LA: Labette-----	85	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Hard to compact Gravel content	1.00 1.00 1.00 0.04
035MC: Martin, eroded-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
035RA: Reading-----	85	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
035SA: Smolan-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
035SC: Smolan, eroded-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
035SD: Sogn-----	90	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too acid Seepage	1.00 1.00 1.00 1.00
035TA: Tabler-----	95	Very limited Too clayey Depth to saturated zone	1.00 0.44	Not limited		Very limited Too clayey Hard to compact Depth to saturated zone	1.00 1.00 0.09
049CD: Catoosa-----	90	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
049CF: Catoosa-----	55	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Sogn-----	35	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too clayey	1.00 1.00 0.50
049CK: Clime-----	100	Very limited Slope Depth to bedrock Too clayey Seepage	1.00 1.00 1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Slope Too clayey Hard to compact	1.00 1.00 1.00 1.00
049CS: Clime-----	65	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock Slope	1.00 0.84	Very limited Depth to bedrock Too clayey	1.00 1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	20	Seepage Slope Very limited Depth to bedrock Seepage Too clayey Slope	1.00 0.84 1.00 1.00 0.50 1.00	Very limited Depth to bedrock Slope	1.00 0.00	Hard to compact Slope Very limited Depth to bedrock Hard to compact Too clayey Slope	1.00 0.84 1.00 1.00 0.50 0.00
049EM: Eram-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
049KD: Kenoma-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
049LA: Labette-----	90	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Hard to compact Gravel content	1.00 1.00 1.00 0.00
049LD: Labette-----	65	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too clayey Gravel content	1.00 1.00 0.50 0.00
Dwight-----	35	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Somewhat limited Depth to bedrock	0.96	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.96
049ME: Martin, eroded-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
049SH: Sogn-----	85	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too clayey	1.00 1.00 0.50
049ST: Steedman-----	85	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 1.00 0.84	Very limited Depth to bedrock Depth to saturated zone Slope	1.00 1.00 0.84	Very limited Depth to bedrock Too clayey Hard to compact Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.84
049VD: Verdigris-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
125BG: Bates-----	45	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Collinsville-----	40	Very limited Depth to bedrock Seepage Slope	1.00 1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope Seepage	1.00 0.63 0.50
125DB: Dennis-----	90	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
125EB: Eram-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
125ET: Eram-----	50	Very limited		Very limited		Very limited	

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Talihina-----	35	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Depth to saturated zone	0.75	Too clayey	1.00
		Seepage	1.00	Very limited	1.00	Hard to compact	1.00
		Depth to saturated zone	1.00			Depth to saturated zone	0.86
125KA: Kenoma-----	90	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.84	Depth to bedrock	1.00
		Too clayey	1.00	Depth to saturated zone	0.75	Too clayey	1.00
		Seepage	1.00	Very limited	1.00	Hard to compact	1.00
Depth to saturated zone	1.00	Depth to saturated zone	0.86				
125LA: Lanton-----	95	Slope	0.84	Slope	0.84	Slope	0.84
		Very limited	1.00	Very limited	1.00	Very limited	1.00
AED: Arents, Earthen Dam-	100	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
		Too clayey	1.00	Very limited	1.00	Hard to compact	1.00
Ba: Bates-----	85	Very limited	1.00			Very limited	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Ca: Clareson-----	85	Seepage	1.00	Very limited	1.00	Very limited	1.00
		Content of large stones	0.06			Depth to bedrock	1.00
Cs: Clareson-----	65	Depth to bedrock	1.00	Very limited	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
Sogn-----	35	Seepage	1.00	Depth to bedrock	1.00	Content of large stones	0.06
		Content of large stones	0.06	Very limited	1.00	Very limited	1.00
Ct: Cleora-----	90	Very limited	1.00			Very limited	1.00
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
Cx: Clime-----	62	Seepage	1.00	Seepage	1.00	Content of large stones	0.06
		Too Sandy	1.00	Very limited	1.00	Very limited	1.00
Sogn-----	25	Very limited	1.00			Very limited	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.96	Hard to compact	1.00
Db: Dennis-----	90	Seepage	1.00	Slope	0.96	Too acid	1.00
		Slope	0.96	Very limited	1.00	Seepage	1.00
Dc: Dennis-----	85	Very limited	1.00			Very limited	1.00
		Depth to saturated zone	0.50	Depth to saturated zone	1.00	Very limited	1.00
Dc: Dennis-----	85	Too clayey	0.50	Very limited	1.00	Depth to saturated zone	1.00
		Very limited	1.00			Hard to compact	1.00
Dc: Dennis-----	85	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Very limited	1.00	Very limited	1.00	Depth to saturated zone	1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
De: Dennis, eroded-----	85	Too clayey	0.50			Hard to compact Too clayey	1.00 0.50
		Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
DEE: Dennis-----	100	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
Ds: Dennis-----	60	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50
Dwight-----	23	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Ea: Eram-----	90	Very limited Depth to saturated zone Depth to bedrock Too clayey	1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
		Seepage	1.00				
Ec: Eram-----	70	Very limited Depth to saturated zone Depth to bedrock Too clayey	1.00 1.00 1.00	Very limited Depth to saturated zone Depth to bedrock	1.00 1.00	Very limited Depth to bedrock Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00 1.00
		Seepage	1.00				
Collinsville-----	20	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
Iv: Ivan-----	90	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
Ke: Kenoma-----	90	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Depth to saturated zone Hard to compact	1.00 1.00 1.00
Ln: Longford-----	90	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Somewhat limited Depth to bedrock	0.13	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.13
Lo: Longford, eroded----	90	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Somewhat limited Depth to bedrock	0.13	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.13
Lu: Lula-----	90	Very limited Depth to bedrock Seepage Too clayey	1.00 1.00 0.50	Somewhat limited Depth to bedrock	0.77	Somewhat limited Depth to bedrock Too clayey	0.77 0.50
M-W: Miscellaneous Water-	100	Not rated		Not rated		Not rated	
Ma: Martin-----	95	Very limited Depth to bedrock Too clayey Seepage	1.00 1.00 1.00	Somewhat limited Depth to bedrock	0.13	Very limited Too clayey Hard to compact Depth to bedrock	1.00 1.00 0.13
Mb: Martin-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey	1.00

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Mc: Martin-----	85	Depth to bedrock	1.00	Depth to bedrock	0.13	Hard to compact	1.00
		Too clayey	1.00			Depth to saturated zone	0.47
		Seepage	1.00			Depth to bedrock	0.13
Me: Martin, eroded-----	85	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.13	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
Ms: Martin-----	75	Seepage	1.00			Depth to bedrock	0.13
		Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.13	Too clayey	1.00
Dwight-----	15	Too clayey	1.00			Hard to compact	1.00
		Seepage	1.00			Depth to bedrock	0.13
		Very limited		Not limited		Very limited	
Mt: Mason-----	85	Too clayey	1.00			Too clayey	1.00
		Flooding	0.50	Somewhat limited		Hard to compact	1.00
			0.40	Flooding	0.40	Depth to bedrock	0.13
Mx: Mason-----	75	Very limited		Somewhat limited		Very limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
Drummond-----	15	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
		Seepage	1.00	Flooding	0.40		
Nd: Niotaze-----	65	Flooding	0.40				
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
Darnell-----	20	Too clayey	1.00	Depth to bedrock	1.00	Too clayey	1.00
		Seepage	1.00	Slope	0.96	Hard to compact	1.00
		Slope	0.96			Depth to saturated zone	1.00
Oa: Osage-----	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
Oc: Osage-----	90	Ponding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
		Very limited		Very limited		Very limited	
Os: Osage-----	60	Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
Drummond-----	25	Too clayey	1.00			Hard to compact	1.00
		Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
PIT: Pits-----	100	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Seepage	1.00				
		Too clayey	0.50				
		Not rated		Not rated		Not rated	

SANITARY FACILITIES--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact Too acid Seepage	1.00 1.00 1.00 1.00
St: Steedman-----	100	Very limited Depth to saturated zone Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 1.00 1.00 0.96	Very limited Depth to bedrock Depth to saturated zone Slope	1.00 1.00 0.96	Very limited Depth to bedrock Too clayey Hard to compact Gravel content Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
Sv: Stephenville-----	85	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Sx: Stephenville-----	60	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Darnell-----	25	Very limited Depth to bedrock Seepage	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
Ve: Verdigris-----	90	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
W: Water-----	100	Not rated		Not rated		Not rated	

AGRICULTURAL WASTE MANAGEMENT
Chautauqua County, Kansas

The nature of the soil is also important in the application of organic wastes and wastewater to land as fertilizers and irrigation; it is also important when the soil is used as a medium for treatment and disposal of these wastes. Favorable soil properties are required to prevent environmental damage.

The use of organic wastes and wastewater as production resources will result in energy conservation, prevent the waste of these important resources, and prevent problems associated with their disposal. Where disposal is the goal, and a maximum amount is disposed in a minimum area to hold costs to a minimum, risk of environmental damage is the principal constraint. Where the reuse goal is pursued, and a minimum amount is applied to a maximum area to obtain the greatest benefit, environmental damage is unlikely.

Interpretations developed for waste management may include ratings for (1) manure and food processing wastes; (2) municipal sewage sludge; (3) irrigation use of wastewater; or (4) treatment of wastewater by the slow rate process, overland flow process, or rapid infiltration process. If available, these should be located in this subsection.

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

The Ag-Waste tables show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, phosphorus, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are generally favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

AGRICULTURAL WASTE MANAGEMENT
Chautauqua County, Kansas

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding.

The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

See the National Soil Handbook, September 1992, Part 620, for criteria used in rating soils for sanitary facilities and waste management.

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
015CS: Clime-----	67	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	0.29	Restricted permeability	0.29	Restricted permeability	1.00
		Droughty		Droughty		Too steep for surface application	
Sogn-----	30	Depth to bedrock	0.20	Depth to bedrock	0.20	Droughty	0.29
		Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
						Depth to bedrock	0.20
035CC: Clime-----	60	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	0.40	Depth to bedrock	1.00	Depth to bedrock	1.00
Sogn-----	20	Runoff limitation	0.40	Slope	0.04	Too steep for surface application	1.00
		Slope	0.04			Too steep for sprinkler application	0.22
035LA: Labette-----	85	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	0.06	Restricted permeability	0.14	Restricted permeability	0.14
		Depth to bedrock	0.03	Too acid	0.06	Too acid	0.06
035MC: Martin, eroded-----	90	Too acid	0.03	Depth to bedrock	0.06	Depth to bedrock	0.06
		Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	0.03	Restricted permeability	0.14	Restricted permeability	1.00
035RA: Reading-----	85	Too acid	0.03	Too acid	0.14	Too steep for surface application	0.31
						Too acid	0.14
		Somewhat limited	0.03	Somewhat limited	0.40	Somewhat limited	0.14
035SA: Smolan-----	90	Flooding	0.03	Flooding	0.40	Too acid	0.14
		Too acid	0.03	Too acid	0.14		
035SC: Smolan, eroded-----	90	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
						Too steep for surface application	0.31
035SD: Sogn-----	90	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	0.40	Depth to bedrock	1.00	Depth to bedrock	1.00
				Too steep for surface application	0.31		

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
035TA: Tabler-----	95	Very limited Restricted permeability Depth to saturated zone Runoff limitation	1.00 0.43 0.40	Very limited Restricted permeability Depth to saturated zone	1.00 0.43	Very limited Restricted permeability Depth to saturated zone	1.00 0.43
049CD: Catoosa-----	90	Somewhat limited Depth to bedrock Too acid	0.16 0.03	Somewhat limited Depth to bedrock Too acid	0.16 0.14	Somewhat limited Depth to bedrock Too acid	0.16 0.14
049CF: Catoosa-----	55	Somewhat limited Depth to bedrock Droughty Too acid	0.80 0.18 0.03	Somewhat limited Depth to bedrock Droughty Too acid	0.80 0.18 0.14	Somewhat limited Depth to bedrock Droughty Too acid Too steep for surface application	0.80 0.18 0.14 0.08
Sogn-----	35	Very limited Depth to bedrock Droughty Runoff limitation	1.00 1.00 0.40	Very limited Droughty Depth to bedrock	1.00 1.00	Very limited Droughty Depth to bedrock Too steep for surface application	1.00 1.00 0.08
049CK: Clime-----	100	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Too steep for surface application	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
		Depth to bedrock	0.20	Depth to bedrock	0.20	Restricted permeability	1.00
		Droughty	0.09	Droughty	0.09	Depth to bedrock Droughty	0.20 0.09
049CS: Clime-----	65	Very limited Restricted permeability Slope	1.00 0.84	Very limited Restricted permeability Slope	1.00 0.84	Very limited Restricted permeability Too steep for surface application	1.00 1.00
		Droughty	0.61	Droughty	0.61	Too steep for sprinkler application	0.89
		Depth to bedrock	0.35	Depth to bedrock	0.35	Droughty Depth to bedrock	0.61 0.35
Sogn-----	20	Very limited Depth to bedrock Droughty Runoff limitation	1.00 1.00 0.40	Very limited Droughty Depth to bedrock Slope	1.00 1.00 0.00	Very limited Droughty Depth to bedrock Too steep for surface application	1.00 1.00 1.00
		Slope	0.00			Too steep for sprinkler application	0.10
049EM: Eram-----	90	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.20 0.18 0.03	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.20 0.18 0.14	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.20 0.18 0.14
049KD: Kenoma-----	90	Very limited Restricted permeability Runoff limitation Too acid	1.00 0.40 0.11	Very limited Restricted permeability Too acid	1.00 0.42	Very limited Restricted permeability Too acid	1.00 0.42
049LA: Labette-----	90	Very limited Restricted permeability Depth to bedrock	1.00 0.46	Very limited Restricted permeability Depth to bedrock	1.00 0.46	Very limited Restricted permeability Depth to bedrock	1.00 0.46

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
049LD: Labette-----	65	Droughty	0.13	Too acid	0.14	Too acid	0.14
		Too acid	0.03	Droughty	0.13	Droughty	0.13
Dwight-----	35	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	0.46	Restricted permeability	0.46	Restricted permeability	0.46
049ME: Martin, eroded-----	90	Depth to bedrock	0.13	Depth to bedrock	0.14	Depth to bedrock	0.14
		Droughty	0.03	Too acid	0.13	Too acid	0.13
049SH: Sogn-----	85	Too acid	1.00	Droughty	1.00	Droughty	1.00
		Very limited	0.40	Restricted permeability	0.02	Restricted permeability	0.02
049ST: Steedman-----	85	Runoff limitation	0.02	Droughty	0.02	Droughty	0.02
		Droughty	1.00	Very limited	1.00	Very limited	1.00
049VD: Verdigris-----	85	Restricted permeability	0.03	Restricted permeability	0.14	Restricted permeability	0.31
		Too acid	1.00	Too acid	0.14	Too steep for surface application	0.14
125BG: Bates-----	45	Too acid	1.00	Too acid	1.00	Too acid	1.00
		Very limited	1.00	Droughty	1.00	Droughty	1.00
Collinsville-----	40	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
125DB: Dennis-----	90	Slope	0.84	Slope	0.84	Slope	1.00
		Very limited	0.49	Very limited	0.49	Very limited	0.89
125BG: Bates-----	45	Droughty	0.49	Droughty	0.49	Too steep for sprinkler application	0.89
		Too acid	0.11	Too acid	0.42	Too steep for sprinkler application	0.49
Collinsville-----	40	Too acid	1.00	Too acid	1.00	Droughty	1.00
		Very limited	1.00	Very limited	1.00	Depth to bedrock	1.00
125DB: Dennis-----	90	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
		Somewhat limited	0.35	Somewhat limited	0.35	Too steep for surface application	0.66
Collinsville-----	40	Depth to bedrock	0.35	Depth to bedrock	0.35	Too steep for surface application	0.35
		Restricted permeability	0.30	Restricted permeability	0.22	Depth to bedrock	0.35
125DB: Dennis-----	90	Too acid	0.02	Too acid	0.07	Restricted permeability	0.22
		Very limited	1.00	Very limited	1.00	Too acid	0.07
Collinsville-----	40	Too acid	0.02	Too acid	0.07	Too steep for sprinkler application	0.00
		Very limited	1.00	Very limited	1.00	Very limited	1.00
125DB: Dennis-----	90	Depth to bedrock	1.00	Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Droughty	1.00	Depth to bedrock	1.00
Collinsville-----	40	Slope	0.63	Too acid	0.77	Too steep for surface application	1.00
		Runoff limitation	0.40	Slope	0.63	Too steep for surface application	0.77
125DB: Dennis-----	90	Too acid	0.22	Filtering capacity	0.00	Too acid	0.77
		Very limited	1.00	Very limited	1.00	Too steep for sprinkler application	0.77
Collinsville-----	40	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
125DB: Dennis-----	90	Too acid	0.18	Too acid	0.67	Too acid	0.67

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
125EB: Eram-----	90	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.29 0.23 0.03	Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	1.00 1.00 0.29 0.23 0.14	Too steep for surface application Very limited Depth to saturated zone Restricted permeability Depth to bedrock Droughty Too acid	0.00 1.00 1.00 0.29 0.23 0.14
125ET: Eram-----	50	Very limited Restricted permeability Depth to saturated zone Depth to bedrock	1.00 1.00 0.29	Very limited Restricted permeability Depth to saturated zone Depth to bedrock	1.00 1.00 0.29	Very limited Restricted permeability Depth to saturated zone Too steep for surface application Depth to bedrock Droughty Too acid	1.00 1.00 0.91 0.29 0.23 0.14
Talihina-----	35	Droughty Too acid Very limited Depth to bedrock Restricted permeability Droughty Depth to saturated zone Slope	0.23 0.03 1.00 1.00 1.00 1.00 0.84	Droughty Too acid Very limited Depth to bedrock Droughty Restricted permeability Depth to saturated zone Slope	0.23 0.14 1.00 1.00 1.00 1.00 0.84	Depth to bedrock Droughty Very limited Depth to bedrock Droughty Restricted permeability Too steep for surface application Depth to saturated zone	0.29 0.23 1.00 1.00 1.00 1.00 1.00
125KA: Kenoma-----	90	Very limited Restricted permeability Depth to saturated zone Runoff limitation Too acid	1.00 1.00 0.40 0.11	Very limited Restricted permeability Depth to saturated zone Too acid	1.00 1.00 0.42	Very limited Restricted permeability Depth to saturated zone Too acid	1.00 1.00 0.42
125LA: Lanton-----	95	Very limited Restricted permeability Depth to saturated zone Flooding Too acid	1.00 1.00 0.60 0.03	Very limited Flooding Depth to saturated zone Restricted permeability Too acid	1.00 1.00 1.00 0.14	Very limited Depth to saturated zone Restricted permeability Flooding Too acid	1.00 1.00 0.60 0.14
AED: Arents, Earthen Dam-	100	Not rated		Not rated		Not rated	
Ba: Bates-----	85	Somewhat limited Depth to bedrock Too acid Droughty Filtering capacity	0.16 0.11 0.02 0.00	Somewhat limited Too acid Depth to bedrock Droughty Filtering capacity	0.42 0.16 0.02 0.00	Somewhat limited Too acid Depth to bedrock Droughty Filtering capacity Too steep for surface application	0.42 0.16 0.02 0.00 0.00
Ca: Clareson-----	85	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.89 0.58 0.10	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.78 0.58 0.10	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.78 0.58 0.10
Cs: Clareson-----	65	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.89 0.58 0.10	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.78 0.58 0.10	Somewhat limited Restricted permeability Droughty Depth to bedrock	0.78 0.58 0.10

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sogn-----	35	Very limited Depth to bedrock Droughty Runoff limitation	1.00 1.00 0.40	Very limited Droughty Depth to bedrock	1.00 1.00	Very limited Droughty Depth to bedrock	1.00 1.00
Ct: Cleora-----	90	Somewhat limited Flooding Filtering capacity	0.60 0.00	Very limited Flooding Filtering capacity	1.00 0.00	Somewhat limited Flooding Filtering capacity	0.60 0.00
Cx: Clime-----	62	Very limited Restricted permeability Slope Droughty	1.00 1.00 0.87	Very limited Restricted permeability Slope Droughty	1.00 1.00 0.87	Very limited Too steep for surface application Restricted permeability Too steep for sprinkler application Droughty Depth to bedrock	1.00 1.00 1.00 0.87 0.65
Sogn-----	25	Very limited Depth to bedrock Droughty Slope Runoff limitation	1.00 1.00 0.96 0.40	Very limited Droughty Depth to bedrock Slope	1.00 1.00 0.96	Very limited Droughty Depth to bedrock Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00 0.97
Db: Dennis-----	90	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67
Dc: Dennis-----	85	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application	1.00 1.00 0.67 0.31
De: Dennis, eroded-----	85	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application	1.00 1.00 0.67 0.31
DEE: Dennis-----	100	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid Too steep for surface application Too steep for sprinkler application	1.00 1.00 0.67 0.66 0.00
Ds: Dennis-----	60	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.18	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.67
Dwight-----	23	Very limited		Very limited		Very limited	

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ea: Eram-----	90	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40				
		Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ec: Eram-----	70	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Droughty	0.29	Droughty	0.29	Droughty	0.29
		Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
		Too acid	0.03	Too acid	0.14	Too acid	0.14
Collinsville-----	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Runoff limitation	0.40	Too acid	0.77	Too acid	0.77
Iv: Ivan-----	90	Too acid	0.22	Filtering capacity	0.00	Too steep for surface application	0.08
		Filtering capacity	0.00			Filtering capacity	0.00
		Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
Ke: Kenoma-----	90	Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40	Too acid	0.42	Too acid	0.42
Ln: Longford-----	90	Too acid	0.11				
		Somewhat limited		Somewhat limited		Somewhat limited	
Lo: Longford, eroded---	90	Restricted permeability	0.89	Restricted permeability	0.78	Restricted permeability	0.78
						Too steep for surface application	0.00
Lu: Lula-----	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.89	Restricted permeability	0.78	Restricted permeability	0.78
M-W: Miscellaneous Water-	100	Too acid	0.03	Too acid	0.14	Too acid	0.14
		Not rated		Not rated		Not rated	
Ma: Martin-----	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Mb: Martin-----	85	Too acid	0.03	Too acid	0.14	Too acid	0.14
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
		Too acid	0.03	Too acid	0.14	Too acid	0.14
						Too steep for surface application	0.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

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Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Mc: Martin-----	85	Very limited Restricted permeability Too acid	1.00 0.03	Very limited Restricted permeability Too acid	1.00 0.14	Very limited Restricted permeability Too steep for surface application Too acid Too steep for sprinkler application	1.00 0.66 0.14 0.00
Me: Martin, eroded-----	85	Very limited Restricted permeability Too acid	1.00 0.03	Very limited Restricted permeability Too acid	1.00 0.14	Very limited Restricted permeability Too steep for surface application Too acid	1.00 0.31 0.14
Ms: Martin-----	75	Very limited Restricted permeability Too acid	1.00 0.03	Very limited Restricted permeability Too acid	1.00 0.14	Very limited Restricted permeability Too acid	1.00 0.14
Dwight-----	15	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Mt: Mason-----	85	Somewhat limited Restricted permeability Too acid	0.30 0.02	Somewhat limited Flooding Restricted permeability Too acid	0.40 0.22 0.07	Somewhat limited Restricted permeability Too acid	0.22 0.07
Mx: Mason-----	75	Somewhat limited Restricted permeability Too acid	0.30 0.02	Somewhat limited Flooding Restricted permeability Too acid	0.40 0.22 0.07	Somewhat limited Restricted permeability Too acid	0.22 0.07
Drummond-----	15	Very limited Restricted permeability Droughty Runoff limitation Salinity	1.00 0.73 0.40 0.01	Very limited Restricted permeability Droughty Flooding	1.00 0.73 0.40	Very limited Restricted permeability Droughty	1.00 0.73
Nd: Niotaze-----	65	Very limited Restricted permeability Depth to saturated zone Cobble content Slope Droughty	1.00 1.00 1.00 0.96 0.90	Very limited Depth to saturated zone Restricted permeability Cobble content Slope Droughty	1.00 1.00 1.00 0.96 0.90	Very limited Depth to saturated zone Too steep for surface application Restricted permeability Cobble content Too steep for sprinkler application	1.00 1.00 1.00 1.00 1.00 0.97
Darnell-----	20	Very limited Depth to bedrock Droughty Slope Too acid Filtering capacity	1.00 1.00 0.96 0.02 0.00	Very limited Droughty Depth to bedrock Slope Too acid Filtering capacity	1.00 1.00 0.96 0.07 0.00	Very limited Droughty Depth to bedrock Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 1.00 0.97 0.07
Oa: Osage-----	85	Very limited Restricted permeability Ponding	1.00 1.00	Very limited Restricted permeability Ponding	1.00 1.00	Very limited Restricted permeability Ponding	1.00 1.00

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Oc: Osage-----	90	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00	Flooding	0.60
		Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
Os: Osage-----	60	Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00	Flooding	0.60
Drummond-----	25	Runoff limitation	0.40	Runoff limitation	0.40	Runoff limitation	0.40
		Flooding	0.60	Flooding	1.00	Flooding	0.60
		Too acid	0.07	Too acid	0.07	Too acid	0.07
		Very limited	1.00	Very limited	1.00	Very limited	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
PIT: Pits-----	100	Droughty	0.73	Flooding	1.00	Droughty	0.73
		Flooding	0.60	Droughty	0.73	Flooding	0.60
		Runoff limitation	0.40				
		Salinity	0.01				
Not rated		Not rated		Not rated			
QUA: Quarry-----	100	Not rated		Not rated		Not rated	
So: Sogn-----	90	Very limited	1.00	Very limited	1.00	Very limited	1.00
Droughty	1.00	Droughty	1.00	Droughty	1.00	Droughty	1.00
Runoff limitation	0.40	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
St: Steedman-----	100	Very limited	1.00	Very limited	1.00	Very limited	1.00
Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
Slope	0.96	Slope	0.96	Slope	0.96	Restricted permeability	1.00
Droughty	0.92	Droughty	0.92	Droughty	0.92	Too steep for sprinkler application	0.97
Depth to bedrock	0.46	Depth to bedrock	0.46	Depth to bedrock	0.46	Droughty	0.92
Sv: Stephenville-----	85	Somewhat limited	0.42	Somewhat limited	0.42	Somewhat limited	0.42
Droughty	0.38	Too acid	0.42	Too acid	0.42	Too acid	0.42
Depth to bedrock	0.16	Droughty	0.38	Droughty	0.38	Droughty	0.38
Too acid	0.11	Depth to bedrock	0.16	Depth to bedrock	0.16	Depth to bedrock	0.16
Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
Too steep for surface application		Too steep for surface application		Too steep for surface application		Too steep for surface application	0.00
Sx: Stephenville-----	60	Somewhat limited	0.42	Somewhat limited	0.42	Somewhat limited	0.42
Droughty	0.36	Too acid	0.42	Too acid	0.42	Too acid	0.42
Depth to bedrock	0.16	Droughty	0.36	Droughty	0.36	Droughty	0.36
Too acid	0.11	Depth to bedrock	0.16	Depth to bedrock	0.16	Depth to bedrock	0.16
Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
Too steep for surface application		Too steep for surface application		Too steep for surface application		Too steep for surface application	0.00
Darnell-----	25	Very limited		Very limited		Very limited	

AGRICULTURAL WASTE MANAGEMENT--Continued
Chautauqua County, Kansas

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too acid	0.02	Too acid	0.07	Too acid	0.07
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
						Too steep for surface application	0.00
Ve: Verdigris-----	90	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
W: Water-----	100	Not rated		Not rated		Not rated	

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Chautauqua County, Kansas: KS019

MUSYM/SEQ#	COMPONENT/TEXTURE/MU%	HYD	KFACT	SURFACE DEPTH	% OM	SPISP II Ratings		
						Leaching (SLP)	Solution Runoff (SSRP)	Adsorbed Runoff (SARP)
015CS 1	CLIME SIC 67%	C	0.28	9"	2.5%	L	H	H
015CS 2	SOGN SICL 30%	D	0.32	7"	2.0%	V	H	H
035CC 1	CLIME SIC 60%	C	0.28	8"	2.5%	L	H	H
035CC 2	SOGN SICL 20%	D	0.32	10"	2.0%	V	H	H
035LA 1	LABETTE SICL 85%	C	0.37	7"	3.0%	L	H	H
035MC 1	MARTIN SICL 90%	C	0.37	9"	3.0%	L	H	H
035RA 1	READING SIL 85%	B	0.32	14"	3.0%	I	I	I
035SA 1	SMOLAN SICL 90%	C	0.37	8"	3.0%	L	H	H
035SC 1	SMOLAN SICL 90%	C	0.37	6"	3.0%	L	H	H
035SD 1	SOGN SICL 90%	D	0.32	10"	2.0%	V	H	H
035TA 1	TABLER SICL 95%	D	0.37	8"	2.0%	V	H	H
049CD 1	CANYON L 100%	D	0.32	6"	2.0%	V	H	H (s)
049CF 1	CATOOSA SIL 55%	B	0.37	9"	2.0%	I	I	I
049CF 2	SOGN SICL 35%	D	0.32	8"	2.0%	V	H	H
049CK 1	CLIME ST-SICL 100%	C	0.28	2"	3.0%	L	H	H (s)
049CS 1	CLIME SIC 65%	C	0.28	10"	2.5%	L	H	H (s)
049CS 2	SOGN SICL 20%	D	0.32	8"	2.0%	V	H	H
049EM 1	ERAM SIL 90%	C	0.43	10"	2.0%	H (w)	H	H
049KD 1	KENOMA SIL 90%	D	0.43	8"	3.5%	V	H	H
049LA 1	LABETTE SICL 90%	C	0.37	9"	3.0%	L	H	H
049LD 1	LABETTE SICL 65%	C	0.37	9"	3.0%	L	H	H
049LD 2	DWIGHT SIL 35%	D	0.43	4"	3.0%	V	H	H
049ME 1	MARTIN SIC 90%	C	0.28	7"	1.5%	L	H	H
049SH 1	SOGN SICL 85%	D	0.32	8"	2.0%	V	H	H
049ST 1	STEEDMAN ST-L 85%	C	0.24	7"	1.8%	H (w)	H	H (s)
049VD 1	VERDIGRIS SIL 85%	B	0.32	27"	3.0%	L	I	I
125BG 1	BATES L 45%	B	0.32	15"	2.5%	I	I	I
125BG 2	COLLINSVILLE FSL 40%	D	0.20	11"	2.0%	V	H	H (s)

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Chautauqua County, Kansas: KS019

125DB 1	DENNIS SIL 90%	C	0.43	13"	2.0% H (w)	H	H
125EB 1	ERAM SICL 90%	C	0.37	11"	2.0% H (w)	H	H
125ET 1	ERAM SICL 50%	C	0.37	11"	2.0% H (w)	H	H
125ET 2	TALIHINA SICL 35%	D	0.37	17"	2.0% H (w)	H	H (s)
125KA 1	KENOMA SIL 90%	D	0.43	12"	3.0% H (w)	H	H
125LA 1	LANTON SICL 95%	C	0.37	12"	3.0% H (w)	H	H
AED 1	ARENTS, EARTHEN DAM 100%		0.00	0"	0.0% ?	?	?
Ba 1	BATES FSL 85%	B	0.20	16"	2.0% I	I	I
Ca 1	CLARESON SICL 85%	C	0.32	17"	2.5% L	H	H
Cs 1	CLARESON SICL 65%	C	0.32	17"	2.5% L	H	H
Cs 2	SOGN SICL 35%	D	0.32	10"	2.0% V	H	H
Ct 1	CLEORA FSL 90%	B	0.20	18"	2.0% I	I	I
Cx 1	CLIME SIC 62%	C	0.28	10"	2.5% L	H	H (s)
Cx 2	SOGN SICL 25%	D	0.32	10"	2.0% V	H	H (s)
Db 1	DENNIS SIL 90%	C	0.43	14"	2.0% H (w)	H	H
Dc 1	DENNIS SIL 85%	C	0.43	14"	2.0% H (w)	H	H
De 1	DENNIS SICL 85%	C	0.37	7"	2.0% H (w)	H	H
DEE 1	DENNIS SIL 100%	C	0.43	13"	2.0% H (w)	H	H
Ds 1	DENNIS SIL 60%	C	0.43	14"	2.0% H (w)	H	H
Ds 2	DWIGHT SIL 23%	D	0.43	5"	3.0% V	H	H
Ea 1	ERAM SICL 90%	C	0.37	8"	2.0% H (w)	H	H
Ec 1	ERAM SICL 70%	C	0.37	8"	2.0% H (w)	H	H
Ec 2	COLLINSVILLE L 20%	D	0.32	12"	2.0% V	H	H
Iv 1	IVAN SIL 90%	B	0.32	16"	3.0% L	I	I
Ke 1	KENOMA SIL 90%	D	0.43	11"	3.5% H (w)	H	H
Ln 1	LONGFORD SICL 90%	C	0.37	8"	3.0% L	H	H
Lo 1	LONGFORD SICL 90%	C	0.37	8"	2.0% L	H	H
Lu 1	LULA SIL 90%	B	0.37	10"	2.0% I	I	I
M-W 1	MISCELLANEOUS WATER 100%		0.00	0"	0.0% ?	?	?

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Chautauqua County, Kansas: KS019

Ma 1	MARTIN SICL 100%	C	0.37	12"	3.0% L	H	H
Mb 1	MARTIN SICL 90%	C	0.37	12"	3.0% H (w)	H	H
Mc 1	MARTIN SICL 90%	C	0.37	12"	3.0% L	H	H
Me 1	MARTIN SICL 100%	C	0.37	7"	3.0% L	H	H
Ms 1	MARTIN SICL 75%	C	0.37	12"	3.0% L	H	H
Ms 2	DWIGHT SICL 15%	D	0.37	5"	3.0% V	H	H
Mt 1	MASON SIL 85%	B	0.37	8"	2.0% I	I	I
Mx 1	MASON SIL 75%	B	0.37	8"	2.0% I	I	I
Mx 2	DRUMMOND SIL 15%	D	0.43	8"	0.8% H (w)	H	H
Nd 1	NIOTAZE CB-FSL 65%	C	0.20	10"	2.0% H (w)	H	H (s)
Nd 2	DARNELL FSL 20%	C	0.24	5"	0.7% I	H	H (s)
Oa 1	OSAGE SICL 85%	D	0.32	20"	2.5% H (w)	H	H
Oc 1	OSAGE SIC 90%	D	0.28	20"	2.5% H (w)	H	H
Os 1	OSAGE SICL 60%	D	0.32	20"	2.5% H (w)	H	H
Os 2	SLICKSPOTS SIL 25%	D	0.43	8"	0.8% H (w)	H	H
PIT 1	PITS 100%		0.00	0"	0.0% ?	?	?
QUA 1	QUARRY 100%		0.00	0"	0.0% ?	?	?
So 1	SOGN SICL 90%	D	0.32	10"	2.0% V	H	H
St 1	STEEDMAN ST-CL 100%	C	0.20	6"	1.8% H (w)	H	H (s)
Sv 1	STEPHENVILLE FSL 85%	B	0.24	12"	1.3% I	I	I
Sx 1	STEPHENVILLE FSL 60%	B	0.24	9"	1.3% H	I	I
Sx 2	DARNELL FSL 25%	C	0.24	5"	0.7% I	H	H
Ve 1	VERDIGRIS SIL 90%	B	0.32	12"	3.0% I	I	I
W 1	WATER 100%		0.00	0"	0.0% ?	?	?

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H -- High
I -- Intermediate
L -- Low
V -- Very Low

Conditions that affect ratings:

- m -- There are macropores in the surface horizon deeper than 24"
- w -- The high water table comes within 24" of the surface during the growing season
- s -- The field slope is greater than 15%

SPISP II S-Ratings:

- SLP -- Soil Leaching Potential
- SSRP -- Soil Solution Runoff Potential
- SARP -- Soil Adsorbed Runoff Potential

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

HYDRIC SOIL INTERPRETATIONS
 HYDRIC SOILS LIST
 Chautauqua County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
015CS: CLIME-SOGN COMPLEX, 3 TO 15 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN rock outcrop	No ---	hillslope ---	---	---	---	---
035CC: CLIME-SOGN COMPLEX, 2 TO 15 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN MARTIN ROCK OUTCROP	No No Unranked	hillslope hillslope hillslope	---	---	---	---
035LA: LABETTE SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT IRWIN	No No	hillslope hillslope	---	---	---	---
035MC: MARTIN SILTY CLAY LOAM, 2 TO 7 PERCENT SLOPES, ERODED	MARTIN	No	hillslope	---	---	---	---
	CLIME LABETTE	No No	hillslope hillslope	---	---	---	---
035RA: READING SILT LOAM, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	READING	No	terrace	---	---	---	---
	BREWER IVAN MARTIN	No No No	flood plain flood plain hillslope	---	---	---	---
035SA: SMOLAN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	SMOLAN	No	hillslope	---	---	---	---
	LABETTE NORGE	No No	hillslope hillslope	---	---	---	---
035SC: SMOLAN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	SMOLAN	No	hillslope	---	---	---	---
	MARTIN NORGE	No No	hillslope hillslope	---	---	---	---
035SD: SOGN SILTY CLAY LOAM, 0 TO 10 PERCENT SLOPES	SOGN	No	hillslope	---	---	---	---
	CLIME LABETTE	No No	hillside hillside	---	---	---	---
035TA: TABLER SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	TABLER	No	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
049CD: CATOOSA SILT LOAM, 0 TO 2 PERCENT SLOPES	CATOOSA	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
049CF: CATOOSA-SOGN COMPLEX, 0 TO 8 PERCENT SLOPES	CATOOSA	No	hillslope	---	---	---	---
	SOGN CLIME ERAM	No No No	hillslope hillslope hillslope	---	---	---	---
049CK: CLIME STONY SILTY CLAY LOAM, 20 TO 30 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	CLIME-SOGN COMPLEX, 5 TO 20 PERCENT SLOPES	No	hillslope	---	---	---	---
049CS: CLIME-SOGN COMPLEX, 5 TO 20 PERCENT SLOPES	SOGN DWIGHT ERAM LABETTE MARTIN ROCK OUTCROP	No No No No No ---	hillslope hillslope hillslope hillslope hillslope ---	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
049EM: ERAM SILT LOAM, 1 TO 4 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES DWIGHT	No No	hillslope hillslope	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
HYDRIC SOILS LIST
Chautauqua County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
049KD: KENOMA SILT LOAM, 1 TO 3 PERCENT SLOPES	KENOMA	No	hillslope	---	---	---	---
	CATOOSA ERAM	No	hillslope	---	---	---	---
049LA: LABETTE SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
049LD: LABETTE-DWIGHT COMPLEX, 0 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
049ME: MARTIN SILTY CLAY, 3 TO 7 PERCENT SLOPES, ERODED	MARTIN	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
049SH: SOGN SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES	SOGN	No	hillslope	---	---	---	---
	CLIME CATOOSA	No	hillslope	---	---	---	---
049ST: STEEDMAN STONY LOAM, 5 TO 20 PERCENT SLOPES	STEEDMAN	No	hillslope	---	---	---	---
	BATES COLLINSVILLE	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
049VD: VERDIGRIS SILT LOAM, CHANNELED	VERDIGRIS	No	flood plain	---	---	---	---
	MARTIN DENNIS	No	hillslope	---	---	---	---
125BG: BATES-COLLINSVILLE COMPLEX, 4 TO 20 PERCENT SLOPES	BATES	No	ridge	---	---	---	---
	COLLINSVILLE	No	ridge	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	TALIHINA	No	hillslope	---	---	---	---
125DB: DENNIS SILT LOAM, 1 TO 4 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	BATES ERAM	No	hillslope	---	---	---	---
125EB: ERAM SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES TALIHINA	No	hillslope	---	---	---	---
125ET: ERAM-TALIHINA SILTY CLAY LOAMS, 6 TO 20 PERCENT SLOPES	ERAM	No	ridge	---	---	---	---
	TALIHINA	No	ridge	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	COLLINSVILLE DENNIS	No	hillslope	---	---	---	---
125KA: KENOMA SILT LOAM, 0 TO 2 PERCENT SLOPES	KENOMA	No	paleoterrace	---	---	---	---
	CATOOSA ZAAR	No	ridge	---	---	---	---
125LA: LANTON SILTY CLAY LOAM, OCCASIONALLY FLOODED	LANTON	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Ba: BATES FINE SANDY LOAM, 1 TO 4 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---
	COLLINSVILLE	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
 HYDRIC SOILS LIST
 Chautauqua County, Kansas

All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Ca: CLARESON SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	SOGN LULA	No No	hillslope hillslope	---	---	---	---
Cs: CLARESON-SOGN COMPLEX, 1 TO 3 PERCENT SLOPES	CLARESON	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
Ct: CLEORA FINE SANDY LOAM, OCCASIONALLY FLOODED	CLEORA	No	flood plain	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
Cx: CLIME-SOGN COMPLEX, 8 TO 30 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	MARTIN CLARESON	No No	hillslope hillslope	---	---	---	---
Db: DENNIS SILT LOAM, 1 TO 3 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	ERAM	No	---	---	---	---	---
Dc: DENNIS SILT LOAM, 3 TO 7 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	ERAM MARTIN	No No	hillslope hillslope	---	---	---	---
De: DENNIS SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
DEE: DENNIS SILT LOAM, 4 TO 7 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
Ds: DENNIS-DWIGHT SILT LOAMS, 1 TO 3 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
	DWIGHT Unnamed soil	No No	hillslope hillslope	---	---	---	---
Ea: ERAM SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES DENNIS	No No	hillslope hillslope	---	---	---	---
Ec: ERAM-COLLINSVILLE COMPLEX, 1 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	COLLINSVILLE BATES	No No	hillslope hillslope	---	---	---	---
Iv: IVAN SILT LOAM, OCCASIONALLY FLOODED	IVAN	No	flood plain	---	---	---	---
	MASON VERDIGRIS	No No	stream terrace flood plain	---	---	---	---
Ke: KENOMA SILT LOAM, 0 TO 1 PERCENT SLOPES	KENOMA	No	hillslope	---	---	---	---
	ERAM	No	---	---	---	---	---
Ln: LONGFORD SILTY CLAY LOAM, BEDROCK SUBSTRATUM, 1 TO 4 PERCENT SLOPES	LONGFORD	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Lo: LONGFORD SILTY CLAY LOAM, BEDROCK SUBSTRATUM, 1 TO 4 PERCENT SLOPES, ERODED	LONGFORD	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Lu: LULA SILT LOAM, 0 TO 2 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	CLARESON KENOMA	No No	hillslope hillslope	---	---	---	---

HYDRIC SOIL INTERPRETATIONS
 HYDRIC SOILS LIST
 Chautauqua County, Kansas

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	---	---	---	---	---	---
Ma: MARTIN SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
Mb: MARTIN SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	DWIGHT	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Mc: MARTIN SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	OSAGE DWIGHT	Yes No	flood plain hillslope	2B3 ---	YES ---	NO ---	NO ---
	MARTIN	No	hillslope	---	---	---	---
Me: MARTIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	CLIME Unnamed soil	No No	hillslope hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Ms: MARTIN-DWIGHT SILTY CLAY LOAMS, 1 TO 3 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Mt: MASON SILT LOAM, RARELY FLOODED	DWIGHT Unnamed soil	No No	hillslope hillslope	---	---	---	---
	MASON	No	stream terrace	---	---	---	---
Mx: MASON-DRUMMOND SILT LOAMS, RARELY FLOODED	IVAN OSAGE	No Yes	flood plain flood plain	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
	MASON	No	stream terrace	---	---	---	---
Nd: NIOTAZE-DARNELL COMPLEX, 8 TO 20 PERCENT SLOPES	DRUMMOND Unnamed soil	No No	terrace stream terrace	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
	DARNELL STEEDMAN DENNIS	No No No	hillslope hillslope hillslope	---	---	---	---
Oa: OSAGE SILTY CLAY LOAM, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	DENNIS MASON OSAGE	No No Yes	hillslope stream terrace flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
Oc: OSAGE SILTY CLAY, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	OSAGE VERDIGRIS	Yes No	flood plain flood plain	2B3 ---	YES ---	NO ---	NO ---
Os: OSAGE-DRUMMOND COMPLEX, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	---	---	---	---
	DRUMMOND Unnamed soil	No Yes	flood plain flood plain	---	---	---	---
PIT: PITS	PITS	Unranked	---	---	---	---	---
QUA: QUARRY	QUARRY	Unranked	---	---	---	---	---
So: SOGN SOILS, 1 TO 3 PERCENT SLOPES	SOGN	No	hillslope	---	---	---	---
	CLARESON ROCK OUTCROP	No ---	hillslope ---	---	---	---	---
St: STEEDMAN STONY CLAY LOAM, 8 TO 20 PERCENT SLOPES	STEEDMAN	No	hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Sv: STEPHENVILLE FINE SANDY LOAM, 1 TO 4 PERCENT SLOPES	STEPHENVILLE	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	DARNELL	No	hillslope	---	---	---	---
	ERAM	No	---	---	---	---	---
Sx: STEPHENVILLE-DARNELL FINE SANDY LOAMS, 1 TO 5 PERCENT SLOPES	STEPHENVILLE	No	hillslope	---	---	---	---
	DARNELL	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	ERAM	No	---	---	---	---	---
	NIOTAZE	No	hillslope	---	---	---	---
Ve: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	CLEORA	No	flood plain	---	---	---	---
	MASON	No	stream terrace	---	---	---	---
W: WATER	WATER	Yes	---	4,3	NO	YES	YES

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II. Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
 - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
 - b. poorly drained or very poorly drained and have either:
 - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
 - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
 - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.