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**County specific computer generated reports.*

ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Harvey County, Kansas: Published

Map symbol	Soil name	Acres	Percent
015VE	Verdigris Soils, Frequently Flooded-----	7	*
113CB	Cass Fine Sandy Loam, Rarely Flooded-----	37	*
113TO	Tobin Silt Loam, Occasionally Flooded-----	1,301	0.4
115CM	Clime Silty Clay Loam, 1 To 3 Percent Slopes-----	282	*
115CP	Clime Silty Clay Loam, 3 To 7 Percent Slopes-----	147	*
115WB	Wells Loam, 1 To 3 Percent Slopes-----	67	*
115WC	Wells Loam, 3 To 7 Percent Slopes-----	12	*
173EA	Elandco Silt Loam, Rarely Flooded-----	1,175	0.3
173EB	Elandco Silt Loam, Occasionally Flooded-----	134	*
173EC	Elandco Silt Loam, Frequently Flooded-----	1	*
173TB	Tabler-Drummond Complex, 0 To 1 Percent Slope-----	2,402	0.7
173VB	Vanoss Silt Loam, 1 To 3 Percent Slopes-----	18	*
1191	Blazefork Silty Clay Loam, 0 To 1 Percent Slope, Rarely Flooded-----	160	*
1324	Carway And Carbika Soils, 0 To 1 Percent Slope-----	41	*
1357	Carway-Dillhut-Solvay Complex, 0 To 2 Percent Slopes-----	110	*
1553	Darlow-Elmer Complex, 0 To 2 Percent Slopes-----	106	*
1554	Dillhut Fine Sand, 1 To 3 Percent Slopes-----	42	*
1556	Dillhut-Solvay Complex, 0 To 3 Percent Slopes-----	299	*
2391	Kaskan Silty Clay Loam, 0 To 1 Percent Slope, Frequently Flooded, Channeled-----	1	*
2395	Kisiwa Loam, 0 To 1 Percent Slopes-----	49	*
2556	Langdon Fine Sand, 0 To 15 Percent Slopes-----	4	*
2812	Mahone Loamy Fine Sand, 0 To 2 Percent Slopes, Rarely Flooded-----	9	*
2957	Nickerson-Punkin Fine Sandy Loams, 0 To 2 Percent Slopes-----	4	*
3181	Pratt-Turon Fine Sands, 1 To 5 Percent Slopes-----	40	*
3190	Punkin Silt Loam, 0 To 1 Percent Slope-----	28	*
3191	Punkin-Taver Complex, 0 To 1 Percent Slope-----	86	*
3511	Saltcreek And Naron Fine Sandy Loams, 0 To 1 Percent Slope-----	699	0.2
3540	Solvay Loamy Fine Sand, 0 To 2 Percent Slopes-----	6	*
3639	Taver Loam, 0 To 1 Percent Slope-----	504	0.1
3641	Tivin-Dillhut Fine Sands, 0 To 15 Percent Slopes-----	119	*
3900	Warnut Fine Sandy Loam, 0 To 1 Percent Slopes-----	21	*
3966	Willowbrook Fine Sandy Loam, 0 To 1 Percent Slope, Occasionally Flooded-----	4	*
Ad	Fluvents, Frequently Flooded-----	4,328	1.3
Ba	Clime-Hobbs Complex, 0 To 20 Percent Slopes-----	5,348	1.5
BOP	Borrow Pits-----	73	*
Ca	Carwile Fine Sandy Loam, 0 To 1 Percent Slopes-----	11,456	3.3
Cc	Clark Clay Loam, 1 To 3 Percent Slopes-----	413	0.1
Cd	Clime Silty Clay, 1 To 3 Percent Slopes-----	5,323	1.5
Ce	Clime Silty Clay, 3 To 6 Percent Slopes-----	4,873	1.4
Cf	Clime Silty Clay, 2 To 6 Percent Slopes, Eroded-----	2,105	0.6
Cm	Clime Complex, 6 To 12 Percent Slopes-----	2,753	0.8
Cr	Crete Silt Loam, 0 To 1 Percent Slopes-----	14,531	4.2
Ct	Crete Silt Loam, 1 To 3 Percent Slopes-----	9,306	2.7
De	Detroit Silty Clay Loam, Rarely Flooded-----	11,765	3.4
Dp	Dillwyn-Plevna Complex, 0 To 2 Percent Slopes-----	3,386	1.0
Dt	Dillwyn-Tivoli Complex, 0 To 15 Percent Slopes-----	4,992	1.4
Du	Drummond Loam, 0 To 1 Percent Slopes-----	3,103	0.9
Fa	Farnum Fine Sandy Loam, 0 To 1 Percent Slopes-----	3,651	1.1
Fc	Farnum Loam, 0 To 1 Percent Slopes-----	10,119	2.9
Fd	Farnum Loam, 1 To 3 Percent Slopes-----	19,910	5.8
Fe	Farnum Loam, 3 To 6 Percent Slopes-----	1,066	0.3
Fs	Farnum-Drummond Complex, 0 To 1 Percent Slopes-----	14,427	4.2
Gc	Geary Silt Loam, 0 To 1 Percent Slopes-----	960	0.3
Gd	Geary Silt Loam, 1 To 3 Percent Slopes-----	6,178	1.8
Ge	Geary Silt Loam, 3 To 6 Percent Slopes-----	2,303	0.7
Go	Goessel Silty Clay, 0 To 1 Percent Slopes-----	10,830	3.1
GRP	Gravel Pits-----	112	*
Gs	Goessel Silty Clay, 1 To 2 Percent Slopes-----	2,033	0.6
Ho	Hobbs Silt Loam, Occasionally Flooded-----	14,569	4.2
INT	Aquolls-----	322	*
Ir	Irwin Silty Clay Loam, 1 To 3 Percent Slopes-----	22,963	6.6
Is	Irwin Silty Clay Loam, 3 To 6 Percent Slopes-----	2,163	0.6
It	Irwin Silty Clay Loam, 2 To 6 Percent Slopes, Eroded-----	372	0.1
Ka	Kaski Loam, Occasionally Flooded-----	938	0.3
La	Ladysmith Silty Clay Loam, 0 To 1 Percent Slope-----	46,957	13.6
Lb	Ladysmith Silty Clay Loam, 1 To 2 Percent Slopes-----	34,480	10.0
Ld	Lela-Drummond Complex, Occasionally Flooded-----	4,657	1.3
Le	Lesho Loam, Occasionally Flooded-----	391	0.1
Na	Naron Fine Sandy Loam, 0 To 1 Percent Slope-----	5,119	1.5
Nb	Naron Fine Sandy Loam, 1 To 4 Percent Slopes-----	5,451	1.6
Pa	Pratt Loamy Fine Sand, 1 To 5 Percent Slopes-----	3,159	0.9
Pc	Pratt-Carwile Complex, 0 To 5 Percent Slopes-----	4,799	1.4
Pt	Pratt-Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes-----	3,385	1.0
Ro	Rosehill Silty Clay, 1 To 3 Percent Slopes-----	16,728	4.8
Rs	Rosehill Silty Clay, 3 To 6 Percent Slopes-----	4,899	1.4
Sm	Smolan Silty Clay Loam, 1 To 3 Percent Slopes-----	9,989	2.9
Tv	Tivoli Fine Sand, 15 To 25 Percent Slopes-----	1,065	0.3
W	Water-----	428	0.1
	Total-----	346,093	100.0

* Less than 0.1 percent.

Nontechnical Soil Descriptions
Harvey 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.

015VE Verdigris Soils, Frequently Flooded

Verdigris soil makes up 85 percent of the map unit. This map unit is in the Central Loess Plains 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 moderately well drained. The slowest permeability is moderate. It has a 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 (pe30-36) range site. It is in the nonirrigated land capability classification 5w.

113CB Cass Fine Sandy Loam, Rarely Flooded

Cass soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level flood plain. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderately rapid. It has a high available water capacity and a low 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 Sandy Lowland (pe26-30) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

113TO Tobin Silt Loam, Occasionally Flooded

Tobin soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping flood plain on upland. 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. This soil is in the Loamy Lowland (pe26-30) range site. It is in the nonirrigated land capability classification 2w.

115CM Clime Silty Clay Loam, 1 To 3 Percent Slopes

Clime soil makes up 90 percent of the map unit. This map unit is in the Central Loess Plains 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, 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

115CP Clime Silty Clay Loam, 3 To 7 Percent Slopes

Clime soil makes up 90 percent of the map unit. This map unit is in the Central Loess Plains 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 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

115WB Wells Loam, 1 To 3 Percent Slopes

Wells soil makes up 90 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is low. The parent material consists of fine-loamy residuum weathered from sandstone. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. It is in the nonirrigated land capability classification 2e.

115WC Wells Loam, 3 To 7 Percent Slopes

Wells soil makes up 90 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a moderately sloping backslope hillslope on upland. The runoff class is low. The parent material consists of fine-loamy residuum. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

173EA Elandco Silt Loam, Rarely Flooded

Elandco soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. 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 Terrace (pe24-32) range site. It is in the nonirrigated land capability classification 1.

173EB Elandco Silt Loam, Occasionally Flooded

Elandco soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a 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 (pe24-32) range site. It is in the nonirrigated land capability classification 2w.

173EC Elandco Silt Loam, Frequently Flooded

Elandco soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a 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 (pe24-32) range site. It is in the nonirrigated land capability classification 5w.

173TB Tabler-Drummond Complex, 0 To 1 Percent Slope

Tabler soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of 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 seasonal high water table is at a depth of more than 6 feet. This soil is in the Clay Upland (pe24-32) range site. It is in the nonirrigated land capability classification 2s.

Drummond soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level terrace on river valley. The runoff class is negligible. 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 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 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 6s.

173VB Vanoss Silt Loam, 1 To 3 Percent Slopes

Vanoss soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is very low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe24-32) range site. It is in the nonirrigated land capability classification 2e.

1191 Blazefork Silty Clay Loam, 0 To 1 Percent Slope, Rarely Flooded

Blazefork soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very low. The parent material consists of silty alluvium. 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 rarely flooded and is not ponded. The top of the seasonal high water table is at 48 inches. This soil is in the Clay Lowland (pe25-34) range site. This soil is in the irrigated land capability class 2s. It is in the nonirrigated land capability classification 2w.

1324 Carway And Carbika Soils, 0 To 1 Percent Slope

Carway soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level interdune on depression on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly 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 frequent ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Carbika soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level interdune on depression on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is poorly 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 frequent ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

1357 Carway-Dillhut-Solvay Complex, 0 To 2 Percent Slopes

Carway soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping depression on interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly 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 frequent ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

Solvay soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a low 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 Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

Dillhut soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of eolian deposits over alluvium. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a low 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

1553 Darlow-Elmer Complex, 0 To 2 Percent Slopes

Darlow soil makes up 70 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping terrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is somewhat poorly drained. The slowest permeability is very slow. 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. The soil contains a maximum amount of 2 percent calcium carbonate. This soil contains a moderately saline horizon, it has a horizon that is strongly sodic. This soil is in the Clay Pan (pe21-28) range site. This soil is in the irrigated land capability class 4s. It is in the nonirrigated land capability classification 4s.

Elmer soil makes up 20 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping terrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium. 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 2 percent calcium carbonate. This soil contains a very slightly saline horizon, it has a horizon that is strongly sodic. This soil is in the Loamy Terrace (pe21-28) range site. This soil is in the irrigated land capability class 3s. It is in the nonirrigated land capability classification 3s.

1554 Dillhut Fine Sand, 1 To 3 Percent Slopes

Dillhut soil makes up 70 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of eolian deposits over alluvium. This soil is moderately well drained. The slowest permeability is very slow. It has a moderate available water capacity and a low 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

1556 Dillhut-Solvay Complex, 0 To 3 Percent Slopes

Dillhut soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of eolian deposits over alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a moderate 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Solvay soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a low 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 Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

2391 Kaskan Silty Clay Loam, 0 To 1 Percent Slope, Frequently Flooded, Channeled

Kaskan soil makes up 75 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level 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 slow. It has a moderate available water capacity and a moderate shrink swell potential. This soil is frequently flooded and is not ponded. The top of the seasonal high water table is at 60 inches. The soil contains a maximum amount of 1 percent calcium carbonate. This soil is in the Loamy Lowland (pe21-28) range site. It is in the nonirrigated land capability classification 5w.

2395 Kisiwa Loam, 0 To 1 Percent Slopes

Kisiwa soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley, terrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium over clayey alluvium. This soil is poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a moderate shrink swell potential. This soil is not flooded and is occasional ponded. The top of the seasonal high water table is at 0 inches. The soil contains a maximum amount of 10 percent calcium carbonate. This soil contains a slightly saline horizon, it has a horizon that is strongly sodic. This soil is in the Saline Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 4s.

2556 Langdon Fine Sand, 0 To 15 Percent Slopes

Langdon soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to moderately steep dune on paleoterrace on river valley. The runoff class is medium. The parent material consists of sandy eolian deposits. This soil is somewhat excessively drained. The slowest permeability is rapid. 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 Choppy Sands (pe21-28) range site. It is in the nonirrigated land capability classification 6e.

2812 Mahone Loamy Fine Sand, 0 To 2 Percent Slopes, Rarely Flooded

Mahone soil makes up 95 percent of the map unit. This map unit is in the Great Bend Sand Plains 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 moderate. It has a high available water capacity and a low shrink swell potential. This soil is rarely flooded and is not ponded. The top of the seasonal high water table is at 60 inches. The soil contains a maximum amount of 1 percent calcium carbonate. This soil is in the Loamy Lowland (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

2957 Nickerson-Punkin Fine Sandy Loams, 0 To 2 Percent Slopes

Nickerson soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping terrace on river valley. The runoff class is very low. The parent material consists of alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is not ponded. The top of the seasonal high water table is at 36 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Punkin soil makes up 50 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of clayey alluvium over sandy alluvium. 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil contains a slightly saline horizon, it has a horizon that is moderately sodic. This soil is in the Saline Subirrigated (pe21-28) range site. This soil is in the irrigated land capability class 3s. It is in the nonirrigated land capability classification 3s.

3181 Pratt-Turon Fine Sands, 1 To 5 Percent Slopes

Pratt soil makes up 45 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Turon soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits over alluvium. This soil is well drained. The slowest permeability is very slow. It has a moderate 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

3190 Punkin Silt Loam, 0 To 1 Percent Slope

Punkin soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of clayey alluvium. 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil contains a slightly saline horizon, it has a horizon that is strongly sodic. This soil is in the Clay Pan (pe21-28) range site. This soil is in the irrigated land capability class 3s. It is in the nonirrigated land capability classification 3s.

3191 Punkin-Taver Complex, 0 To 1 Percent Slope

Punkin soil makes up 70 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of clayey alluvium. 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil contains a slightly saline horizon, it has a horizon that is strongly sodic. This soil is in the Clay Pan (pe21-28) range site. This soil is in the irrigated land capability class 3s. It is in the nonirrigated land capability classification 3s.

Taver soil makes up 20 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of 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 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 Clay Upland (pe21-28) range site. It is in the nonirrigated land capability classification 2s.

3511 Saltcreek And Naron Fine Sandy Loams, 0 To 1 Percent Slope

Saltcreek soil makes up 70 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is 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 Sandy (pe21-28) range site. This soil is in the irrigated land capability class 1t. It is in the nonirrigated land capability classification 3e.

Naron, sandy substratum, soil makes up 30 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Sandy (pe21-28) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

3540 Solvay Loamy Fine Sand, 0 To 2 Percent Slopes

Solvay soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy eolian deposits over alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a high available water capacity and a low 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 Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2e.

3639 Taver Loam, 0 To 1 Percent Slope

Taver soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is very low. The parent material consists of 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 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 Clay Upland (pe21-28) range site. It is in the nonirrigated land capability classification 2s.

3641 Tivin-Dillhut Fine Sands, 0 To 15 Percent Slopes

Tivin soil makes up 45 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately steep dune on paleoterrace on river valley. The runoff class is medium. The parent material consists of sandy eolian deposits. This soil is somewhat excessively drained. The slowest permeability is rapid. 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 Choppy Sands (pe21-28) range site. It is in the nonirrigated land capability classification 6e.

Nontechnical Soil Descriptions--Continued
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Dillhut soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to moderately sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of eolian deposits over alluvium. This soil is moderately well drained. The slowest permeability is moderate. It has a moderate 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 Sands (pe21-28) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

3900 Walnut Fine Sandy Loam, 0 To 1 Percent Slopes

Walnut soil makes up 75 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level interdune on paleoterrace on river valley, depression on paleoterrace on river valley. The runoff class is very low. The parent material consists of loamy alluvium. This soil is poorly drained. The slowest permeability is moderate. It has a moderate available water capacity and a low shrink swell potential. This soil is not flooded and is frequent ponded. The top of the seasonal high water table is at 0 inches. This soil is in the Subirrigated (pe21-28) range site. It is in the nonirrigated land capability classification 2w.

3966 Willowbrook Fine Sandy Loam, 0 To 1 Percent Slope, Occasionally Flooded

Willowbrook soil makes up 90 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is very low. The parent material consists of loamy alluvium over sandy alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately rapid. It has a low available water capacity and a low shrink swell potential. This soil is occasionally flooded and is not ponded. The top of the seasonal high water table is at 36 inches. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Subirrigated (pe21-28) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 3e.

Ad Fluvents, Frequently Flooded

Fluvents soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level to moderately steep flood plain on river valley. The runoff class is negligible. The parent material consists of 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. It is in the nonirrigated land capability classification 6w.

Ba Clime-Hobbs Complex, 0 To 20 Percent Slopes

Clime soil makes up 70 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately steep hillslope on upland. The runoff class is high. The parent material consists of residuum. The soil is 20 to 40 inches deep to bedrock (paralithic). This soil is somewhat excessively drained. The slowest permeability is slow. 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 6e.

Hobbs soil makes up 30 percent of the map unit. This map unit is in the Central Loess Plains 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 alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high available water capacity and a low 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Lowland (pe25-34) range site. It is in the nonirrigated land capability classification 5w.

Ca Carwile Fine Sandy Loam, 0 To 1 Percent Slopes

Carwile soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level depression on paleoterrace on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat poorly 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 0 inches. This soil is in the Sandy (pe25-34) range site. It is in the nonirrigated land capability classification 2w.

Cc Clark Clay Loam, 1 To 3 Percent Slopes

Clark soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of loamy alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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. The soil contains a maximum amount of 45 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
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Cd Clime Silty Clay, 1 To 3 Percent Slopes

Clime soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains 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 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Ce Clime Silty Clay, 3 To 6 Percent Slopes

Clime soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains 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 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

Cf Clime Silty Clay, 2 To 6 Percent Slopes, Eroded

Clime soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains 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 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 6e.

Cm Clime Complex, 6 To 12 Percent Slopes

Clime soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a moderately sloping to strongly sloping 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 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. The soil contains a maximum amount of 10 percent calcium carbonate. This soil is in the Limy Upland (pe25-34) range site. It is in the nonirrigated land capability classification 6e.

Cr Crete Silt Loam, 0 To 1 Percent Slopes

Crete soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level upland. The runoff class is medium. 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 Clay Upland (pe25-34) range site. This soil is in the irrigated land capability class 2s. It is in the nonirrigated land capability classification 2s.

Ct Crete Silt Loam, 1 To 3 Percent Slopes

Crete soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is low. 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 Clay Upland (pe25-34) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

De Detroit Silty Clay Loam, Rarely Flooded

Detroit soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level flood plain, river valley. The runoff class is negligible. The parent material consists of alluvium. 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 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 Terrace (pe25-34) range site. This soil is in the irrigated land capability class 1. It is in the nonirrigated land capability classification 1.

Dp Dillwyn-Plevna Complex, 0 To 2 Percent Slopes

Dillwyn soil makes up 65 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley, dune on paleoterrace on river valley. The runoff class is negligible. The parent material consists of sandy eolian deposits. This soil is somewhat poorly drained. The slowest permeability is rapid. It has a low available water capacity and a low 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 Subirrigated (pe25-34) range site. It is in the nonirrigated land capability classification 4w.

Nontechnical Soil Descriptions--Continued
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Plevna soil makes up 35 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is poorly drained. The slowest permeability is moderately rapid. It has a moderate available water capacity and a low shrink swell potential. This soil is frequently flooded and is not ponded. The top of the seasonal high water table is at 12 inches. This soil is in the Subirrigated (pe25-34) range site. It is in the nonirrigated land capability classification 5w.

Dt Dillwyn-Tivoli Complex, 0 To 15 Percent Slopes

Dillwyn soil makes up 55 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to gently sloping interdune on paleoterrace on river valley, dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits. This soil is somewhat poorly drained. The slowest permeability is rapid. It has a low available water capacity and a low 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 Subirrigated (pe25-34) range site. It is in the nonirrigated land capability classification 4w.

Tivoli soil makes up 45 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is 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 Choppy Sands (pe25-34) range site. It is in the nonirrigated land capability classification 7e.

Du Drummond Loam, 0 To 1 Percent Slopes

Drummond soil makes up 75 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level terrace on river valley. The runoff class is negligible. 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 not flooded and is not ponded. The top of the seasonal high water table is at 36 inches. This soil contains a moderately saline horizon. This soil is in the Saline Lowland (pe25-34) range site. It is in the nonirrigated land capability classification 6s.

Fa Farnum Fine Sandy Loam, 0 To 1 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 Sandy (pe25-34) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 1.

Fc Farnum Loam, 0 To 1 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe24-32) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 1.

Fd Farnum Loam, 1 To 3 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

Fe Farnum Loam, 3 To 6 Percent Slopes

Farnum soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on river valley. The runoff class is low. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Fs Farnum-Drummond Complex, 0 To 1 Percent Slopes

Farnum soil makes up 65 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. It is in the nonirrigated land capability classification 2s.

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Drummond soil makes up 35 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level terrace on river valley. The runoff class is negligible. The parent material consists of alluvium. 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 48 inches. This soil contains a slightly saline horizon. This soil is in the Saline Lowland (pe25-34) range site. It is in the nonirrigated land capability classification 6s.

Gc Geary Silt Loam, 0 To 1 Percent Slopes

Geary soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level hillslope, upland. The runoff class is negligible. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. This soil is in the irrigated land capability class 1. It is in the nonirrigated land capability classification 1.

Gd Geary Silt Loam, 1 To 3 Percent Slopes

Geary soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping hillslope, upland. The runoff class is low. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 2e.

Ge Geary Silt Loam, 3 To 6 Percent Slopes

Geary soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a moderately sloping hillslope, upland. The runoff class is low. The parent material consists of loess. This soil is well drained. The slowest permeability is moderate. It has a high 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 (pe25-34) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Go Goessel Silty Clay, 0 To 1 Percent Slopes

Goessel soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on upland. The runoff class is negligible. The parent material consists of clayey alluvium. 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 30 inches. This soil is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 2s.

Gs Goessel Silty Clay, 1 To 2 Percent Slopes

Goessel soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on upland. The runoff class is negligible. The parent material consists of clayey alluvium. 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 30 inches. This soil is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Ho Hobbs Silt Loam, Occasionally Flooded

Hobbs soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level flood plain. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a very high 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Loamy Lowland (pe25-34) range site. This soil is in the irrigated land capability class 2w. It is in the nonirrigated land capability classification 2w.

Ir Irwin Silty Clay Loam, 1 To 3 Percent Slopes

Irwin soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on upland. The runoff class is medium. The parent material consists of residuum. This soil is 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 is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Is Irwin Silty Clay Loam, 3 To 6 Percent Slopes

Irwin soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a moderately sloping paleoterrace on upland. The runoff class is medium. The parent material consists of residuum. This soil is 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 is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

It Irwin Silty Clay Loam, 2 To 6 Percent Slopes, Eroded
Irwin soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping paleoterrace on upland. The runoff class is medium. The parent material consists of residuum. This soil is 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 is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

Ka Kaski Loam, Occasionally Flooded

Kaski soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is well drained. The slowest permeability is moderate. It has a 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 (pe25-34) range site. It is in the nonirrigated land capability classification 2w.

La Ladysmith Silty Clay Loam, 0 To 1 Percent Slope

Ladysmith soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on upland. The runoff class is low. The parent material consists of clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is impermeable. 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 2s.

Lb Ladysmith Silty Clay Loam, 1 To 2 Percent Slopes

Ladysmith soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping paleoterrace on upland. The runoff class is low. The parent material consists of clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is impermeable. 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. The soil contains a maximum amount of 5 percent calcium carbonate. This soil is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Ld Lela-Drummond Complex, Occasionally Flooded

Lela soil makes up 60 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level paleoterrace on upland. The runoff class is low. The parent material consists of clayey alluvium. This soil is somewhat poorly drained. The slowest permeability is very slow. It has a moderate available water capacity and a high 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 Clay Lowland (pe25-34) range site. It is in the nonirrigated land capability classification 4s.

Drummond soil makes up 40 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level terrace on river valley. The runoff class is low. <parent material is missing> This soil is somewhat poorly 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 48 inches. This soil contains a slightly saline horizon. This soil is in the Saline Lowland (pe25-34) range site. It is in the nonirrigated land capability classification 6s.

Le Lesho Loam, Occasionally Flooded

Lesho soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a nearly level flood plain on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat poorly drained. The slowest permeability is moderately slow. It has a moderate 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 36 inches. This soil contains a very slightly saline horizon. This soil is in the Subirrigated (pe25-34) range site. It is in the nonirrigated land capability classification 3w.

Na Naron Fine Sandy Loam, 0 To 1 Percent Slope

Naron soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level dune on paleoterrace on river valley. The runoff class is negligible. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high 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 Sandy (pe25-34) range site. This soil is in the irrigated land capability class 1 It is in the nonirrigated land capability classification 2e.

Nb Naron Fine Sandy Loam, 1 To 4 Percent Slopes

Naron soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is low. The parent material consists of loamy eolian deposits. This soil is well drained. The slowest permeability is moderate. It has a high 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 Sandy (pe25-34) range site. This soil is in the irrigated land capability class 2e. It is in the nonirrigated land capability classification 3e.

Nontechnical Soil Descriptions--Continued
Harvey County, Kansas

Pa Pratt Loamy Fine Sand, 1 To 5 Percent Slopes

Pratt soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a gently sloping to moderately sloping dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate 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 Sands (pe25-34) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Pc Pratt-Carwile Complex, 0 To 5 Percent Slopes

Pratt soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level to moderately sloping dune on paleoterrace on river valley. The runoff class is negligible. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate available water capacity and a low 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 Sands (pe25-34) range site. This soil is in the irrigated land capability class 3e. It is in the nonirrigated land capability classification 3e.

Carwile soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a nearly level depression on paleoterrace on river valley. The runoff class is negligible. The parent material consists of alluvium. This soil is somewhat poorly 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 0 inches. This soil is in the Sandy (pe25-34) range site. It is in the nonirrigated land capability classification 2w.

Pt Pratt-Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes

Pratt soil makes up 60 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is well drained. The slowest permeability is rapid. It has a moderate 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 Sands (pe25-34) range site. It is in the nonirrigated land capability classification 6e.

Tivoli soil makes up 40 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately sloping to moderately steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is rapid. 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 Sands (pe25-34) range site. It is in the nonirrigated land capability classification 7e.

Ro Rosehill Silty Clay, 1 To 3 Percent Slopes

Rosehill soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains Major Land Resource Area. This soil occurs on a gently sloping hillslope on upland. The runoff class is high. The parent material consists of residuum. The soil is 20 to 40 inches deep to bedrock (paralithic). 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 is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 3e.

Rs Rosehill Silty Clay, 3 To 6 Percent Slopes

Rosehill soil makes up 100 percent of the map unit. This map unit is in the Central Loess Plains 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 residuum. The soil is 20 to 40 inches deep to bedrock (paralithic). 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 is in the Clay Upland (pe25-34) range site. It is in the nonirrigated land capability classification 4e.

Sm 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 Central Loess Plains 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.

Tv Tivoli Fine Sand, 15 To 25 Percent Slopes

Tivoli soil makes up 100 percent of the map unit. This map unit is in the Great Bend Sand Plains Major Land Resource Area. This soil occurs on a moderately steep to steep dune on paleoterrace on river valley. The runoff class is very low. The parent material consists of sandy eolian deposits. This soil is excessively drained. The slowest permeability is 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 Choppy Sands (pe25-34) range site. It is in the nonirrigated land capability classification 7e.

015VE—Verdigris Soils, frequently flooded**Map Unit Composition**

Verdigris: 85 percent
 Minor components: 10 percent

Component Descriptions**Verdigris**

MLRA: 75 - Central Loess Plains
Landform: Flood plain on river valley
Parent material: Silty alluvium
Slope: 0 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.6 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 (pe30-36)
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 8 inches; silt loam
 H2—8 to 57 inches; silty clay loam

Minor Components**Tully**

Composition: About 10 percent
Slope: 4 to 7 percent
Drainage class: Well drained
Ecological site: Loamy Upland (pe30-36)

113CB—Cass fine sandy loam, rarely flooded**Map Unit Composition**

Cass: 100 percent

Component Descriptions**Cass**

MLRA: 75 - Central Loess Plains
Landform: Flood plain
Parent material: Alluvium

Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 9.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Rare
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Sandy Lowland (pe26-30)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 7 inches; fine sandy loam
 H2—7 to 51 inches; fine sandy loam
 H3—51 to 60 inches; loamy fine sand

Minor Components**Bridgeport**

Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Overflow

Carwile**113TO—Tobin silt loam, occasionally flooded****Map Unit Composition**

Tobin: 100 percent

Component Descriptions**Tobin**

MLRA: 75 - Central Loess Plains
Landform: Flood plain on upland
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 12.1 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 (pe26-30)

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 20 inches; silt loam
H2—20 to 32 inches; silt loam
H3—32 to 60 inches; silt loam

Minor Components

Unnamed Hydric Soils

Slope: 0 to 2 percent
Drainage class: Poorly drained

Unnamed Hydric Soil

Slope: 0 to 2 percent
Drainage class: Poorly drained

Unnamed Wet Soils

Phase: Loamy, Depression

Unnamed Wet Soils

Phase: Loamy, Drainageway

115CM—Clime silty clay loam, 1 to 3 percent slopes

Map Unit Composition

Clime: 90 percent
Minor components: 10 percent

Component Descriptions

Clime

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 1 to 3 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 5.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Limy Upland (pe25-34)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; silty clay loam
H2—10 to 30 inches; silty clay loam
Cr—30 to 30 inches; unweathered bedrock

Minor Components

Irwin

Composition: About 10 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe25-34)

115CP—Clime silty clay loam, 3 to 7 percent slopes

Map Unit Composition

Clime: 90 percent
Minor components: 10 percent

Component Descriptions

Clime

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 3 to 7 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 5.2 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Limy Upland (pe25-34)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 10 inches; silty clay loam
H2—10 to 30 inches; silty clay loam
Cr—30 to 34 inches; unweathered bedrock

Minor Components

Irwin

Composition: About 10 percent
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe25-34)

115WB—Wells loam, 1 to 3 percent slopes**Map Unit Composition**

Wells: 90 percent
 Minor components: 10 percent

Component Descriptions**Wells**

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Fine-loamy residuum weathered from sandstone
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 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 (pe25-34)
Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 15 inches; loam
 H2—15 to 36 inches; sandy clay loam
 H3—36 to 60 inches; sandy loam

Minor Components**Clime**

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: Limy Upland (pe25-34)

Irwin

Composition: About 5 percent
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe25-34)

115WC—Wells loam, 3 to 7 percent slopes**Map Unit Composition**

Wells: 90 percent
 Minor components: 10 percent

Component Descriptions**Wells**

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Hillslope position: Backslope
Parent material: Fine-loamy residuum
Slope: 3 to 7 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 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 (pe25-34)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 15 inches; loam
 H2—15 to 36 inches; sandy clay loam
 H3—36 to 60 inches; sandy loam

Minor Components**Clime**

Composition: About 5 percent
Slope: 3 to 7 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Ecological site: Limy Upland (pe25-34)

Irwin

Composition: About 5 percent
Slope: 3 to 6 percent
Drainage class: Moderately well drained
Ecological site: Clay Upland (pe25-34)

173EA—Elandco silt loam, rarely flooded**Map Unit Composition**

Elandco: 100 percent

Component Descriptions**Elandco**

MLRA: 79 - Great Bend Sand Plains

Landform: Flood plain on river valley

Parent material: Alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.2 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Loamy Terrace (pe24-32)

Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 40 inches; silt loam

H2—40 to 60 inches; silt loam

Minor Components**Unnamed Hydric Soils****Unnamed Hydric Soils****Unnamed Wet Soils**

Phase: Loamy, Drainageway

173EB—Elandco silt loam, occasionally flooded**Map Unit Composition**

Elandco: 100 percent

Component Descriptions**Elandco**

MLRA: 79 - Great Bend Sand Plains

Landform: Flood plain on river valley

Parent material: Alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.2 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 (pe24-32)

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 40 inches; silt loam

H2—40 to 60 inches; silt loam

Minor Components**Unnamed Wet Soils**

Phase: Loamy, Drainageway

Unnamed Wet Soils

Phase: Loamy, Drainageway

Unnamed Wet Soils

Phase: Loamy, Drainageway

173EC—Elandco silt loam, frequently flooded**Map Unit Composition**

Elandco: 100 percent

Component Descriptions**Elandco**

MLRA: 79 - Great Bend Sand Plains

Landform: Flood plain on river valley

Parent material: Alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.2 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: Frequent

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Loamy Lowland (pe24-32)

Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 40 inches; silt loam

H2—40 to 60 inches; silt loam

Minor Components

Unnamed Wet Soils

Phase: Loamy, Depression

Unnamed Wet Soils

Phase: Loamy, Drainageway

Unnamed Wet Soils

Phase: Loamy, Drainageway

173TB—Tabler-Drummond complex, 0 to 1 percent slope

Map Unit Composition

Tabler: 60 percent

Drummond: 40 percent

Component Descriptions

Tabler

MLRA: 79 - Great Bend Sand Plains

Landform: Paleoterrace on river valley

Parent material: 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 9.9 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Clay Upland (pe24-32)

Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 9 inches; silt loam

H2—9 to 32 inches; silty clay

H3—32 to 60 inches; silty clay

Drummond

MLRA: 79 - Great Bend Sand Plains

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: Moderate (About 6.4 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 24 to 72 inches

Runoff class: Negligible

Ecological site: Saline Lowland (pe24-32)

Land capability (nonirrigated): 6s

Typical Profile:

H1—0 to 8 inches; silt loam

H2—8 to 48 inches; silty clay

H3—48 to 60 inches; variable

Minor Components

Carwile

Unnamed Wet Soils

Phase: Clayey, Drainageway

Unnamed Wet Soils

Phase: Clayey, Depression

173VB—Vanoss silt loam, 1 to 3 percent slopes

Map Unit Composition

Vanoss: 100 percent

Component Descriptions

Vanoss

MLRA: 79 - Great Bend Sand Plains

Landform: Paleoterrace on river valley

Parent material: Alluvium

Slope: 1 to 3 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.4 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very low

Ecological site: Loamy Upland (pe24-32)

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 13 inches; silt loam

H2—13 to 16 inches; silty clay loam

H3—16 to 60 inches; silty clay loam

1191—Blazefork silty clay loam, 0 to 1 percent slope, rarely flooded

Map Unit Composition

Blazefork: 90 percent

Minor components: 10 percent

Component Descriptions

Blazefork

MLRA: 79 - Great Bend Sand Plains

Landform: Flood plain on river valley

Parent material: Silty alluvium

Slope: 0 to 1 percent

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 9.3 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: About 48 to 48 inches

Runoff class: Very low

Ecological site: Clay Lowland (pe25-34)

Land capability (irrigated): 2s

Land capability (nonirrigated): 2w

Typical Profile:

Ap1—0 to 3 inches; silty clay loam

Ap2—3 to 7 inches; silty clay loam

Bt—7 to 14 inches; silty clay

Btss—14 to 22 inches; silty clay

Bt1—22 to 29 inches; silty clay

Bt2—29 to 34 inches; silty clay

Bt3—34 to 40 inches; silty clay

Bt4—40 to 48 inches; silty clay loam

2Bt5—48 to 61 inches; clay loam

2Bt6—61 to 80 inches; loam

Component note: This soil was formerly mapped as Tabler. Included with this soil in mapping are small areas with a silt loam surface texture.

Minor Components

Tobin

Composition: About 10 percent

Slope: 0 to 1 percent

Drainage class: Well drained

Ecological site: Loamy Lowland (pe25-34)

Unnamed Wet Soils

General Considerations: This map unit is well suited for the commonly grown crops such as wheat and grain sorghum. Most areas are cropped. The hazard of wind and water erosion is slight. The water table and high shrink-swell potential limit the engineering uses of this soil.

1324—Carway And Carbika Soils, 0 to 1 percent slope

Mapunit Information: Carway soils are in the interdunal areas which sit higher than the Carbika soils in the depressional areas on the paleoterrace.

Map Unit Composition

Carway: 50 percent

Carbika: 30 percent

Minor components: 20 percent

Component Descriptions

Carway

MLRA: 79 - Great Bend Sand Plains

Landform: Interdune on depression on paleoterrace on river valley

Parent material: Loamy eolian deposits over alluvium

Slope: 0 to 1 percent

Drainage class: Somewhat poorly 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

Ponding hazard: Frequent

Depth to seasonal water saturation: About 0 to 0 inches

Runoff class: Very low

Ecological site: Subirrigated (pe21-28)

Land capability (nonirrigated): 2w

Typical Profile:

Ap—0 to 7 inches; fine sandy loam

Bt1—7 to 10 inches; sandy clay loam

Bt2—10 to 15 inches; sandy clay loam

Bt3—15 to 22 inches; fine sandy loam
 Bt4—22 to 35 inches; fine sandy loam
 2Btb1—35 to 40 inches; clay loam
 2Btb2—40 to 54 inches; clay loam
 2Btb3—54 to 63 inches; clay loam
 2Btb4—63 to 72 inches; clay loam
 2Btkb—72 to 80 inches; clay loam

Component note: This soil was formerly mapped as Carwile. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

Carbika

MLRA: 79 - Great Bend Sand Plains

Landform: Interdune on depression on paleoterrace on river valley

Parent material: Loamy eolian deposits over alluvium

Slope: 0 to 1 percent

Drainage class: Poorly drained

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

Available water capacity: High (About 9.6 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Ponding hazard: Frequent

Depth to seasonal water saturation: About 0 to 0 inches

Runoff class: Very low

Ecological site: Subirrigated (pe21-28)

Land capability (nonirrigated): 2w

Typical Profile:

A—0 to 11 inches; silt loam
 Bt1—11 to 15 inches; clay
 Bt2—15 to 22 inches; clay loam
 Bt3—22 to 34 inches; clay loam
 Bt4—34 to 41 inches; clay loam
 Bt5—41 to 60 inches; clay loam
 Btk—60 to 80 inches; clay loam

Component note: This soil was formerly mapped as Carwile.

Minor Components

Solvay

Composition: About 20 percent

Slope: 0 to 1 percent

Drainage class: Somewhat poorly drained

Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland but, some are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. Wheat and grain sorghum are the predominant crops. The hazard for wind and water erosion is slight. The presence of water tables and potential

for high shrink-swell limit most engineering uses for this mapunit.

1357—Carway-Dillhut-Solvay complex, 0 to 2 percent slopes

Mapunit Information: The Carway and Solvay soils are in the interdunal areas below the Dillhut soils on the dunes.

Map Unit Composition

Carway: 40 percent

Solvay: 30 percent

Dillhut: 30 percent

Component Descriptions

Carway

MLRA: 79 - Great Bend Sand Plains

Landform: Depression on interdune on paleoterrace on river valley

Parent material: Loamy eolian deposits over alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

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

Available water capacity: Moderate (About 8.6 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Ponding hazard: Frequent

Depth to seasonal water saturation: About 0 to 0 inches

Runoff class: Very low

Ecological site: Subirrigated (pe21-28)

Land capability (nonirrigated): 2w

Typical Profile:

Ap—0 to 7 inches; loamy fine sand
 Bt1—7 to 10 inches; sandy clay loam
 Bt2—10 to 15 inches; sandy clay loam
 Bt3—15 to 22 inches; fine sandy loam
 Bt4—22 to 35 inches; fine sandy loam
 2Btb1—35 to 40 inches; clay loam
 2Btb2—40 to 54 inches; clay loam
 2Btb3—54 to 63 inches; clay loam
 2Btb4—63 to 72 inches; clay loam
 2Btkb—72 to 80 inches; clay loam

Component note: This soil was formerly mapped as Carwile. Included with this soil in mapping are small areas with a fine sandy loam surface texture.

Solvay

MLRA: 79 - Great Bend Sand Plains

Landform: Interdune on paleoterrace on river valley

Parent material: Loamy eolian deposits over alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

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

Available water capacity: High (About 9.2 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 24 to 48 inches

Runoff class: Very low

Ecological site: Subirrigated (pe21-28)

Land capability (nonirrigated): 2e

Typical Profile:

A—0 to 5 inches; loamy fine sand
 2Bt1—5 to 14 inches; fine sandy loam
 2Bt2—14 to 23 inches; fine sandy loam
 2Bt3—23 to 37 inches; fine sandy loam
 2BC1—37 to 58 inches; fine sandy loam
 2BC2—58 to 76 inches; loamy fine sand
 2BC3—76 to 80 inches; loamy fine sand

Component note: This soil was formerly mapped as Carwile and Farnum. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

Dillhut

MLRA: 79 - Great Bend Sand Plains

Landform: Dune on paleoterrace on river valley

Parent material: Eolian deposits over alluvium

Slope: 0 to 2 percent

Drainage class: Moderately well drained

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

Available water capacity: Moderate (About 6.1 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 18 to 18 inches

Runoff class: Very low

Ecological site: Sands (pe21-28)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

A—0 to 10 inches; fine sand
 C—10 to 29 inches; fine sand
 2Btb1—29 to 35 inches; fine sandy loam
 2Btb2—35 to 43 inches; fine sandy loam
 3Btb3—43 to 54 inches; clay loam
 3Btb4—54 to 66 inches; clay loam
 3Btkb—66 to 80 inches; clay loam

Component note: This soil was formerly mapped as Elsmere. Included with this soil are small areas with a fine sand surface texture.

Minor Components

Carbika

Slope: 0 to 1 percent

Drainage class: Poorly drained

Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are used for pasture or range, some areas are used for cropland. This mapunit is poorly suited for the most commonly grown crops. Wheat, grain sorghum and alfalfa are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. The presence of high water tables will limit most engineering uses for this mapunit.

1553—Darlow-Elmer complex, 0 to 2 percent slopes

Mapunit Information: Darlow soils generally occur on lower areas of the paleoterrace. The soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.

Map Unit Composition

Darlow: 70 percent

Elmer: 20 percent

Minor components: 10 percent

Component Descriptions

Darlow

MLRA: 79 - Great Bend Sand Plains

Landform: Terrace on river valley

Parent material: Loamy alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

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

Available water capacity: Moderate (About 7.6 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Very low
Ecological site: Clay Pan (pe21-28)
Land capability (irrigated): 4s
Land capability (nonirrigated): 4s

Typical Profile:

Ap1—0 to 5 inches; loam
 Ap2—5 to 8 inches; loam
 Btn—8 to 14 inches; loam
 Btny—14 to 20 inches; clay loam
 Btknyz—20 to 26 inches; loam
 Btnz1—26 to 33 inches; loam
 Btnz2—33 to 44 inches; loam
 Btn1—44 to 53 inches; loam
 Btn2—53 to 68 inches; loam
 2Btn3—68 to 80 inches; sandy loam

Component note: This soil was formerly mapped as Farnum-Slickspots. Included with this soil are small areas with a fine sandy loam surface textures. Also included are small areas where the surface layer may be very slightly to slightly saline. In some places there slope inclusions of greater than 1 percent.

Elmer

MLRA: 79 - Great Bend Sand Plains
Landform: Terrace on river valley
Parent material: Loamy alluvium
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.1 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Loamy Terrace (pe21-28)
Land capability (irrigated): 3s
Land capability (nonirrigated): 3s

Typical Profile:

Ap1—0 to 6 inches; fine sandy loam
 Ap2—6 to 9 inches; fine sandy loam
 AB—9 to 19 inches; fine sandy loam
 Btn1—19 to 26 inches; fine sandy loam
 Btn2—26 to 37 inches; fine sandy loam
 Btnk1—37 to 43 inches; loam
 Btnk2—43 to 51 inches; clay loam
 Btnk3—51 to 61 inches; fine sandy loam
 Btn1'—61 to 72 inches; fine sandy loam
 Btn2'—72 to 80 inches; fine sandy loam

Component note: This series was formerly mapped as Farnum-Slickspots. These soils are very deep, moderately well drained, slowly permeable saline-sodic soils formed in alluvium. In some places the surface texture may be a loam. In some areas there

may be a very slightly to slightly saline surface layer. In some places there are slope inclusions of greater than 1 percent.

Minor Components

Punkin

Composition: About 10 percent
Slope: 0 to 2 percent
Drainage class: Moderately well drained
Ecological site: Clay Pan (pe21-28)

Carway

Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carbika

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, but some are in pasture or range. This mapunit is moderately well suited for the most commonly grown crops. Wheat and grain sorghum are the major crops. The hazard for wind erosion is severe and water erosion is slight. Maintaining soil tilth and soil crusting are problems but they can be improved by adding organic matter. The high sodium content, pH, and soluble salts can limit the engineering uses of this mapunit.

1554—Dillhut fine sand, 1 to 3 percent slopes

Map Unit Composition

Dillhut: 70 percent
 Minor components: 30 percent

Component Descriptions

Dillhut

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Eolian deposits over alluvium
Slope: 1 to 3 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 6.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None

Depth to seasonal water saturation: About 18 to 18 inches

Runoff class: Very low

Ecological site: Sands (pe21-28)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

A—0 to 10 inches; fine sand

C—10 to 29 inches; fine sand

2Btb1—29 to 35 inches; fine sandy loam

2Btb2—35 to 43 inches; fine sandy loam

3Btb3—43 to 54 inches; clay loam

3Btb4—54 to 66 inches; clay loam

3Btkb—66 to 80 inches; clay loam

Component note: This soil was formerly mapped as Elsmere. Included with this soil are small areas with a fine sand surface texture.

Minor Components

Dillwyn

Composition: About 30 percent

Slope: 1 to 3 percent

Drainage class: Somewhat poorly drained

Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. Some areas are in cropland. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. The presence of water tables and sandy textures limits many of the engineering uses of this soil.

1556—Dillhut-Solvay complex, 0 to 3 percent slopes

Mapunit Information: Dillhut soils occur on upper dunes and Solvay soils occur in the lower interdunal areas.

Map Unit Composition

Dillhut: 30 percent

Solvay: 30 percent

Minor components: 40 percent

Component Descriptions

Dillhut

MLRA: 79 - Great Bend Sand Plains

Landform: Dune on paleoterrace on river valley

Parent material: Eolian deposits over alluvium

Slope: 0 to 3 percent

Drainage class: Moderately well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Moderate (About 6.0 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: Sands (pe21-28)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

A—0 to 4 inches; fine sand

AC—4 to 9 inches; fine sand

C1—9 to 18 inches; fine sand

C2—18 to 26 inches; fine sand

2Btb1—26 to 41 inches; fine sandy loam

2Btb2—41 to 55 inches; fine sandy loam

2BCb1—55 to 65 inches; fine sandy loam

2BCb2—65 to 70 inches; fine sandy loam

2Cg—70 to 80 inches; fine sandy loam

Component note: This soil was formerly mapped as Elsmere. Included with this soil are small areas with a fine sand surface texture.

Solvay

MLRA: 79 - Great Bend Sand Plains

Landform: Interdune on paleoterrace on river valley

Parent material: Loamy eolian deposits over alluvium

Slope: 0 to 2 percent

Drainage class: Somewhat poorly drained

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

Available water capacity: High (About 9.2 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 24 to 48 inches

Runoff class: Very low

Ecological site: Subirrigated (pe21-28)

Land capability (nonirrigated): 2e

Typical Profile:

A—0 to 5 inches; fine sandy loam

2Bt1—5 to 14 inches; fine sandy loam

2Bt2—14 to 23 inches; fine sandy loam

2Bt3—23 to 37 inches; fine sandy loam

2BC1—37 to 58 inches; fine sandy loam

2BC2—58 to 76 inches; loamy fine sand

2BC3—76 to 80 inches; loamy fine sand

Component note: This soil was formerly mapped as Carwile or Farnum. Included with this soil in mapping are small areas with a loamy fine sand surface texture.

Minor Components**Dillwyn***Composition:* About 25 percent*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Subirrigated (pe21-28)**Carway***Composition:* About 15 percent*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. The presence of water tables and sandy textures limits many of the engineering uses of this soil.

2391—Kaskan silty clay loam, 0 to 1 percent slope, frequently flooded, channeled

Map Unit Composition

Kaskan: 75 percent

Minor components: 25 percent

Component Descriptions

Kaskan*MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain on river valley*Parent material:* Loamy alluvium*Slope:* 0 to 1 percent*Drainage class:* Well drained*Slowest permeability:* Moderately slow (About 0.20 in/hr)*Available water capacity:* Moderate (About 7.8 inches)*Shrink-swell potential:* Moderate (About 4.5 LEP)*Flooding hazard:* Frequent*Depth to seasonal water saturation:* About 60 to 60 inches*Runoff class:* Very low*Ecological site:* Loamy Lowland (pe21-28)*Land capability (nonirrigated):* 5w*Typical Profile:*

A1—0 to 9 inches; silty clay loam

A2—9 to 13 inches; silty clay loam

Bw1—13 to 17 inches; fine sandy loam

Bw2—17 to 21 inches; fine sandy loam

Bw3—21 to 27 inches; fine sandy loam

C1—27 to 43 inches; stratified fine sand to loamy fine sand

C2—43 to 57 inches; stratified fine sand to fine sandy loam

C3—57 to 80 inches; stratified fine sand to fine sandy loam

Component note: This soil was formerly mapped as Dale. Included with this soil in mapping are some areas that have a silty clay loam surface texture.

Minor Components**Tobin***Composition:* About 25 percent*Slope:* 0 to 1 percent*Drainage class:* Well drained*Ecological site:* Loamy Lowland (pe25-34)**Unnamed Wet Soils**

General Considerations: Most areas are in pasture or range. This map unit is poorly suited for most commonly grown crops. The hazard for wind and water erosion is slight. The water table and occasional chance of flooding may limit some of the engineering practices.

2395—Kisiwa loam, 0 to 1 percent slopes

Mapunit Information: The soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.

Map Unit Composition

Kisiwa: 90 percent

Minor components: 10 percent

Component Descriptions

Kisiwa*MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain on river valley, terrace on river valley*Parent material:* Loamy alluvium over 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 8.7 inches)

Shrink-swell potential: Moderate (About 4.5 LEP)

Flooding hazard: None

Ponding hazard: Occasional

Depth to seasonal water saturation: About 0 to 0 inches

Runoff class: Very low

Ecological site: Saline Subirrigated (pe21-28)

Land capability (nonirrigated): 4s

Typical Profile:

Ap1—0 to 4 inches; loam

Ap2—4 to 7 inches; loam

Btkn—7 to 14 inches; clay loam

Btknssg1—14 to 23 inches; clay loam

Btknssg2—23 to 31 inches; clay

Btknssg3—31 to 40 inches; clay

Btknssg4—40 to 46 inches; loam

Btkg—46 to 52 inches; fine sandy loam

BCg—52 to 58 inches; fine sandy loam

Cg—58 to 65 inches; stratified coarse sand to fine sandy loam

2C—65 to 80 inches; stratified coarse sand

Component note: This soil was formerly mapped as Slickspots. Included with this soil in mapping are small areas that have a fine sandy loam, loam, or loamy fine sand surface texture. Also included are small areas that have surface layers that are very slightly saline to moderately saline.

Minor Components

Punkin

Composition: About 10 percent

Slope: 0 to 1 percent

Drainage class: Moderately well drained

Ecological site: Clay Pan (pe21-28)

Carbika

Slope: 0 to 1 percent

Drainage class: Poorly drained

Ecological site: Subirrigated (pe21-28)

General Considerations: This map unit is poorly suited to the commonly grown crops due to the sodic conditions and wetness. Most areas are used for pasture or range. For areas that are cropped, the hazard of wind or water erosion is slight. Maintaining soil tilth and soil crusting are problems, but they can be improved by adding organic matter. The high sodium content, pH, soluble salts, high shrink-swell, and water table limit the engineering uses of these soils.

2556—Langdon fine sand, 0 to 15 percent slopes

Mapunit Information: Langdon soils occur on mid to upper parts of the dunes. Tivin soils occur on the upper parts of the dunes. Turon soils occur on the lower part of the dune. Turon soils have a paleosol below 40 inches.

Map Unit Composition

Langdon: 50 percent

Minor components: 50 percent

Component Descriptions

Langdon

MLRA: 79 - Great Bend Sand Plains

Landform: Dune on paleoterrace on river valley

Parent material: Sandy eolian deposits

Slope: 0 to 15 percent

Drainage class: Somewhat excessively drained

Slowest permeability: Rapid (About 6.00 in/hr)

Available water capacity: Low (About 3.2 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: None

Ponding hazard: None

Depth to seasonal water saturation: More than 6 feet

Runoff class: Medium

Ecological site: Choppy Sands (pe21-28)

Land capability (nonirrigated): 6e

Typical Profile:

A—0 to 8 inches; fine sand

E&Bt—8 to 47 inches; stratified sand to loamy sand

C—47 to 64 inches; fine sand

E&Btb—64 to 80 inches; stratified sand to loamy sand

Component note: This soil was formerly mapped as Tivoli or Pratt. Typically, this map unit is not cropped, although, in some places the soils occurring on the lower dunes are cultivated.

Minor Components

Turon

Composition: About 25 percent

Slope: 0 to 10 percent

Drainage class: Well drained

Ecological site: Sands (pe21-28)

Tivin

Composition: About 25 percent

Slope: 1 to 15 percent

Drainage class: Somewhat excessively drained

Ecological site: Choppy Sands (pe21-28)

Carway*Slope:* 0 to 1 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Subirrigated (pe21-28)**Warnut***Slope:* 0 to 1 percent*Drainage class:* Poorly drained*Ecological site:* Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind erosion is severe and water erosion is moderate. The sandy textures limit most engineering practices.

2812—Mahone loamy fine sand, 0 to 2 percent slopes, rarely flooded

Map Unit Composition

Mahone: 95 percent

Minor components: 5 percent

Component Descriptions

Mahone*MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain on river valley*Parent material:* Loamy alluvium*Slope:* 0 to 2 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* Moderate (About 8.9 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* Rare*Depth to seasonal water saturation:* About 60 to 60 inches*Runoff class:* Very low*Ecological site:* Loamy Lowland (pe21-28)*Land capability (nonirrigated):* 2w*Typical Profile:*

Ap—0 to 8 inches; loamy fine sand

A—8 to 14 inches; fine sandy loam

Bw1—14 to 20 inches; fine sandy loam

Bw2—20 to 25 inches; very fine sandy loam

Bw3—25 to 33 inches; silt loam

2C—33 to 39 inches; stratified silt loam to fine sandy loam

2Ab1—39 to 42 inches; clay loam

2Ab2—42 to 48 inches; fine sandy loam

2Bwb1—48 to 54 inches; very fine sandy loam

2Bwb2—54 to 61 inches; fine sandy loam

2Ab—61 to 66 inches; fine sandy loam

2Bwb—66 to 71 inches; fine sandy loam

3BC—71 to 78 inches; loamy fine sand

3C—78 to 80 inches; coarse sand

Component note: This soil was formerly mapped as Canadian.

Minor Components**Yaggy***Composition:* About 5 percent*Slope:* 0 to 2 percent*Drainage class:* Somewhat poorly drained*Ecological site:* Sandy Lowland (pe21-28)

General Considerations: Most areas are in cropland, but some are in pasture or range. Some areas are also in the Conservation Reserve Program. This map unit is somewhat poorly suited for most commonly grown crops. Wheat and grain sorghum are major crops. The hazard for wind erosion is severe and water erosion is slight. The high water tables and depth to sand will many engineering practices.

2957—Nickerson-Punkin fine sandy loams, 0 to 2 percent slopes

Mapunit Information: Nickerson soils occur higher on the terrace than the Punkin soils.

Map Unit Composition

Nickerson: 50 percent

Punkin: 50 percent

Component Descriptions

Nickerson*MLRA:* 79 - Great Bend Sand Plains*Landform:* Terrace on river valley*Parent material:* Alluvium*Slope:* 0 to 2 percent*Drainage class:* Moderately well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* Moderate (About 7.4 inches)*Shrink-swell potential:* Low (About 1.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* About 24 to 48 inches*Runoff class:* Very low

Ecological site: Sandy (pe21-28)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

Ap—0 to 6 inches; fine sandy loam
 A—6 to 12 inches; loamy fine sand
 BA—12 to 18 inches; fine sandy loam
 Bt—18 to 29 inches; sandy clay loam
 Btk1—29 to 34 inches; loam
 Btk2—34 to 38 inches; very fine sandy loam
 BC—38 to 45 inches; loamy fine sand
 C1—45 to 53 inches; fine sand
 C2—53 to 57 inches; fine sand
 C3—57 to 80 inches; sand

Component note: This soil was formerly mapped as Carwile or Farnum. Included with this soil in mapping are small areas that may have a loamy fine sand surface texture.

Punkin

MLRA: 79 - Great Bend Sand Plains

Landform: Paleoterrace on river valley

Parent material: Clayey alluvium over sandy alluvium

Slope: 0 to 1 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 low

Ecological site: Saline Subirrigated (pe21-28)

Land capability (irrigated): 3s

Land capability (nonirrigated): 3s

Typical Profile:

Ap—0 to 6 inches; fine sandy loam
 An—6 to 14 inches; fine sandy loam
 2Btknz1—14 to 22 inches; clay loam
 2Btknz2—22 to 32 inches; clay
 2Btkn1—32 to 41 inches; sandy clay loam
 2Btkn2—41 to 51 inches; sandy clay loam
 3BC—51 to 63 inches; sand
 3C—63 to 80 inches; stratified coarse sand to sand

Component note: This soil was formerly mapped as Slickspots or Tabler. Included with this soil in mapping are some areas with a loam surface layer. In some areas the surface layer can be very slightly to slightly saline.

Minor Components

Carway

Slope: 0 to 1 percent

Drainage class: Somewhat poorly drained

Ecological site: Subirrigated (pe21-28)

Carbika

Slope: 0 to 1 percent

Drainage class: Poorly drained

Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, some are in pasture or range. This mapunit is moderately well suited for the most commonly grown crops. Wheat, grain sorghum and irrigated corn are the major crops. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by conservation tillage, plant residue management, and tall grass barriers. This mapunit is somewhat poorly suited for most engineering practices due to depth of sand, water tables, potential for shrink-swell, and soluble salt content.

3181—Pratt-Turon fine sands, 1 to 5 percent slopes

Mapunit Information: Pratt and Turon soils are on similar positions on dunes. Turon soils have a paleosol below 40 inches.

Map Unit Composition

Pratt: 45 percent

Turon: 30 percent

Minor components: 25 percent

Component Descriptions

Pratt

MLRA: 79 - Great Bend Sand Plains

Landform: Dune on paleoterrace on river valley

Parent material: Sandy eolian deposits

Slope: 1 to 5 percent

Drainage class: Well drained

Slowest permeability: Rapid (About 5.95 in/hr)

Available water capacity: Moderate (About 6.3 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: Sands (pe21-28)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

Ap—0 to 8 inches; fine sand
 Bt—8 to 24 inches; loamy fine sand

E&Bt—24 to 64 inches; stratified fine sand to loamy fine sand
 C—64 to 80 inches; fine sand
Component note: Included with this soil are small areas with a loamy fine sand surface texture.

Turon

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits over alluvium
Slope: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.1 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: Sands (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:

Ap—0 to 8 inches; fine sand
 Bt—8 to 28 inches; loamy fine sand
 E&Bt—28 to 40 inches; stratified loamy fine sand to fine sandy loam
 2Btb1—40 to 58 inches; silty clay
 2Btb2—58 to 75 inches; silty clay
 2Btb3—75 to 80 inches; silty clay
Component note: This soil was formerly mapped as Pratt. A buried soil occurs below a depth of 40 inches. The buried soil varies in thickness and in texture. The texture varies from sandy clay loam to silty clay. The texture of the buried soil generally increases in sand content with increasing depth.

Minor Components

Hayes

Composition: About 25 percent
Slope: 1 to 5 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carway

Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Warnut

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, but some are in pasture and range. Some areas are also in the Conservation Reserve Program. This mapunit is somewhat poorly suited for the most commonly grown crops. Wheat, grain sorghum, and irrigated corn are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Wind erosion can be controlled by plant residue management, conservation tillage, and tall grass barriers. This mapunit is moderately well suited for most engineering practices.

3190—Punkin silt loam, 0 to 1 percent slope

Mapunit Information: The soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.

Map Unit Composition

Punkin: 90 percent
 Minor components: 10 percent

Component Descriptions

Punkin

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.3 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Clay Pan (pe21-28)
Land capability (irrigated): 3s
Land capability (nonirrigated): 3s

Typical Profile:

Ap—0 to 4 inches; silt loam
 Btn—4 to 8 inches; silty clay
 Btnz1—8 to 15 inches; silty clay loam
 Btnz2—15 to 21 inches; silty clay loam
 Btnkz1—21 to 39 inches; silty clay loam
 Btnkz2—39 to 47 inches; silty clay loam

Btkz3—47 to 64 inches; silty clay loam
 BC1—64 to 78 inches; sandy clay loam
 BC2—78 to 80 inches; sandy clay loam

Component note: This series was formerly mapped as Slickspots and Tabler. In some places, this mapunit may have a fine sandy loam surface layer. And, in some locations, the surface layer can be very slightly to slightly saline.

Minor Components

Darlow

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Pan (pe21-28)

Carbika

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Kisiwa

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Saline Subirrigated (pe21-28)

General Considerations: Most areas are used for cropland, but some areas are used for pasture or range. This mapunit is moderately well suited for the most commonly grown crops such as wheat and grain sorghum. The hazard for wind erosion is severe and water erosion is slight. Maintaining soil tilth and soil crusting are problems but they can be improved by organic matter. The high sodium content, pH, soluble salts, and high shrink-swell potential can limit the uses of many engineering practices.

3191—Punkin-Taver complex, 0 to 1 percent slope

Mapunit Information: The Punkin soils usually sit lower on the paleoterrace than the Taver soils. The Punkin soils in this map unit generally have a non-saline surface layer. The subsoils are very slightly to slightly saline with a high content of adsorbed sodium.

Map Unit Composition

Punkin: 70 percent
 Taver: 20 percent

Minor components: 10 percent

Component Descriptions

Punkin

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Clayey alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.3 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Clay Pan (pe21-28)
Land capability (irrigated): 3s
Land capability (nonirrigated): 3s

Typical Profile:

Ap—0 to 4 inches; silt loam
 Btn—4 to 8 inches; silty clay
 Btnz1—8 to 15 inches; silty clay loam
 Btnz2—15 to 21 inches; silty clay loam
 Btkz1—21 to 39 inches; silty clay loam
 Btkz2—39 to 47 inches; silty clay loam
 Btkz3—47 to 64 inches; silty clay loam
 BC1—64 to 78 inches; sandy clay loam
 BC2—78 to 80 inches; sandy clay loam

Component note: This soil was formerly mapped as Slickspots and Tabler. Included with this soil in mapping are some areas with a fine sandy loam surface texture. Also, in some areas the surface layer can be very slightly to slightly saline.

Taver

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: 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: More than 6 feet
Runoff class: Very low
Ecological site: Clay Upland (pe21-28)
Land capability (nonirrigated): 2s

Typical Profile:

Ap—0 to 7 inches; loam
 2Bt1—7 to 17 inches; silty clay loam
 2Bt2—17 to 33 inches; silty clay
 2Btk1—33 to 53 inches; silty clay loam
 2Btk2—53 to 64 inches; clay loam
 3Bt—64 to 80 inches; sandy clay loam
Component note: This series was formerly mapped as Tabler. These soils are very deep, moderately well drained, very slowly permeable soils formed in clayey alluvium.

Minor Components

Darlow

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Clay Pan (pe21-28)

Carbika

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Kisiwa

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Saline Subirrigated (pe21-28)

General Considerations: Most areas are used for cropland, but some areas are used for pasture or range. This mapunit is moderately well suited for the most commonly grown crops such as wheat and grain sorghum. The hazard for wind erosion is severe and water erosion is slight. Maintaining soil tilth and soil crusting are problems but they can be improved by organic matter. The high sodium content, pH, soluble salts, and high shrink-swell potential can limit the uses of many engineering practices.

3511—Saltcreek And Naron fine sandy loams, 0 to 1 percent slope

Mapunit Information: Saltcreek and Naron soils are interfingering upon the landscape. Both soils occur in similar positions.

Map Unit Composition

Saltcreek: 70 percent
 Naron: 30 percent

Component Descriptions

Saltcreek

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: High (About 9.0 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Very low
Ecological site: Sandy (pe21-28)
Land capability (irrigated): 1
Land capability (nonirrigated): 3e

Typical Profile:

Ap—0 to 5 inches; fine sandy loam
 Bt1—5 to 10 inches; sandy clay loam
 Bt2—10 to 26 inches; sandy clay loam
 Bt3—26 to 39 inches; fine sandy loam
 2Btb—39 to 56 inches; silty clay
 2Btkb1—56 to 66 inches; silty clay loam
 2Btkb2—66 to 80 inches; silty clay loam

Component note: This soil was formerly mapped as Naron. A buried soil occurs from 25 to 60 inches. The buried soil varies in thickness and in texture. The texture ranges from sandy clay loam to silty clay generally increases in sand content with increasing depth. In some areas the buried soil has a higher content of sand.

Naron

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.1 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: Sandy (pe21-28)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:

Ap—0 to 7 inches; fine sandy loam
 A—7 to 19 inches; fine sandy loam

Bt1—19 to 34 inches; loam
 Bt2—34 to 41 inches; sandy clay loam
 Ck—41 to 61 inches; stratified loam to loamy fine sand to fine sandy loam
 C—61 to 80 inches; coarse sand
Component note: These soils are very deep, well drained, moderately permeable soils formed in loamy eolian deposits.

General Considerations: Most areas are in cropland, but some areas are in pasture or range. This mapunit is well suited for most commonly grown crops. Wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. The depth to sand and potential for high shrink-swell may limit some engineering practices for this mapunit.

3540—Solvay loamy fine sand, 0 to 2 percent slopes

Map Unit Composition

Solvay: 90 percent
 Minor components: 10 percent

Component Descriptions

Solvay

MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley
Parent material: Loamy eolian deposits over alluvium
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 9.0 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2e

Typical Profile:

A—0 to 5 inches; loamy fine sand
 2Bt1—5 to 14 inches; fine sandy loam
 2Bt2—14 to 23 inches; fine sandy loam
 2Bt3—23 to 37 inches; fine sandy loam
 2BC1—37 to 58 inches; fine sandy loam
 2BC2—58 to 76 inches; loamy fine sand
 2BC3—76 to 80 inches; loamy fine sand

Component note: This soil was formerly mapped as Carwile and Farnum. Included with this soil in mapping are small areas with a fine sandy loam surface texture. These soils occur in depressions on the floodplain.

Minor Components

Hayes

Composition: About 10 percent
Slope: 0 to 2 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carway

Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carbika

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in cropland, but some areas are used for pasture and range. Many areas are in the Conservation Reserve Program. This mapunit is somewhat poorly suited for the most commonly grown crops. Wheat, grain sorghum and irrigated corn are the predominant crops. The hazard for wind erosion is severe and water erosion is slight. Conservation tillage, residue management, and tall grass barriers are ways to control wind erosion. The depth to water tables will limit many engineering practices.

3639—Taver loam, 0 to 1 percent slope

Map Unit Composition

Taver: 90 percent
 Minor components: 10 percent

Component Descriptions

Taver

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: 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: More than 6 feet
Runoff class: Very low
Ecological site: Clay Upland (pe21-28)
Land capability (nonirrigated): 2s

Typical Profile:

Ap—0 to 7 inches; loam
 2Bt1—7 to 17 inches; silty clay loam
 2Bt2—17 to 33 inches; silty clay
 2Btk1—33 to 53 inches; silty clay loam
 2Btk2—53 to 64 inches; clay loam
 3Bt—64 to 80 inches; sandy clay loam

Component note: This series was formerly mapped as Tabler.

Minor Components

Saltcreek

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Well drained
Ecological site: Sandy (pe21-28)

Carbika

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are used for cropland, but some areas are in pasture or range. This mapunit is well suited for the most commonly grown crops such as wheat, grain sorghum, soybeans, and irrigated corn. The hazard for wind and water erosion is slight. This mapunit is moderately well suited for most engineering practices. The potential for high shrink-swell may limit some practices.

3641—Tivin-Dillhut fine sands, 0 to 15 percent slopes

Mapunit Information: Tivin soils occur on high dunes, and Dillhut soils occur on low relief dunes.

Map Unit Composition

Tivin: 45 percent
 Dillhut: 40 percent
 Minor components: 15 percent

Component Descriptions

Tivin

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 1 to 15 percent
Drainage class: Somewhat excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Ponding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Medium
Ecological site: Choppy Sands (pe21-28)
Land capability (nonirrigated): 6e

Typical Profile:

A—0 to 7 inches; fine sand
 AC—7 to 18 inches; fine sand
 C—18 to 80 inches; fine sand

Component note: This series was formerly mapped as Tivoli.

Dillhut

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Eolian deposits over alluvium
Slope: 0 to 7 percent
Drainage class: Moderately well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 6.0 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: Sands (pe21-28)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:

A—0 to 4 inches; fine sand
 AC—4 to 9 inches; fine sand
 C1—9 to 18 inches; fine sand
 C2—18 to 26 inches; fine sand
 2Btb1—26 to 41 inches; fine sandy loam
 2Btb2—41 to 55 inches; fine sandy loam
 2BCb1—55 to 65 inches; fine sandy loam
 2BCb2—65 to 70 inches; fine sandy loam
 2Cg—70 to 80 inches; fine sandy loam

Component note: This series was formerly mapped as Elsmere. In some places the surface texture may be fine sand.

Minor Components Solvay

Composition: About 15 percent
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Carway

Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

Warnut

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Plev

Slope: 0 to 1 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in pasture or range. This mapunit is poorly suited for most commonly grown crops. The hazard for wind erosion is severe and water erosion is slight. This mapunit is poorly suited for most engineering practices.

3900—Warnut fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Warnut: 75 percent
 Minor components: 25 percent

Component Descriptions

Warnut

MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley, depression on paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Moderate (About 8.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Ponding hazard: Frequent
Depth to seasonal water saturation: About 0 to 0 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)
Land capability (nonirrigated): 2w

Typical Profile:

A—0 to 2 inches; fine sandy loam
 Bt1—2 to 5 inches; loam
 Bt2—5 to 11 inches; sandy clay loam
 Bt3—11 to 15 inches; fine sandy loam
 BC1—15 to 22 inches; fine sandy loam
 BC2—22 to 37 inches; sandy loam
 C1—37 to 60 inches; loamy sand
 C2—60 to 80 inches; sand

Component note: This series was formerly mapped as Carwile.

Minor Components**Carway**

Composition: About 25 percent
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are in rangeland or pasture, but some areas are in cropland. This mapunit is poorly suited for the most commonly grown crops. The hazard for wind and water erosion is slight. The depth to the water table can severely limit most engineering practices.

3966—Willowbrook fine sandy loam, 0 to 1 percent slope, occasionally flooded

Map Unit Composition

Willowbrook: 90 percent
 Minor components: 10 percent

Component Descriptions

Willowbrook

MLRA: 79 - Great Bend Sand Plains
Landform: Flood plain on river valley
Parent material: Loamy alluvium over sandy alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Low (About 5.7 inches)
Shrink-swell potential: Low (About 1.7 LEP)
Flooding hazard: Occasional
Ponding hazard: None
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Very low
Ecological site: Subirrigated (pe21-28)

Land capability (irrigated): 2e
Land capability (nonirrigated): 3e

Typical Profile:

Ap1—0 to 4 inches; fine sandy loam
 Ap2—4 to 9 inches; fine sandy loam
 AB—9 to 13 inches; fine sandy loam
 Bw—13 to 17 inches; fine sandy loam
 Bk1—17 to 19 inches; loam
 Bk2—19 to 26 inches; fine sandy loam
 2C1—26 to 45 inches; coarse sand
 2C2—45 to 51 inches; coarse sand
 2C3—51 to 80 inches; stratified gravelly
 coarse sand to sand

Component note: This series was formerly mapped as Wann.

Minor Components

Nickerson

Composition: About 10 percent
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Ecological site: Sandy (pe21-28)

Kanza

Slope: 0 to 2 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

Ninnescah

Slope: 0 to 2 percent
Drainage class: Poorly drained
Ecological site: Subirrigated (pe21-28)

General Considerations: Most areas are used for pasture or range, some areas are used for hay production. This map unit is poorly suited for most commonly grown crops. The hazard for water erosion is slight and wind erosion is severe. Depth to sand and water tables can limit most engineering uses for this map unit. Most areas are used for pasture or range, some areas are used for hay production. This map unit is poorly suited for most commonly grown crops. The hazard for water erosion is slight and wind erosion is severe. Depth to sand and water tables can limit most engineering uses for this map unit.

Ad—Fluents, frequently flooded

Map Unit Composition

Fluents: 100 percent

Component Descriptions

Fluents

MLRA: 75 - Central Loess Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 20 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.9 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Land capability (nonirrigated): 6w

Typical Profile:

H1—0 to 6 inches; silt loam
 H2—6 to 60 inches; silty clay loam

Minor Components

Unnamed Wet Soils

Phase: Sandy, Drainageway

Ba—Clime-Hobbs complex, 0 to 20 percent slopes

Map Unit Composition

Clime: 70 percent
 Hobbs: 30 percent

Component Descriptions

Clime

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Residuum
Slope: 1 to 20 percent
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Somewhat excessively drained
Slowest permeability: Slow (About 0.06 in/hr)
Available water capacity: Low (About 3.9 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High

Ecological site: Limy Upland (pe25-34)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 9 inches; silty clay
 H2—9 to 27 inches; silty clay
 Cr—27 to 27 inches; unweathered bedrock

Hobbs

MLRA: 75 - Central Loess Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: Very high (About 12.6 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Loamy Lowland (pe25-34)
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 26 inches; silt loam
 H2—26 to 60 inches;

Minor Components

Unnamed Wet Soils

Phase: Sandy, Drainageway

BOP—Borrow Pits

Map Unit Composition

Borrow Pits: 100 percent

Component Descriptions

Borrow Pits

MLRA: 75 - Central Loess Plains
Depth to seasonal water saturation: More than 6 feet

General Considerations: An open excavation from which soil and underlying material have been removed usually for construction purposes.

Ca—Carwile fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Carwile: 100 percent

Component Descriptions

Carwile

MLRA: 79 - Great Bend Sand Plains
Landform: Depression on paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly 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 0 to 0 inches
Runoff class: Negligible
Ecological site: Sandy (pe25-34)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 18 inches; fine sandy loam
 H2—18 to 37 inches; clay loam
 H3—37 to 60 inches; clay loam

Minor Components

Unnamed Wet Soils

Phase: Loamy, Depression

Cc—Clark clay loam, 1 to 3 percent slopes

Map Unit Composition

Clark: 100 percent

Component Descriptions

Clark

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Loamy alluvium
Slope: 1 to 3 percent
Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 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: Limy Upland (pe25-34)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 10 inches; clay loam
H2—10 to 60 inches; clay loam

Cd—Clime silty clay, 1 to 3 percent slopes

Map Unit Composition

Clime: 100 percent

Component Descriptions

Clime

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 1 to 3 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 4.3 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: Limy Upland (pe25-34)
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silty clay
H2—9 to 30 inches; silty clay
Cr—30 to 30 inches; unweathered bedrock

Minor Components

Unnamed Wet Soils

Phase: Clayey, Drainageway

Ce—Clime silty clay, 3 to 6 percent slopes

Map Unit Composition

Clime: 100 percent

Component Descriptions

Clime

MLRA: 75 - Central Loess Plains
Landform: Hillslope on upland
Parent material: Silty and clayey residuum weathered from shale, calcareous
Slope: 3 to 6 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 3.9 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: High
Ecological site: Limy Upland (pe25-34)
Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 9 inches; silty clay
H2—9 to 27 inches; silty clay
Cr—27 to 34 inches; unweathered bedrock

Minor Components

Unnamed Hydric Soils

Unnamed Wet Soils

Phase: Clayey, Depression

Cf—Clime silty clay, 2 to 6 percent slopes, eroded

Map Unit Composition

Clime: 100 percent

Component Descriptions

Clime*MLRA:* 75 - Central Loess Plains*Landform:* Hillslope on upland*Parent material:* Silty and clayey residuum weathered from shale, calcareous*Slope:* 2 to 6 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 4.4 inches)*Shrink-swell potential:* Moderate (About 4.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* High*Ecological site:* Limy Upland (pe25-34)*Land capability (nonirrigated):* 6e*Typical Profile:*

H1—0 to 6 inches; silty clay

H2—6 to 30 inches; silty clay

Cr—30 to 30 inches; unweathered bedrock

Minor Components**Unnamed Wet Soils***Phase:* Clayey, Drainageway**Cm—Clime complex, 6 to 12 percent slopes****Map Unit Composition**

Clime: 100 percent

Component Descriptions**Clime***MLRA:* 75 - Central Loess Plains*Landform:* Hillslope on upland*Parent material:* Silty and clayey residuum weathered from shale, calcareous*Slope:* 6 to 12 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 3.9 inches)*Shrink-swell potential:* Moderate (About 4.5 LEP)*Flooding hazard:* None*Depth to seasonal water saturation:* More than 6 feet*Runoff class:* Very high*Ecological site:* Limy Upland (pe25-34)*Land capability (nonirrigated):* 6e*Typical Profile:*

H1—0 to 9 inches; silty clay

H2—9 to 27 inches; silty clay

Cr—27 to 27 inches; unweathered bedrock

Minor Components**Unnamed Wet Soils***Phase:* Clayey, Drainageway**Cr—Crete silt loam, 0 to 1 percent slopes****Map Unit Composition**

Crete: 100 percent

Component Descriptions**Crete***MLRA:* 75 - Central Loess Plains*Landform:* Upland*Parent material:* Silty and clayey loess*Slope:* 0 to 1 percent*Drainage class:* Moderately well drained*Slowest permeability:* Slow (About 0.06 in/hr)*Available water capacity:* High (About 10.9 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:* Clay Upland (pe25-34)*Land capability (irrigated):* 2s*Land capability (nonirrigated):* 2s*Typical Profile:*

Ap—0 to 5 inches; silt loam

BA—5 to 9 inches; silty clay loam

Bt1—9 to 19 inches; silty clay loam

Bt2—19 to 27 inches; silty clay

Bt3—27 to 38 inches; silty clay

BC—38 to 48 inches; silty clay loam

C—48 to 80 inches; silty clay loam

Component note: This soil was formerly mapped as Bethany. Included with this soil in mapping are small areas with a silty clay loam surface texture.

Minor Components**Unnamed Wet Soils**

Phase: Clayey, Drainageway

Unnamed Wet Soils

Phase: Clayey, Depression

General Considerations: Most areas are used as cropland. This mapunit is well suited to all commonly grown crops. Wheat, grain sorghum, and soybeans are the major crops. A few areas are planted to irrigated corn. The hazard of water erosion is slight and wind erosion is moderate. This problem can be overcome by using a conservation tillage and residue management. This mapunit is moderately well suited for most engineering uses.

Ct—Crete silt loam, 1 to 3 percent slopes

Mapunit Information: In some areas within the mapunit, a small percentage of the Crete soils have been moderately eroded. This results in low or very low organic matter levels in the soil surface.

Map Unit Composition

Crete: 100 percent

Component Descriptions**Crete**

MLRA: 75 - Central Loess Plains

Landform: Hillslope on upland

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 10.9 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: Clay Upland (pe25-34)

Land capability (irrigated): 2e

Land capability (nonirrigated): 2e

Typical Profile:

Ap—0 to 5 inches; silt loam

BA—5 to 9 inches; silty clay loam

Bt1—9 to 19 inches; silty clay

Bt2—19 to 27 inches; silty clay

Bt3—27 to 38 inches; silty clay

BC—38 to 48 inches; silty clay loam

C—48 to 80 inches; silt loam

Component note: This soil was formerly mapped as Bethany. Included with this soil in mapping are small areas with a silty clay loam surface texture.

Minor Components**Unnamed Wet Soils**

General Considerations: Most areas are used as cropland. This mapunit is well suited to all commonly grown crops. Wheat, grain sorghum, and soybeans are the major crops. A few areas are planted to irrigated corn. The hazard of water and wind erosion is moderate. Ephemeral gully erosion potential is moderate in most areas. This problem can be overcome by using a conservation tillage, tall grass barriers, contour farming, terraces and waterways, and residue management. This mapunit is moderately well suited for most engineering uses. The high clay content and shrink-swell may limit some practices.

De—Detroit silty clay loam, rarely flooded**Map Unit Composition**

Detroit: 100 percent

Component Descriptions**Detroit**

MLRA: 75 - Central Loess Plains

Landform: Flood plain, river valley

Parent material: Alluvium

Slope: 0 to 1 percent

Drainage class: Moderately well drained

Slowest permeability: Slow (About 0.06 in/hr)

Available water capacity: High (About 10.8 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: Rare

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Loamy Terrace (pe25-34)

Land capability (irrigated): 1

Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 11 inches; silty clay loam
 H2—11 to 36 inches; silty clay
 H3—36 to 60 inches; silty clay loam

Dp—Dillwyn-Plevna complex, 0 to 2 percent slopes

Map Unit Composition

Dillwyn: 65 percent
 Plevna: 35 percent

Component Descriptions

Dillwyn

MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley, dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 4.9 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 36 inches
Runoff class: Negligible
Ecological site: Subirrigated (pe25-34)
Land capability (nonirrigated): 4w

Typical Profile:

H1—0 to 8 inches; loamy fine sand
 H2—8 to 60 inches; loamy fine sand

Plevna

MLRA: 79 - Great Bend Sand Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Poorly drained
Slowest permeability: Moderately rapid (About 2.00 in/hr)
Available water capacity: Moderate (About 7.1 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: Frequent
Depth to seasonal water saturation: About 0 to 24 inches
Runoff class: Negligible
Ecological site: Subirrigated (pe25-34)
Land capability (nonirrigated): 5w

Typical Profile:

H1—0 to 18 inches; fine sandy loam
 H2—18 to 42 inches; fine sandy loam
 H3—42 to 60 inches; sand

Minor Components

Unnamed Wet Soils

Phase: Sandy, Depression

Dt—Dillwyn-Tivoli complex, 0 to 15 percent slopes

Map Unit Composition

Dillwyn: 55 percent
 Tivoli: 45 percent

Component Descriptions

Dillwyn

MLRA: 79 - Great Bend Sand Plains
Landform: Interdune on paleoterrace on river valley, dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 0 to 2 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 4.9 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 36 inches
Runoff class: Low
Ecological site: Subirrigated (pe25-34)
Land capability (nonirrigated): 4w

Typical Profile:

H1—0 to 8 inches; loamy fine sand
 H2—8 to 60 inches; loamy fine sand

Tivoli

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Very low (About 3.0 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: Choppy Sands (pe25-34)
Land capability (nonirrigated): 7e

Typical Profile:
 H1—0 to 7 inches; fine sand
 H2—7 to 60 inches; fine sand

Minor Components

Plevna

Unnamed Wet Soils

Phase: Sandy, Depression

Du—Drummond loam, 0 to 1 percent slopes

Map Unit Composition

Drummond: 75 percent

Component Descriptions

Drummond

MLRA: 75 - Central Loess Plains
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 5.4 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Negligible
Ecological site: Saline Lowland (pe25-34)
Land capability (nonirrigated): 6s

Typical Profile:
 H1—0 to 9 inches; loam
 H2—9 to 60 inches; silty clay loam

Minor Components

Carwile

Unnamed Hydric Soils

Unnamed Hydric Soils

Fa—Farnum fine sandy loam, 0 to 1 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.6 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Sandy (pe25-34)
Land capability (irrigated): 1
Land capability (nonirrigated): 1

Typical Profile:
 H1—0 to 14 inches; fine sandy loam
 H2—14 to 45 inches; clay loam
 H3—45 to 60 inches; sandy loam

Minor Components

Carwile

Unnamed Wet Soils

Phase: Loamy, Depression

Fc—Farnum loam, 0 to 1 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley

Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Upland (pe24-32)
Land capability (irrigated): 1
Land capability (nonirrigated): 1

Typical Profile:
 H1—0 to 14 inches; loam
 H2—14 to 46 inches; clay loam
 H3—46 to 60 inches; clay loam

Minor Components **Carwile**

Unnamed Wet Soils
Phase: Loamy, Depression

Unnamed Wet Soils
Phase: Loamy, Drainageway

Fd—Farnum loam, 1 to 3 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 1 to 3 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 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 (pe25-34)
Land capability (irrigated): 2e
Land capability (nonirrigated): 2e

Typical Profile:
 H1—0 to 12 inches; loam
 H2—12 to 45 inches; clay loam
 H3—45 to 60 inches; sandy loam

Minor Components
Unnamed Wet Soils
Phase: Loamy, Depression

Unnamed Wet Soils
Phase: Loamy, Drainageway

Fe—Farnum loam, 3 to 6 percent slopes

Map Unit Composition

Farnum: 100 percent

Component Descriptions

Farnum
MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 3 to 6 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.2 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 (pe25-34)
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 11 inches; loam
 H2—11 to 45 inches; clay loam
 H3—45 to 60 inches; sandy loam

Fs—Farnum-Drummond complex, 0 to 1 percent slopes

Map Unit Composition

Farnum: 65 percent
Drummond: 35 percent

Component Descriptions

Farnum

MLRA: 79 - Great Bend Sand Plains
Landform: Paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 10.3 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Upland (pe25-34)
Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 14 inches; loam
H2—14 to 45 inches; clay loam
H3—45 to 60 inches; sandy loam

Drummond

MLRA: 79 - Great Bend Sand Plains
Landform: Terrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Moderately well drained
Slowest permeability: Very slow (About 0.00 in/hr)
Available water capacity: Moderate (About 7.8 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 24 to 72 inches
Runoff class: Negligible
Ecological site: Saline Lowland (pe25-34)
Land capability (nonirrigated): 6s

Typical Profile:

H1—0 to 8 inches; loam
H2—8 to 60 inches; clay loam

Minor Components **Carwile**

Unnamed Wet Soils

Phase: Loamy, Depression

Unnamed Wet Soils

Phase: Loamy, Drainageway

Gc—Geary silt loam, 0 to 1 percent slopes

Map Unit Composition

Geary: 100 percent

Component Descriptions

Geary

MLRA: 75 - Central Loess Plains
Landform: Hillslope, upland
Parent material: Loess
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 11.1 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Loamy Upland (pe25-34)
Land capability (irrigated): 1
Land capability (nonirrigated): 1

Typical Profile:

H1—0 to 9 inches; silt loam
H2—9 to 35 inches; silty clay loam
H3—35 to 60 inches; clay loam

Gd—Geary silt loam, 1 to 3 percent slopes

Map Unit Composition

Geary: 100 percent

Component Descriptions

Geary

MLRA: 75 - Central Loess Plains

Landform: Hillslope, upland

Parent material: Loess

Slope: 1 to 3 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.0 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 (pe25-34)

Land capability (irrigated): 2e

Land capability (nonirrigated): 2e

Typical Profile:

H1—0 to 7 inches; silt loam

H2—7 to 32 inches; silty clay loam

H3—32 to 60 inches; silty clay loam

Ge—Geary silt loam, 3 to 6 percent slopes

Map Unit Composition

Geary: 100 percent

Component Descriptions

Geary

MLRA: 75 - Central Loess Plains

Landform: Hillslope, upland

Parent material: Loess

Slope: 3 to 6 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: High (About 11.1 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 (pe25-34)

Land capability (irrigated): 3e

Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silt loam

H2—9 to 35 inches; silty clay loam

H3—35 to 60 inches; clay loam

Go—Goessel silty clay, 0 to 1 percent slopes

Map Unit Composition

Goessel: 100 percent

Component Descriptions

Goessel

MLRA: 75 - Central Loess Plains

Landform: Paleoterrace on upland

Parent material: Clayey alluvium

Slope: 0 to 1 percent

Drainage class: Moderately well drained

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

Available water capacity: Moderate (About 7.7 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 24 to 36 inches

Runoff class: Negligible

Ecological site: Clay Upland (pe25-34)

Land capability (nonirrigated): 2s

Typical Profile:

H1—0 to 15 inches; silty clay

H2—15 to 50 inches; silty clay

H3—50 to 60 inches; silty clay

Minor Components

Unnamed Wet Soils

Phase: Clayey, Drainageway

Unnamed Wet Soils

Phase: Clayey, Depression

GRP—Gravel Pits**Map Unit Composition****Gs—Goessel silty clay, 1 to 2 percent slopes****Map Unit Composition**

Goessel: 100 percent

Component Descriptions**Goessel**

MLRA: 75 - Central Loess Plains

Landform: Paleoterrace on upland

Parent material: Clayey alluvium

Slope: 1 to 2 percent

Drainage class: Moderately well drained

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

Available water capacity: Moderate (About 7.7 inches)

Shrink-swell potential: High (About 7.5 LEP)

Flooding hazard: None

Depth to seasonal water saturation: About 24 to 36 inches

Runoff class: Negligible

Ecological site: Clay Upland (pe25-34)

Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 15 inches; silty clay

H2—15 to 50 inches; silty clay

H3—50 to 60 inches; silty clay

Minor Components**Unnamed Wet Soils**

Phase: Clayey, Drainageway

Unnamed Wet Soils

Phase: Clayey, Depression

Ho—Hobbs silt loam, occasionally flooded**Map Unit Composition**

Hobbs: 100 percent

Component Descriptions**Hobbs**

MLRA: 75 - Central Loess Plains

Landform: Flood plain

Parent material: Alluvium

Slope: 0 to 1 percent

Drainage class: Well drained

Slowest permeability: Moderate (About 0.60 in/hr)

Available water capacity: Very high (About 12.6 inches)

Shrink-swell potential: Low (About 1.5 LEP)

Flooding hazard: Occasional

Depth to seasonal water saturation: More than 6 feet

Runoff class: Negligible

Ecological site: Loamy Lowland (pe25-34)

Land capability (irrigated): 2w

Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 26 inches; silt loam

H2—26 to 60 inches; silt loam

Minor Components**Unnamed Wet Soils**

Phase: Loamy, Depression

Unnamed Wet Soils

Phase: Loamy, Drainageway

INT—Aquolls**Map Unit Composition**

Intermittent Lakes: 100 percent

Component Descriptions**Intermittent Lakes**

MLRA: 75 - Central Loess Plains

Depth to seasonal water saturation: More than 6 feet

Ir—Irwin silty clay loam, 1 to 3 percent slopes**Map Unit Composition**

Irwin: 100 percent

Component Descriptions

Irwin

MLRA: 75 - Central Loess Plains

Landform: Paleoterrace on upland

Parent material: Residuum

Slope: 1 to 3 percent

Drainage class: Well drained

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

Available water capacity: Moderate (About 8.5 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: Clay Upland (pe25-34)

Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 13 inches; silty clay loam

H2—13 to 52 inches; silty clay

H3—52 to 60 inches; silty clay

Minor Components

Unnamed Wet Soils

Phase: Clayey, Drainageway

Is—Irwin silty clay loam, 3 to 6 percent slopes

Map Unit Composition

Irwin: 100 percent

Component Descriptions

Irwin

MLRA: 75 - Central Loess Plains

Landform: Paleoterrace on upland

Parent material: Residuum

Slope: 3 to 6 percent

Drainage class: Well drained

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

Available water capacity: Moderate (About 8.5 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: Clay Upland (pe25-34)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 11 inches; silty clay loam

H2—11 to 44 inches; silty clay

H3—44 to 60 inches; silty clay

It—Irwin silty clay loam, 2 to 6 percent slopes, eroded

Map Unit Composition

Irwin: 100 percent

Component Descriptions

Irwin

MLRA: 75 - Central Loess Plains

Landform: Paleoterrace on upland

Parent material: Residuum

Slope: 2 to 6 percent

Drainage class: 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: Medium

Ecological site: Clay Upland (pe25-34)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 6 inches; silty clay loam

H2—6 to 44 inches; silty clay

H3—44 to 60 inches; silty clay

Ka—Kaski loam, occasionally flooded

Map Unit Composition

Kaski: 100 percent

Component Descriptions

Kaski*MLRA:* 79 - Great Bend Sand Plains*Landform:* Flood plain on river valley*Parent material:* Alluvium*Slope:* 0 to 1 percent*Drainage class:* Well drained*Slowest permeability:* Moderate (About 0.60 in/hr)*Available water capacity:* High (About 10.4 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 (pe25-34)*Land capability (nonirrigated):* 2w*Typical Profile:*

H1—0 to 24 inches; loam

H2—24 to 41 inches; clay loam

H3—41 to 60 inches; clay loam

Minor Components**Unnamed Wet Soils***Phase:* Loamy, Drainageway**La—Ladysmith silty clay loam, 0 to 1 percent slope****Map Unit Composition**

Ladysmith: 100 percent

Component Descriptions**Ladysmith***MLRA:* 75 - Central Loess Plains*Landform:* Paleoterrace on upland*Parent material:* Clayey alluvium*Slope:* 0 to 1 percent*Drainage class:* Somewhat poorly drained*Slowest permeability:* Impermeable (About 0.00 in/hr)*Available water capacity:* Moderate (About 8.8 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:* Clay Upland (pe25-34)*Land capability (nonirrigated):* 2s*Typical Profile:*

H1—0 to 10 inches; silty clay loam

H2—10 to 45 inches; silty clay

H3—45 to 60 inches; silty clay loam

Minor Components**Unnamed Wet Soils***Phase:* Clayey, Drainageway**Unnamed Wet Soils***Phase:* Clayey, Depression**Lb—Ladysmith silty clay loam, 1 to 2 percent slopes****Map Unit Composition**

Ladysmith: 100 percent

Component Descriptions**Ladysmith***MLRA:* 75 - Central Loess Plains*Landform:* Paleoterrace on upland*Parent material:* Clayey alluvium*Slope:* 1 to 2 percent*Drainage class:* Somewhat poorly drained*Slowest permeability:* Impermeable (About 0.00 in/hr)*Available water capacity:* Moderate (About 8.8 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:* Clay Upland (pe25-34)*Land capability (nonirrigated):* 3e*Typical Profile:*

H1—0 to 10 inches; silty clay loam

H2—10 to 45 inches; silty clay

H3—45 to 60 inches; silty clay loam

Minor Components**Unnamed Hydric Soils****Unnamed Hydric Soils**

Ld—Lela-Drummond complex, occasionally flooded

Map Unit Composition

Lela: 60 percent
Drummond: 40 percent

Component Descriptions

Lela

MLRA: 75 - Central Loess Plains
Landform: Paleoterrace on upland
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: Moderate (About 7.3 inches)
Shrink-swell potential: High (About 7.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: More than 6 feet
Runoff class: Low
Ecological site: Clay Lowland (pe25-34)
Land capability (nonirrigated): 4s

Typical Profile:

H1—0 to 11 inches; silty clay loam
H2—11 to 60 inches; silty clay

Drummond

MLRA: 75 - Central Loess Plains
Landform: Terrace on river valley
Slope: 0 to 1 percent
Drainage class: Somewhat poorly 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: About 24 to 72 inches
Runoff class: Low
Ecological site: Saline Lowland (pe25-34)
Land capability (nonirrigated): 6s

Typical Profile:

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

Minor Components

Unnamed Wet Soils

Phase: Clayey, Depression

Le—Lesho loam, occasionally flooded

Map Unit Composition

Lesho: 100 percent

Component Descriptions

Lesho

MLRA: 75 - Central Loess Plains
Landform: Flood plain on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly drained
Slowest permeability: Moderately slow (About 0.20 in/hr)
Available water capacity: Moderate (About 7.6 inches)
Shrink-swell potential: Moderate (About 4.5 LEP)
Flooding hazard: Occasional
Depth to seasonal water saturation: About 24 to 48 inches
Runoff class: Negligible
Ecological site: Subirrigated (pe25-34)
Land capability (nonirrigated): 3w

Typical Profile:

H1—0 to 17 inches; loam
H2—17 to 30 inches; clay loam
H3—30 to 60 inches; loamy sand

Minor Components

Carwile

Unnamed Wet Soils

Phase: Loamy, Drainageway

Na—Naron fine sandy loam, 0 to 1 percent slope

Map Unit Composition

Naron: 100 percent

Component Descriptions

Naron

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 0 to 1 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.2 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: More than 6 feet
Runoff class: Negligible
Ecological site: Sandy (pe25-34)
Land capability (irrigated): 1
Land capability (nonirrigated): 2e

Typical Profile:
 H1—0 to 12 inches; fine sandy loam
 H2—12 to 40 inches; sandy clay loam
 H3—40 to 60 inches; fine sandy loam

Minor Components **Carwile**

Unnamed Wet Soils
Phase: Loamy, Depression

Nb—Naron fine sandy loam, 1 to 4 percent slopes

Map Unit Composition

Naron: 100 percent

Component Descriptions

Naron
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Loamy eolian deposits
Slope: 1 to 4 percent
Drainage class: Well drained
Slowest permeability: Moderate (About 0.60 in/hr)
Available water capacity: High (About 9.2 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: Sandy (pe25-34)

Land capability (irrigated): 2e
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 10 inches; fine sandy loam
 H2—10 to 40 inches; sandy clay loam
 H3—40 to 60 inches; fine sandy loam

Minor Components **Carwile**

Unnamed Wet Soils
Phase: Loamy, Depression

Unnamed Wet Soils
Phase: Loamy, Drainageway

Pa—Pratt loamy fine sand, 1 to 5 percent slopes

Map Unit Composition

Pratt: 100 percent

Component Descriptions

Pratt
MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 1 to 5 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.3 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: Sands (pe25-34)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:
 H1—0 to 12 inches; loamy fine sand
 H2—12 to 30 inches; loamy fine sand
 H3—30 to 60 inches; loamy fine sand

Minor Components **Carwile**

Unnamed Wet Soils
Phase: Sandy, Depression

Pc—Pratt-Carwile complex, 0 to 5 percent slopes

Map Unit Composition

Pratt: 60 percent
Carwile: 40 percent

Component Descriptions

Pratt

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 0 to 5 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.3 inches)
Shrink-swell potential: Low (About 1.5 LEP)
Flooding hazard: None
Depth to seasonal water saturation: About 12 to 24 inches
Runoff class: Negligible
Ecological site: Sands (pe25-34)
Land capability (irrigated): 3e
Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 12 inches; loamy fine sand
H2—12 to 30 inches; loamy fine sand
H3—30 to 60 inches; loamy fine sand

Carwile

MLRA: 79 - Great Bend Sand Plains
Landform: Depression on paleoterrace on river valley
Parent material: Alluvium
Slope: 0 to 1 percent
Drainage class: Somewhat poorly 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 0 to 0 inches
Runoff class: Negligible
Ecological site: Sandy (pe25-34)
Land capability (nonirrigated): 2w

Typical Profile:

H1—0 to 18 inches; fine sandy loam

H2—18 to 37 inches;
H3—37 to 60 inches;

Minor Components

Unnamed Wet Soils

Phase: Sandy, Depression

Pt—Pratt-Tivoli loamy fine sands, 5 to 15 percent slopes

Map Unit Composition

Pratt: 60 percent
Tivoli: 40 percent

Component Descriptions

Pratt

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Well drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Moderate (About 6.3 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: Sands (pe25-34)
Land capability (nonirrigated): 6e

Typical Profile:

H1—0 to 12 inches; loamy fine sand
H2—12 to 30 inches; loamy fine sand
H3—30 to 60 inches; loamy fine sand

Tivoli

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 5 to 15 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Low (About 3.2 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: Sands (pe25-34)
Land capability (nonirrigated): 7e

Typical Profile:

H1—0 to 7 inches; loamy fine sand
H2—7 to 60 inches; fine sand

Minor Components**Carwile****Unnamed Wet Soils**

Phase: Sandy, Depression

Ro—Rosehill silty clay, 1 to 3 percent slopes**Map Unit Composition**

Rosehill: 100 percent

Component Descriptions**Rosehill**

MLRA: 75 - Central Loess Plains

Landform: Hillslope on upland

Parent material: Residuum

Slope: 1 to 3 percent

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

Drainage class: Moderately well drained

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

Available water capacity: Low (About 4.2 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: Clay Upland (pe25-34)

Land capability (nonirrigated): 3e

Typical Profile:

H1—0 to 9 inches; silty clay
H2—9 to 34 inches; silty clay
Cr—34 to 34 inches; unweathered bedrock

Minor Components**Unnamed Wet Soils**

Phase: Clayey, Drainageway

Rs—Rosehill silty clay, 3 to 6 percent slopes**Map Unit Composition**

Rosehill: 100 percent

Component Descriptions**Rosehill**

MLRA: 75 - Central Loess Plains

Landform: Hillslope on upland

Parent material: Residuum

Slope: 3 to 6 percent

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

Drainage class: Moderately well drained

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

Available water capacity: Low (About 4.2 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: Clay Upland (pe25-34)

Land capability (nonirrigated): 4e

Typical Profile:

H1—0 to 9 inches; silty clay
H2—9 to 34 inches; silty clay
Cr—34 to 34 inches; unweathered bedrock

Minor Components**Unnamed Wet Soils**

Phase: Clayey, Drainageway

Sm—Smolan silty clay loam, 1 to 3 percent slopes**Map Unit Composition**

Smolan: 90 percent

Minor components: 10 percent

Component Descriptions**Smolan**

MLRA: 75 - Central Loess Plains

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)

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)

Tv—Tivoli fine sand, 15 to 25 percent slopes

Map Unit Composition

Tivoli: 100 percent

Component Descriptions

Tivoli

MLRA: 79 - Great Bend Sand Plains
Landform: Dune on paleoterrace on river valley
Parent material: Sandy eolian deposits
Slope: 15 to 25 percent
Drainage class: Excessively drained
Slowest permeability: Rapid (About 5.95 in/hr)
Available water capacity: Very low (About 3.0 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: Choppy Sands (pe25-34)
Land capability (nonirrigated): 7e

Typical Profile:

H1—0 to 7 inches; fine sand
 H2—7 to 60 inches; fine sand

W—Water

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."

PRIME FARMLAND--Continued
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Map symbol	Mapunit name	Farmland Classification
113CB	Cass fine sandy loam, rarely flooded	All areas are prime farmland
113TO	Tobin silt loam, occasionally flooded	All areas are prime farmland
115WB	Wells loam, 1 to 3 percent slopes	All areas are prime farmland
115WC	Wells loam, 3 to 7 percent slopes	All areas are prime farmland
173EA	Elandco silt loam, rarely flooded	All areas are prime farmland
173EB	Elandco silt loam, occasionally flooded	All areas are prime farmland
173VB	Vanoss silt loam, 1 to 3 percent slopes	All areas are prime farmland
1191	Blazefork silty clay loam, 0 to 1 percent slope, rarely flooded	All areas are prime farmland
3511	Saltcreek and naron fine sandy loams, 0 to 1 percent slope	All areas are prime farmland
3639	Taver loam, 0 to 1 percent slope	All areas are prime farmland
Cc	Clark clay loam, 1 to 3 percent slopes	All areas are prime farmland
Cr	Crete silt loam, 0 to 1 percent slopes	All areas are prime farmland
Ct	Crete silt loam, 1 to 3 percent slopes	All areas are prime farmland
De	Detroit silty clay loam, rarely flooded	All areas are prime farmland
Fa	Farnum fine sandy loam, 0 to 1 percent slopes	All areas are prime farmland
Fc	Farnum loam, 0 to 1 percent slopes	All areas are prime farmland
Fd	Farnum loam, 1 to 3 percent slopes	All areas are prime farmland
Fe	Farnum loam, 3 to 6 percent slopes	All areas are prime farmland
Gc	Geary silt loam, 0 to 1 percent slopes	All areas are prime farmland
Gd	Geary silt loam, 1 to 3 percent slopes	All areas are prime farmland
Ge	Geary silt loam, 3 to 6 percent slopes	All areas are prime farmland
Go	Goessel silty clay, 0 to 1 percent slopes	All areas are prime farmland
Gs	Goessel silty clay, 1 to 2 percent slopes	All areas are prime farmland
Ho	Hobbs silt loam, occasionally flooded	All areas are prime farmland
Ir	Irwin silty clay loam, 1 to 3 percent slopes	All areas are prime farmland
Is	Irwin silty clay loam, 3 to 6 percent slopes	All areas are prime farmland
Ka	Kaski loam, occasionally flooded	All areas are prime farmland
La	Ladysmith silty clay loam, 0 to 1 percent slope	All areas are prime farmland
Lb	Ladysmith silty clay loam, 1 to 2 percent slopes	All areas are prime farmland
Le	Lesho loam, occasionally flooded	All areas are prime farmland
Na	Naron fine sandy loam, 0 to 1 percent slope	All areas are prime farmland
Nb	Naron fine sandy loam, 1 to 4 percent slopes	All areas are prime farmland
Sm	Smolan silty clay loam, 1 to 3 percent slopes	All areas are prime farmland

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
015VE	Verdigris Soils, Frequently Flooded-----	65
113CB	Cass Fine Sandy Loam, Rarely Flooded-----	56
113TO	Tobin Silt Loam, Occasionally Flooded-----	65
115CM	Clime Silty Clay Loam, 1 To 3 Percent Slopes-----	40
115CP	Clime Silty Clay Loam, 3 To 7 Percent Slopes-----	39
115WB	Wells Loam, 1 To 3 Percent Slopes-----	78
115WC	Wells Loam, 3 To 7 Percent Slopes-----	75
1191	Blazefork Silty Clay Loam, 0 To 1 Percent Slope, Rarely Flooded-----	55
1324	Carway And Carbika Soils, 0 To 1 Percent Slope-----	33
1357	Carway-Dillhut-Solvay Complex, 0 To 2 Percent Slopes-----	37
1553	Darlow-Elmer Complex, 0 To 2 Percent Slopes-----	26
1554	Dillhut Fine Sand, 1 To 3 Percent Slopes-----	31
1556	Dillhut-Solvay Complex, 0 To 3 Percent Slopes-----	41
173EA	Elandco Silt Loam, Rarely Flooded-----	63
173EB	Elandco Silt Loam, Occasionally Flooded-----	58
173EC	Elandco Silt Loam, Frequently Flooded-----	46
173TB	Tabler-Drummond Complex, 0 To 1 Percent Slope-----	61
173VB	Vanoss Silt Loam, 1 To 3 Percent Slopes-----	77
2391	Kaskan Silty Clay Loam, 0 To 1 Percent Slope, Frequently Flooded, Channeled-----	54
2395	Kisiwa Loam, 0 To 1 Percent Slopes-----	5
2556	Langdon Fine Sand, 0 To 15 Percent Slopes-----	26
2812	Mahone Loamy Fine Sand, 0 To 2 Percent Slopes, Rarely Flooded-----	47
2957	Nickerson-Punkin Fine Sandy Loams, 0 To 2 Percent Slopes-----	50
3181	Pratt-Turon Fine Sands, 1 To 5 Percent Slopes-----	43
3190	Punkin Silt Loam, 0 To 1 Percent Slope-----	28
3191	Punkin-Taver Complex, 0 To 1 Percent Slope-----	36
3511	Saltcreek And Naron Fine Sandy Loams, 0 To 1 Percent Slope-----	60
3540	Solvay Loamy Fine Sand, 0 To 2 Percent Slopes-----	66
3639	Taver Loam, 0 To 1 Percent Slope-----	66
3641	Tivin-Dillhut Fine Sands, 0 To 15 Percent Slopes-----	33
3900	Warnut Fine Sandy Loam, 0 To 1 Percent Slopes-----	15
3966	Willowbrook Fine Sandy Loam, 0 To 1 Percent Slope, Occasionally Flooded-----	44
Ad	Fluvents, Frequently Flooded-----	0
BOP	Borrow Pits-----	0
Ba	Clime-Hobbs Complex, 0 To 20 Percent Slopes-----	36
Ca	Carwile Fine Sandy Loam, 0 To 1 Percent Slopes-----	22
Cc	Clark Clay Loam, 1 To 3 Percent Slopes-----	36
Cd	Clime Silty Clay, 1 To 3 Percent Slopes-----	34
Ce	Clime Silty Clay, 3 To 6 Percent Slopes-----	28
Cf	Clime Silty Clay, 2 To 6 Percent Slopes, Eroded-----	33
Cm	Clime Complex, 6 To 12 Percent Slopes-----	26
Cr	Crete Silt Loam, 0 To 1 Percent Slopes-----	70
Ct	Crete Silt Loam, 1 To 3 Percent Slopes-----	69
De	Detroit Silty Clay Loam, Rarely Flooded-----	73
Dp	Dillwyn-Plevna Complex, 0 To 2 Percent Slopes-----	32
Dt	Dillwyn-Tivoli Complex, 0 To 15 Percent Slopes-----	27
Du	Drummond Loam, 0 To 1 Percent Slopes-----	31
Fa	Farnum Fine Sandy Loam, 0 To 1 Percent Slopes-----	73
Fc	Farnum Loam, 0 To 1 Percent Slopes-----	76
Fd	Farnum Loam, 1 To 3 Percent Slopes-----	76
Fe	Farnum Loam, 3 To 6 Percent Slopes-----	73
Fs	Farnum-Drummond Complex, 0 To 1 Percent Slopes-----	68
GRP	Gravel Pits-----	0
Gc	Geary Silt Loam, 0 To 1 Percent Slopes-----	82
Gd	Geary Silt Loam, 1 To 3 Percent Slopes-----	77
Ge	Geary Silt Loam, 3 To 6 Percent Slopes-----	78
Go	Goessel Silty Clay, 0 To 1 Percent Slopes-----	55
Gs	Goessel Silty Clay, 1 To 2 Percent Slopes-----	55
Ho	Hobbs Silt Loam, Occasionally Flooded-----	69
INT	Aquolls-----	0
Ir	Irwin Silty Clay Loam, 1 To 3 Percent Slopes-----	63
Is	Irwin Silty Clay Loam, 3 To 6 Percent Slopes-----	62
It	Irwin Silty Clay Loam, 2 To 6 Percent Slopes, Eroded-----	61
Ka	Kaski Loam, Occasionally Flooded-----	75
La	Ladysmith Silty Clay Loam, 0 To 1 Percent Slope-----	68
Lb	Ladysmith Silty Clay Loam, 1 To 2 Percent Slopes-----	67
Ld	Lela-Drummond Complex, Occasionally Flooded-----	49
Le	Lesho Loam, Occasionally Flooded-----	54
Na	Naron Fine Sandy Loam, 0 To 1 Percent Slope-----	73
Nb	Naron Fine Sandy Loam, 1 To 4 Percent Slopes-----	71
Pa	Pratt Loamy Fine Sand, 1 To 5 Percent Slopes-----	41
Pc	Pratt-Carwile Complex, 0 To 5 Percent Slopes-----	33
Pt	Pratt-Tivoli Loamy Fine Sands, 5 To 15 Percent Slopes-----	31
Ro	Rosehill Silty Clay, 1 To 3 Percent Slopes-----	39
Rs	Rosehill Silty Clay, 3 To 6 Percent Slopes-----	38
Sm	Smolan Silty Clay Loam, 1 To 3 Percent Slopes-----	77
Tv	Tivoli Fine Sand, 15 To 25 Percent Slopes-----	14
W	Water-----	0

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(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 erodi- bility group	Wind erodi- bility index
								K	Kf	T		
015VE:VERDIGRIS-	85	N/A	5w	Not prime farmland	B	Loamy Lowland (pe30-36)	7	.32	.32	5	6	48
113CB:CASS-----	100	2e-	2e	All areas are prime farmland	B	Sandy Lowland (pe26-30)	3	.20	.20	4	3	86
113TO:TOBIN-----	100	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe26-30)	7	.32	.32	5	6	48
115CM:CLIME-----	90	N/A	3e	Not prime farmland	C	Limy Upland (pe25-34)	4	.37	.37	3	4	86
115CP:CLIME-----	90	N/A	4e	Not prime farmland	C	Limy Upland (pe25-34)	4	.37	.37	3	4	86
115WB:WELLS-----	90	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.28	.28	5	6	48
115WC:WELLS-----	90	N/A	3e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.28	.28	5	6	48
1191:BLAZEFORK--	90	2s-	2w	All areas are prime farmland	D	Clay Lowland (pe25-34)	8	.37	.37	5	7	38
1324:CARWAY-----	50	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	3	.20	.20	5	3	86
1324:CARBIKA----	30	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	6	.24	.24	5	5	56
1357:CARWAY-----	40	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	2	.17	.17	5	2	134
1357:SOLVAY-----	30	N/A	2e	Not prime farmland	D	Subirrigated (pe21-28)	3	.17	.17	5	3	86
1357:DILLHUT----	30	3e-	3e	Not prime farmland	B	Sands (pe21-28)	1	.15	.15	4	1	220
1553:DARLOW-----	70	4s-	4s	Not prime farmland	C	Clay Pan (pe21- 28)	6	.43	.43	2	5	56
1553:ELMER-----	20	3s-	3s	Not prime farmland	C	Loamy Terrace (pe21-28)	3	.32	.32	2	3	86
1554:DILLHUT----	70	3e-	3e	Not prime farmland	B	Sands (pe21-28)	1	.15	.15	4	1	220
1556:DILLHUT----	30	3e-	3e	Not prime farmland	B	Sands (pe21-28)	1	.15	.15	5	1	220
1556:SOLVAY-----	30	N/A	2e	Not prime farmland	D	Subirrigated (pe21-28)	3	.20	.20	5	3	86
173EA:ELANDCO---	100	N/A	1	All areas are prime farmland	B	Loamy Terrace (pe24-32)	7	.43	.43	5	6	48

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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		
173EB:ELANDCO---	100	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe24-32)	7	.43	.43	5	6	48
173EC:ELANDCO---	100	N/A	5w	Not prime farmland	B	Loamy Lowland (pe24-32)	7	.43	.43	5	6	48
173TB:TABLER----	60	N/A	2s	Not prime farmland	D	Clay Upland (pe24-32)	7	.49	.49	5	6	48
173TB:DRUMMOND--	40	N/A	6s	Not prime farmland	D	Saline Lowland (pe24-32)	5	.49	.49	2	4L	48
173VB:VANOSS----	100	N/A	2e	All areas are prime farmland	B	Loamy Upland (pe24-32)	7	.37	.37	5	6	48
2391:KASKAN-----	75	N/A	5w	Not prime farmland	B	Loamy Lowland (pe21-28)	8	.37	.37	5	7	38
2395:KISIWA-----	90	N/A	4s	Not prime farmland	D	Saline Subirrigated (pe21-28)	7	.43	.43	2	6	48
2556:LANGDON----	50	N/A	6e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.15	.15	5	1	220
2812:MAHONE-----	95	N/A	2w	Not prime farmland	C	Loamy Lowland (pe21-28)	2	.17	.17	5	2	134
2957:NICKERSON--	50	3e-	3e	Not prime farmland	B	Sandy (pe21-28)	3	.17	.17	4	3	86
2957:PUNKIN-----	50	3s-	3s	Not prime farmland	D	Saline Subirrigated (pe21-28)	3	.32	.32	2	3	86
3181:PRATT-----	45	3e-	3e	Not prime farmland	A	Sands (pe21-28)	1	.15	.15	5	1	220
3181:TURON-----	30	3e-	3e	Not prime farmland	A	Sands (pe21-28)	1	.15	.15	5	1	220
3190:PUNKIN-----	90	3s-	3s	Not prime farmland	D	Clay Pan (pe21- 28)	6	.43	.43	2	5	56
3191:PUNKIN-----	70	3s-	3s	Not prime farmland	D	Clay Pan (pe21- 28)	6	.43	.43	2	5	56
3191:TAVER-----	20	N/A	2s	Not prime farmland	D	Clay Upland (pe21-28)	7	.28	.28	5	6	48
3511:SALTCREEK--	70	1-	3e	All areas are prime farmland	C	Sandy (pe21-28)	3	.20	.20	5	3	86
3511:NARON-----	30	2e-	2e	All areas are prime farmland	B	Sandy (pe21-28)	3	.20	.20	5	3	86
3540:SOLVAY-----	90	N/A	2e	Not prime farmland	D	Subirrigated (pe21-28)	3	.17	.17	5	3	86

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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		
3639:TAVER-----	90	N/A	2s	All areas are prime farmland	D	Clay Upland (pe21-28)	7	.28	.28	5	6	48
3641:TIVIN-----	45	N/A	6e	Not prime farmland	A	Choppy Sands (pe21-28)	1	.15	.15	5	1	220
3641:DILLHUT----	40	3e-	3e	Not prime farmland	B	Sands (pe21-28)	1	.15	.15	5	1	220
3900:WARNUT-----	75	N/A	2w	Not prime farmland	D	Subirrigated (pe21-28)	3	.20	.20	5	3	86
3966:WILLOWBROOK	90	2e-	3e	Not prime farmland	B	Subirrigated (pe21-28)	3	.20	.20	4	3	86
Ad:FLUVENTS-----	100	N/A	6w	Not prime farmland	B	Unspecified	5	.37	.37	5	4L	86
BOP:BORROW PITS-	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Ba:CLIME-----	70	N/A	6e	Not prime farmland	C	Limy Upland (pe25-34)	4	.28	.28	3	4	86
Ba:HOBBS-----	30	N/A	5w	Not prime farmland	B	Loamy Lowland (pe25-34)	7	.32	.32	5	6	48
Ca:CARWILE-----	100	N/A	2w	Not prime farmland	D	Sandy (pe25-34)	3	.24	.24	5	3	86
Cc:CLARK-----	100	N/A	3e	All areas are prime farmland	B	Limy Upland (pe25-34)	5	.28	.28	5	4L	86
Cd:CLIME-----	100	N/A	3e	Not prime farmland	C	Limy Upland (pe25-34)	4	.28	.28	3	4	86
Ce:CLIME-----	100	N/A	4e	Not prime farmland	C	Limy Upland (pe25-34)	4	.28	.28	3	4	86
Cf:CLIME-----	100	N/A	6e	Not prime farmland	C	Limy Upland (pe25-34)	4	.28	.28	3	4	86
Cm:CLIME-----	100	N/A	6e	Not prime farmland	C	Limy Upland (pe25-34)	4	.28	.28	3	4	86
Cr:CRETE-----	100	2s-	2s	All areas are prime farmland	C	Clay Upland (pe25-34)	7	.37	.37	5	6	48
Ct:CRETE-----	100	2e-	2e	All areas are prime farmland	C	Clay Upland (pe25-34)	7	.37	.37	5	6	48
De:DETROIT-----	100	1-	1	All areas are prime farmland	C	Loamy Terrace (pe25-34)	8	.37	.37	5	7	38
Dp:DILLWYN-----	65	N/A	4w	Not prime farmland	A	Subirrigated (pe25-34)	2	.17	.17	5	2	134
Dp:PLEVNA-----	35	N/A	5w	Not prime farmland	D	Subirrigated (pe25-34)	3	.20	.20	5	3	86

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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		
Dt:DILLWYN-----	55	N/A	4w	Not prime farmland	A	Subirrigated (pe25-34)	2	.17	.17	5	2	134
Dt:TIVOLI-----	45	N/A	7e	Not prime farmland	A	Choppy Sands (pe25-34)	1	.17	.17	5	1	250
Du:DRUMMOND-----	75	N/A	6s	Not prime farmland	D	Saline Lowland (pe25-34)	5	.49	.49	2	4L	48
Fa:FARNUM-----	100	1-	1	All areas are prime farmland	B	Sandy (pe25-34)	3	.20	.20	5	3	86
Fc:FARNUM-----	100	1-	1	All areas are prime farmland	B	Loamy Upland (pe24-32)	7	.28	.28	5	6	48
Fd:FARNUM-----	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.28	.28	5	6	48
Fe:FARNUM-----	100	N/A	3e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.28	.28	5	6	48
Fs:FARNUM-----	65	N/A	2s	Not prime farmland	B	Loamy Upland (pe25-34)	7	.28	.28	5	6	48
Fs:DRUMMOND-----	35	N/A	6s	Not prime farmland	D	Saline Lowland (pe25-34)	5	.49	.49	2	4L	86
GRP:GRAVEL PITS-	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Gc:GEARY-----	100	1-	1	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.32	.32	5	6	48
Gd:GEARY-----	100	2e-	2e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.32	.32	5	6	48
Ge:GEARY-----	100	3e-	3e	All areas are prime farmland	B	Loamy Upland (pe25-34)	7	.32	.32	5	6	48
Go:GOESSEL-----	100	N/A	2s	All areas are prime farmland	D	Clay Upland (pe25-34)	4	.28	.28	5	4	86
Gs:GOESSEL-----	100	N/A	3e	All areas are prime farmland	D	Clay Upland (pe25-34)	4	.28	.28	5	4	86
Ho:HOBBS-----	100	2w-	2w	All areas are prime farmland	B	Loamy Lowland (pe25-34)	7	.32	.32	5	6	48
INT:INTERMITTENT LAKES-----	100	N/A	N/A	Not prime farmland		Unspecified		---	---	-	---	---
Ir:IRWIN-----	100	N/A	3e	All areas are prime farmland	D	Clay Upland (pe25-34)	8	.32	.32	5	7	38

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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		
Is:IRWIN-----	100	N/A	4e	All areas are prime farmland	D	Clay Upland (pe25-34)	8	.32	.32	5	7	38
It:IRWIN-----	100	N/A	4e	Not prime farmland	D	Clay Upland (pe25-34)	8	.32	.32	5	7	38
Ka:KASKI-----	100	N/A	2w	All areas are prime farmland	B	Loamy Lowland (pe25-34)	7	.28	.28	5	6	48
La:LADYSMITH----	100	N/A	2s	All areas are prime farmland	D	Clay Upland (pe25-34)	8	.37	.37	5	7	38
Lb:LADYSMITH----	100	N/A	3e	All areas are prime farmland	D	Clay Upland (pe25-34)	8	.37	.37	5	7	38
Ld:LELA-----	60	N/A	4s	Not prime farmland	D	Clay Lowland (pe25-34)	8	.43	.43	5	7	38
Ld:DRUMMOND-----	40	N/A	6s	Not prime farmland	D	Saline Lowland (pe25-34)	5	.43	.43	2	4L	86
Le:LESHO-----	100	N/A	3w	All areas are prime farmland	C	Subirrigated (pe25-34)	5	.28	.28	4	4L	86
Na:NARON-----	100	1-	2e	All areas are prime farmland	B	Sandy (pe25-34)	3	.20	.20	5	3	86
Nb:NARON-----	100	2e-	3e	All areas are prime farmland	B	Sandy (pe25-34)	3	.20	.20	5	3	86
Pa:PRATT-----	100	3e-	3e	Not prime farmland	A	Sands (pe25-34)	2	.17	.17	5	2	134
Pc:PRATT-----	60	3e-	3e	Not prime farmland	A	Sands (pe25-34)	2	.17	.17	5	2	134
Pc:CARWILE-----	40	N/A	2w	Not prime farmland	D	Sandy (pe25-34)	3	.24	.24	5	3	86
Pt:PRATT-----	60	N/A	6e	Not prime farmland	A	Sands (pe25-34)	2	.17	.17	5	2	134
Pt:TIVOLI-----	40	N/A	7e	Not prime farmland	A	Sands (pe25-34)	2	.17	.17	5	2	134
Ro:ROSEHILL-----	100	N/A	3e	Not prime farmland	D	Clay Upland (pe25-34)	4	.28	.28	3	4	86
Rs:ROSEHILL-----	100	N/A	4e	Not prime farmland	D	Clay Upland (pe25-34)	4	.28	.28	3	4	86
Sm:SMOLAN-----	90	2e-	2e	All areas are prime farmland	C	Loamy Upland (pe25-34)	8	.37	.37	5	7	38
Tv:TIVOLI-----	100	N/A	7e	Not prime farmland	A	Choppy Sands (pe25-34)	1	.17	.17	5	1	250

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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		
W:WATER-----	100	N/A	N/A			Unspecified		---	---	-	---	---

RANGELAND PRODUCTIVITY
Harvey 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
Harvey 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
015VE: Verdigris-----	Loamy Lowland (pe30-36)	10,000	8,500	6,000
113CB: Cass-----	Sandy Lowland (pe26-30)	6,000	4,750	3,500
113TO: Tobin-----	Loamy Lowland (pe26-30)	6,000	5,000	4,000
115CM: Clime-----	Limy Upland (pe25-34)	4,500	3,500	2,500
115CP: Clime-----	Limy Upland (pe25-34)	4,500	3,500	2,500
115WB: Wells-----	Loamy Upland (pe25-34)	5,250	4,000	2,750
115WC: Wells-----	Loamy Upland (pe25-34)	5,250	4,000	2,750
173EA: Elandco-----	Loamy Terrace (pe24-32)	6,500	5,000	3,500
173EB: Elandco-----	Loamy Lowland (pe24-32)	6,500	5,000	3,500
173EC: Elandco-----	Loamy Lowland (pe24-32)	6,500	5,000	3,500
173TB: Tabler-----	Clay Upland (pe24-32)	3,800	2,600	1,800
Drummond-----	Saline Lowland (pe24-32)	7,000	5,800	5,000
173VB: Vanoss-----	Loamy Upland (pe24-32)	5,500	3,700	2,500
1191: Blazefork-----	Clay Lowland (pe25-34)	6,500	5,000	4,000
1324: Carway-----	Subirrigated (pe21-28)	9,500	8,500	7,500
Carbika-----	Subirrigated (pe21-28)	9,500	8,500	7,500
1357: Carway-----	Subirrigated (pe21-28)	9,500	8,500	7,500
Dillhut-----	Sands (pe21-28)	4,500	3,500	2,500
Solvay-----	Subirrigated (pe21-28)	9,500	8,500	7,500
1553: Darlow-----	Clay Pan (pe21-28)	3,500	2,500	1,800
Elmer-----	Loamy Terrace (pe21-28)	5,500	5,000	3,400
1554: Dillhut-----	Sands (pe21-28)	4,500	3,500	2,500
1556: Dillhut-----	Sands (pe21-28)	4,500	3,500	2,500
Solvay-----	Subirrigated (pe21-28)	9,500	8,500	7,500
2391: Kaskan-----	Loamy Lowland (pe21-28)	7,000	5,500	4,500
2395: Kisiwa-----	Saline Subirrigated (pe21-28)	7,000	6,000	5,000
2556: Langdon-----	Choppy Sands (pe21-28)	3,000	2,150	1,550
2812: Mahone-----	Loamy Lowland (pe21-28)	7,000	5,500	4,500
2957: Nickerson-----	Sandy (pe21-28)	4,000	3,000	2,000
Punkin-----	Saline Subirrigated (pe21-28)	3,500	2,500	1,800
3181: Pratt-----	Sands (pe21-28)	4,500	3,500	2,500
Turon-----	Sands (pe21-28)	4,500	3,500	2,500
3190: Punkin-----	Clay Pan (pe21-28)	3,500	2,500	1,800
3191: Punkin-----	Clay Pan (pe21-28)	3,500	2,500	1,800
Taver-----	Clay Upland (pe21-28)	5,000	3,500	2,500
3511: Saltcreek-----	Sandy (pe21-28)	4,000	3,000	2,000
Naron, sandy substratum-----	Sandy (pe21-28)	4,000	3,000	2,000
3540: Solvay-----	Subirrigated (pe21-28)	9,500	8,500	7,500
3639: Taver-----	Clay Upland (pe21-28)	5,000	3,500	2,500
3641: Tivin-----	Choppy Sands (pe21-28)	3,000	2,150	1,550
Dillhut-----	Sands (pe21-28)	4,500	3,500	2,500
3900: Warnut-----	Subirrigated (pe21-28)	9,500	8,500	7,500
3966: Willowbrook-----	Subirrigated (pe21-28)	9,500	8,500	7,500
Ad: Fluvents-----	---	---	---	---
Ba: Clime-----	Limy Upland (pe25-34)	5,000	3,500	2,500
Hobbs-----	Loamy Lowland (pe25-34)	4,500	4,000	3,800
BOP: Borrow Pits-----	---	---	---	---
Ca: Carwile-----	Sandy (pe25-34)	5,000	3,800	3,000
Cc:				

RANGELAND PRODUCTIVITY--Continued
Harvey 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
Clark-----	Limy Upland (pe25-34)	5,000	4,000	3,000
Cd:				
Clime-----	Limy Upland (pe25-34)	5,000	3,500	2,500
Ce:				
Clime-----	Limy Upland (pe25-34)	5,000	3,500	2,500
Cf:				
Clime-----	Limy Upland (pe25-34)	5,000	3,500	2,500
Cm:				
Clime-----	Limy Upland (pe25-34)	4,500	3,500	2,500
Cr:				
Crete-----	Clay Upland (pe25-34)	5,000	3,500	2,500
Ct:				
Crete-----	Clay Upland (pe25-34)	5,000	3,500	2,500
De:				
Detroit-----	Loamy Terrace (pe25-34)	6,000	4,500	3,000
Dp:				
Dillwyn-----	Subirrigated (pe25-34)	9,000	8,000	7,000
Plevna-----	Subirrigated (pe25-34)	9,000	8,000	7,000
Dt:				
Dillwyn-----	Subirrigated (pe25-34)	9,000	8,000	7,000
Tivoli-----	Choppy Sands (pe25-34)	2,000	1,400	1,000
Du:				
Drummond-----	Saline Lowland (pe25-34)	7,000	5,800	5,000
Fa:				
Farnum-----	Sandy (pe25-34)	5,000	3,500	2,500
Fc:				
Farnum-----	Loamy Upland (pe24-32)	5,500	4,000	2,500
Fd:				
Farnum-----	Loamy Upland (pe25-34)	5,500	4,000	2,500
Fe:				
Farnum-----	Loamy Upland (pe25-34)	5,500	4,000	2,500
Fs:				
Farnum-----	Loamy Upland (pe25-34)	5,500	4,000	2,500
Drummond-----	Saline Lowland (pe25-34)	7,000	5,800	5,000
Gc:				
Geary-----	Loamy Upland (pe25-34)	6,000	4,000	3,000
Gd:				
Geary-----	Loamy Upland (pe25-34)	6,000	4,000	3,000
Ge:				
Geary-----	Loamy Upland (pe25-34)	6,000	4,000	3,000
Go:				
Goessel-----	Clay Upland (pe25-34)	5,500	3,500	2,000
GRP:				
Gravel Pits-----	---	---	---	---
Gs:				
Goessel-----	Clay Upland (pe25-34)	5,500	3,500	2,000
Ho:				
Hobbs-----	Loamy Lowland (pe25-34)	4,500	4,000	3,800
INT:				
Intermittent Lakes-----	---	---	---	---
Ir:				
Irwin-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Is:				
Irwin-----	Clay Upland (pe25-34)	5,000	3,500	2,000
It:				
Irwin-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Ka:				
Kaski-----	Loamy Lowland (pe25-34)	7,000	6,000	4,500
La:				
Ladysmith-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Lb:				
Ladysmith-----	Clay Upland (pe25-34)	5,000	3,500	2,000
Ld:				
Lela-----	Clay Lowland (pe25-34)	5,500	3,700	2,500
Drummond-----	Saline Lowland (pe25-34)	7,000	5,800	5,000
Le:				
Lesho-----	Subirrigated (pe25-34)	9,000	8,000	7,000
Na:				
Naron-----	Sandy (pe25-34)	4,500	3,000	2,000
Nb:				
Naron-----	Sandy (pe25-34)	4,500	3,000	2,000
Pa:				
Pratt-----	Sands (pe25-34)	4,500	3,500	2,500
Pc:				
Pratt-----	Sands (pe25-34)	4,500	3,500	2,500
Carwile-----	Sandy (pe25-34)	5,000	3,800	3,000
Pt:				
Pratt-----	Sands (pe25-34)	4,500	3,500	2,500
Tivoli-----	Sands (pe25-34)	2,000	1,400	1,000
Ro:				
Rosehill-----	Clay Upland (pe25-34)	5,500	3,500	2,000
Rs:				
Rosehill-----	Clay Upland (pe25-34)	5,000	3,500	2,500
Sm:				
Smolan-----	Loamy Upland (pe25-34)	5,500	4,000	3,000

RANGELAND PRODUCTIVITY--Continued
Harvey 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
Tv: Tivoli-----	Choppy Sands (pe25-34)	2,000	1,400	1,000
W: Water-----	---	---	---	---

BUILDING SITE DEVELOPMENT
Harvey 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
Harvey 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
015VE: Verdigris-----	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
113CB: Cass-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
113TO: Tobin-----	100	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
115CM: Clime-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.46	Somewhat limited Shrink-swell	0.50
115CP: Clime-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.46	Somewhat limited Shrink-swell Slope	0.50 0.12
115WB: Wells-----	90	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
115WC: Wells-----	90	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell Slope	0.50 0.12
173EA: Elandco-----	100	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
173EB: Elandco-----	100	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
173EC: Elandco-----	100	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
173TB: Tabler-----	60	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Drummond-----	40	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00
173VB: Vanoss-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
1191: Blazefork-----	90	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 1.00
1324: Carway-----	50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Carbika-----	30	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
1357: Carway-----	40	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Dillhut-----	30	Somewhat limited Depth to saturated zone	0.98	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.98
Solvay-----	30	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
1553: Darlow-----	70	Not limited		Not limited		Not limited	
Elmer-----	20	Not limited		Not limited		Not limited	
1554: Dillhut-----	70	Somewhat limited Depth to saturated zone	0.98	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.98
1556: Dillhut-----	30	Not limited		Not limited		Not limited	
Solvay-----	30	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	
2391: Kaskan-----	75	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.16	Very limited Flooding	1.00
2395: Kisiwa-----	90	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
2556: Langdon-----	50	Somewhat limited Slope	0.00	Somewhat limited Slope	0.00	Very limited Slope	1.00
2812: Mahone-----	95	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.16	Very limited Flooding	1.00
2957: Nickerson-----	50	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	
Punkin-----	50	Very limited Shrink-swell	1.00	Not limited		Very limited Shrink-swell	1.00
3181: Pratt-----	45	Not limited		Not limited		Not limited	
Turon-----	30	Not limited		Not limited		Not limited	
3190: Punkin-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
3191: Punkin-----	70	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Taver-----	20	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
3511: Saltcreek-----	70	Not limited		Very limited Shrink-swell	1.00	Not limited	
Naron, sandy substratum-----	30	Not limited		Not limited		Not limited	
3540: Solvay-----	90	Not limited		Somewhat limited Depth to saturated zone	0.95	Not limited	
3639: Taver-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
3641: Tivin-----	45	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Dillhut-----	40	Not limited		Not limited		Not limited	
3900: Warnut-----	75	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
3966: Willowbrook-----	90	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.95	Very limited Flooding	1.00

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Ad: Fluents-----	100	Very limited Flooding Shrink-swell Slope	1.00 0.50 0.16	Very limited Flooding Shrink-swell Slope	1.00 0.50 0.16	Very limited Flooding Slope Shrink-swell	1.00 1.00 0.50
Ba: Clime-----	70	Somewhat limited Shrink-swell Slope	0.50 0.37	Somewhat limited Shrink-swell Depth to soft bedrock Slope	0.50 0.42 0.37	Very limited Slope Shrink-swell	1.00 0.50
Hobbs-----	30	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00
Cc: Clark-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Cd: Clime-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.46	Somewhat limited Shrink-swell	0.50
Ce: Clime-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to soft bedrock Shrink-swell	0.71 0.50	Somewhat limited Shrink-swell Slope	0.50 0.12
Cf: Clime-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.46	Somewhat limited Shrink-swell Slope	0.50 0.00
Cm: Clime-----	100	Somewhat limited Shrink-swell Slope	0.50 0.04	Somewhat limited Depth to soft bedrock Shrink-swell Slope	0.71 0.50 0.04	Very limited Slope Shrink-swell	1.00 0.50
Cr: Crete-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Ct: Crete-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
De: Detroit-----	100	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Shrink-swell	1.00 1.00
Dp: Dillwyn-----	65	Somewhat limited Depth to saturated zone	0.39	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.39
Plevna-----	35	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
Dt: Dillwyn-----	55	Somewhat limited Depth to saturated zone	0.39	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.39
Tivoli-----	45	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Du: Drummond-----	75	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.95	Very limited Shrink-swell	1.00
Fa: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Fc: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Fd: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Fe: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Slope	0.50 0.12
Fs: Farnum-----	65	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Drummond-----	35	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00
Gc: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Gd: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Ge: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Slope	0.50 0.12
Go: Goessel-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Shrink-swell	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 1.00	Very limited Shrink-swell	1.00
Ho: Hobbs-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Is: Irwin-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.12
It: Irwin-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell Slope	1.00 0.00
Ka: Kaski-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding	1.00	Very limited Flooding Shrink-swell	1.00 0.50
La: Ladysmith-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Lb: Ladysmith-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Ld: Lela-----	60	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Flooding Shrink-swell	1.00 1.00
Drummond-----	40	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Le: Lesho-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 0.95	Very limited Flooding Shrink-swell	1.00 0.50
Na: Naron-----	100	Not limited		Not limited		Not limited	
Nb: Naron-----	100	Not limited		Not limited		Not limited	
Pa: Pratt-----	100	Not limited		Not limited		Not limited	
Pc: Pratt-----	60	Somewhat limited Depth to saturated zone	0.98	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.98
Carwile-----	40	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00
Pt: Pratt-----	60	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Tivoli-----	40	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Ro: Rosehill-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to soft bedrock	1.00 0.15	Very limited Shrink-swell	1.00
Rs: Rosehill-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to soft bedrock	1.00 0.15	Very limited Shrink-swell Slope	1.00 0.03
Sm: Smolan-----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Tv: Tivoli-----	100	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
W: Water-----	100	Not rated		Not rated		Not rated	

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
015VE: Verdigris-----	85	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
113CB: Cass-----	100	Somewhat limited Flooding	0.40	Very limited Cutbanks cave	1.00	Not limited	
113TO: Tobin-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
115CM: Clime-----	90	Somewhat limited Shrink-swell Frost action	0.50 0.50	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave	0.46 0.32 0.10	Somewhat limited Depth to bedrock	0.46
115CP: Clime-----	90	Somewhat limited Shrink-swell Frost action	0.50 0.50	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave	0.46 0.32 0.10	Somewhat limited Depth to bedrock	0.46
115WB: Wells-----	90	Somewhat limited Shrink-swell Frost action	0.50 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
115WC: Wells-----	90	Somewhat limited Shrink-swell Frost action	0.50 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
173EA: Elandco-----	100	Somewhat limited Shrink-swell Flooding	0.50 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
173EB: Elandco-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
173EC: Elandco-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
173TB: Tabler-----	60	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.28 0.10	Not limited	
Drummond-----	40	Very limited Shrink-swell	1.00	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.61 0.28 0.10	Not limited	
173VB: Vanoss-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
1191: Blazefork-----	90	Very limited Low strength Shrink-swell Flooding	1.00 1.00 0.40	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.61 0.12 0.10	Not limited	
1324: Carway-----	50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 0.10	Very limited Ponding Depth to saturated zone	1.00 1.00
Carbika-----	30	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave Too clayey	1.00 1.00 0.10 0.00	Very limited Ponding Depth to saturated zone	1.00 1.00

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
1357: Carway-----	40	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 0.10	Very limited Ponding Depth to saturated zone	1.00 1.00
Dillhut-----	30	Somewhat limited Depth to saturated zone	0.75	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.75 0.31
Solvay-----	30	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.95	Not limited	
1553: Darlow-----	70	Very limited Low strength	1.00	Somewhat limited Cutbanks cave	0.10	Very limited Sodium content	1.00
Elmer-----	20	Not limited		Somewhat limited Cutbanks cave	0.10	Very limited Sodium content	1.00
1554: Dillhut-----	70	Somewhat limited Depth to saturated zone	0.75	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.75 0.31
1556: Dillhut-----	30	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.15
Solvay-----	30	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.95	Not limited	
2391: Kaskan-----	75	Very limited Flooding	1.00	Very limited Cutbanks cave Flooding Depth to saturated zone	1.00 0.80 0.16	Very limited Flooding	1.00
2395: Kisiwa-----	90	Very limited Ponding Depth to saturated zone Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited Ponding Depth to saturated zone Cutbanks cave Too clayey	1.00 1.00 1.00 0.08	Very limited Ponding Sodium content Depth to saturated zone	1.00 1.00 1.00
2556: Langdon-----	50	Somewhat limited Slope	0.00	Very limited Cutbanks cave Slope	1.00 0.00	Somewhat limited Droughty Slope	0.97 0.00
2812: Mahone-----	95	Somewhat limited Flooding	0.40	Somewhat limited Depth to saturated zone Cutbanks cave	0.16 0.10	Not limited	
2957: Nickerson-----	50	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.95	Not limited	
Punkin-----	50	Very limited Low strength Shrink-swell	1.00 1.00	Very limited Cutbanks cave Too clayey	1.00 0.04	Very limited Sodium content	1.00
3181: Pratt-----	45	Not limited		Very limited Cutbanks cave	1.00	Not limited	
Turon-----	30	Not limited		Very limited Cutbanks cave Too clayey	1.00 0.01	Not limited	
3190: Punkin-----	90	Very limited Low strength Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.11 0.10	Very limited Sodium content	1.00

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
3191: Punkin-----	70	Very limited Low strength Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.11 0.10	Very limited Sodium content	1.00
Taver-----	20	Very limited Low strength Shrink-swell	1.00 1.00	Somewhat limited Cutbanks cave	0.10	Not limited	
3511: Saltcreek-----	70	Not limited		Somewhat limited Cutbanks cave Too clayey	0.10 0.00	Not limited	
Naron, sandy substratum-----	30	Not limited		Very limited Cutbanks cave	1.00	Not limited	
3540: Solvay-----	90	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.95	Not limited	
3639: Taver-----	90	Very limited Low strength Shrink-swell	1.00 1.00	Somewhat limited Cutbanks cave	0.10	Not limited	
3641: Tivin-----	45	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Droughty Slope	0.98 0.16
Dillhut-----	40	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.15
3900: Warnut-----	75	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
3966: Willowbrook-----	90	Very limited Flooding	1.00	Very limited Cutbanks cave Depth to saturated zone Flooding	1.00 0.95 0.60	Somewhat limited Flooding	0.60
Ad: Fluvents-----	100	Very limited Flooding Shrink-swell Slope	1.00 0.50 0.16	Somewhat limited Flooding Slope Cutbanks cave	0.80 0.16 0.10	Very limited Flooding Slope	1.00 0.16
Ba: Clime-----	70	Somewhat limited Shrink-swell Slope	0.50 0.37	Somewhat limited Depth to soft bedrock Slope Too clayey Cutbanks cave	0.42 0.37 0.28 0.10	Very limited Too clayey Depth to bedrock Slope Droughty	1.00 0.42 0.37 0.00
Hobbs-----	30	Very limited Flooding	1.00	Somewhat limited Flooding Cutbanks cave	0.80 0.10	Very limited Flooding	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.28 0.10	Very limited Depth to saturated zone	1.00
Cc: Clark-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Cd: Clime-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave	0.46 0.28 0.10	Very limited Too clayey Depth to bedrock	1.00 0.46

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Ce: Cline-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave	0.71 0.28 0.10	Very limited Too clayey Depth to bedrock Droughty	1.00 0.71 0.00
Cf: Cline-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave	0.46 0.28 0.10	Very limited Too clayey Depth to bedrock	1.00 0.46
Cm: Cline-----	100	Somewhat limited Shrink-swell Slope	0.50 0.04	Somewhat limited Depth to soft bedrock Too clayey Cutbanks cave Slope	0.71 0.28 0.10 0.04	Very limited Too clayey Depth to bedrock Slope Droughty	1.00 0.71 0.04 0.00
Cr: Crete-----	100	Very limited Low strength Shrink-swell	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.12 0.10	Not limited	
Ct: Crete-----	100	Very limited Low strength Shrink-swell Frost action	1.00 1.00 0.50	Somewhat limited Too clayey Cutbanks cave	0.12 0.10	Not limited	
De: Detroit-----	100	Very limited Shrink-swell Flooding	1.00 0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
Dp: Dillwyn-----	65	Somewhat limited Depth to saturated zone	0.19	Very limited Cutbanks cave Depth to saturated zone	1.00 1.00	Somewhat limited Droughty Depth to saturated zone	0.22 0.19
Plevna-----	35	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 0.80	Very limited Flooding Depth to saturated zone	1.00 1.00
Dt: Dillwyn-----	55	Somewhat limited Depth to saturated zone	0.19	Very limited Cutbanks cave Depth to saturated zone	1.00 1.00	Somewhat limited Droughty Depth to saturated zone	0.22 0.19
Tivoli-----	45	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Very limited Droughty Slope	1.00 0.16
Du: Drummond-----	75	Very limited Shrink-swell	1.00	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.95 0.28 0.10	Very limited Salinity Droughty	1.00 0.06
Fa: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Fc: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Fd: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Fe: Farnum-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Fs: Farnum-----	65	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Drummond-----	35	Very limited Shrink-swell	1.00	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.61 0.28 0.10	Not limited	
Gc: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Gd: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Ge: Geary-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Go: Goessel-----	100	Very limited Shrink-swell	1.00	Very limited Cutbanks cave Depth to saturated zone Too clayey	1.00 1.00 0.28	Very limited Too clayey	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Very limited Shrink-swell	1.00	Very limited Cutbanks cave Depth to saturated zone Too clayey	1.00 1.00 0.28	Very limited Too clayey	1.00
Ho: Hobbs-----	100	Very limited Flooding	1.00	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
Is: Irwin-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
It: Irwin-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
Ka: Kaski-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Somewhat limited Flooding Cutbanks cave	0.60 0.10	Somewhat limited Flooding	0.60
La: Ladysmith-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
Lb: Ladysmith-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
Ld: Lela-----	60	Very limited Flooding Shrink-swell	1.00 1.00	Very limited Cutbanks cave Flooding Too clayey	1.00 0.60 0.50	Somewhat limited Flooding	0.60
Drummond-----	40	Very limited Shrink-swell	1.00	Somewhat limited Depth to saturated zone Too clayey Cutbanks cave	0.61 0.28 0.10	Not limited	

BUILDING SITE DEVELOPMENT--Continued
Harvey 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
Le: Lesho-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Cutbanks cave Depth to saturated zone Flooding	1.00 0.95 0.60	Somewhat limited Flooding	0.60
Na: Naron-----	100	Not limited		Somewhat limited Cutbanks cave	0.10	Not limited	
Nb: Naron-----	100	Not limited		Somewhat limited Cutbanks cave	0.10	Not limited	
Pa: Pratt-----	100	Not limited		Very limited Cutbanks cave	1.00	Not limited	
Pc: Pratt-----	60	Somewhat limited Depth to saturated zone	0.75	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone	0.75
Carwile-----	40	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.28 0.10	Very limited Depth to saturated zone	1.00
Pt: Pratt-----	60	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
Tivoli-----	40	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Droughty Slope	0.96 0.16
Ro: Rosehill-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Depth to soft bedrock Cutbanks cave	0.50 0.15 0.10	Very limited Too clayey Depth to bedrock	1.00 0.16
Rs: Rosehill-----	100	Very limited Shrink-swell	1.00	Somewhat limited Too clayey Depth to soft bedrock Cutbanks cave	0.50 0.15 0.10	Very limited Too clayey Depth to bedrock	1.00 0.16
Sm: Smolan-----	90	Very limited Shrink-swell	1.00	Somewhat limited Cutbanks cave Too clayey	0.10 0.04	Not limited	
Tv: Tivoli-----	100	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 1.00
W: Water-----	100	Not rated		Not rated		Not rated	

CONSTRUCTION MATERIALS
Harvey 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
Harvey 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
015VE: Verdigris-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
113CB: Cass-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.08 0.70
113TO: Tobin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
115CM: Clime-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
115CP: Clime-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
115WB: Wells-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.06
115WC: Wells-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.06
173EA: Elandco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
173EB: Elandco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
173EC: Elandco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
173TB: Tabler-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Drummond-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
173VB: Vanoss-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
1191: Blazefork-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
1324: Carway-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Carbika-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Harvey 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
1357: Carway-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dillhut-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.27
Solvay-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.15 0.56
1553: Darlow-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.12
Elmer-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.10
1554: Dillhut-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.27
1556: Dillhut-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.13
Solvay-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.15 0.56
2391: Kaskan-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.36 0.40
2395: Kisiwa-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.00
2556: Langdon-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.50 0.50
2812: Mahone-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.93
2957: Nickerson-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.76
Punkin-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.19
3181: Pratt-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.84 0.86
Turon-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.30
3190: Punkin-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.02

CONSTRUCTION MATERIALS--Continued
Harvey 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
3191: Punkin-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.02
Taver-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Thickest layer Bottom layer	0.00 0.00
3511: Saltcreek-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Naron, sandy substratum-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.90
3540: Solvay-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.07 0.44
3639: Taver-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Thickest layer Bottom layer	0.00 0.00
3641: Tivin-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Good	
Dillhut-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.13
3900: Warnut-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.40 0.89
3966: Willowbrook-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.61
Ad: Fluvents-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ba: Clime-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Hobbs-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BOP: Borrow Pits-----	100	Not rated		Not rated	
Ca: Carwile-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cc: Clark-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Harvey 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
Cd: Cline-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ce: Cline-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cf: Cline-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cm: Cline-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cr: Crete-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ct: Crete-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
De: Detroit-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Dp: Dillwyn-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.18 0.18
Plevna-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer Bottom layer	0.09 0.99
Dt: Dillwyn-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.18 0.18
Tivoli-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.99 0.99
Du: Drummond-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Fa: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Fc: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Fd: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Fe: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08

CONSTRUCTION MATERIALS--Continued
Harvey 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
Fs: Farnum-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Drummond-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Gc: Geary-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Gd: Geary-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ge: Geary-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Go: Goessel-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
GRP: Gravel Pits-----	100	Not rated		Not rated	
Gs: Goessel-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ho: Hobbs-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
INT: Intermittent Lakes--	100	Not rated		Not rated	
Ir: Irwin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Is: Irwin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
It: Irwin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ka: Kaski-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
La: Ladysmith-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Lb: Ladysmith-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Harvey 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
Ld: Lela-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Drummond-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Le: Lesho-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.21
Na: Naron-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.08
Nb: Naron-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.08
Pa: Pratt-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.19 0.57
Pc: Pratt-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.19 0.57
Carwile-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pt: Pratt-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.19 0.57
Tivoli-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.57 0.99
Ro: Rosehill-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rs: Rosehill-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sm: Smolan-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Tv: Tivoli-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.99 0.99
W: Water-----	100	Not rated		Not rated	

CONSTRUCTION MATERIALS--Continued
Harvey 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
015VE: Verdigris-----	85	Good		Fair Shrink-swell	0.87	Good	
113CB: Cass-----	100	Poor Low content of organic matter	0.00	Good		Good	
113TO: Tobin-----	100	Fair Low content of organic matter Water erosion	0.50 0.90	Fair Shrink-swell	0.96	Good	
115CM: Clime-----	90	Poor Too clayey Depth to bedrock Droughty No water erosion limitation	0.00 0.54 0.88 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock	0.00 0.54
115CP: Clime-----	90	Poor Too clayey Depth to bedrock Droughty No water erosion limitation	0.00 0.54 0.88 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock	0.00 0.54
115WB: Wells-----	90	Fair Too acid Too clayey	0.95 0.98	Good		Fair Too Clayey	0.93
115WC: Wells-----	90	Fair Too acid Too clayey	0.95 0.98	Good		Fair Too Clayey	0.93
173EA: Elandco-----	100	Fair Water erosion	0.90	Fair Shrink-swell	0.87	Good	
173EB: Elandco-----	100	Fair Water erosion	0.90	Fair Shrink-swell	0.87	Good	
173EC: Elandco-----	100	Fair Water erosion	0.90	Fair Shrink-swell	0.87	Good	
173TB: Tabler-----	60	Poor Too clayey Low content of organic matter Water erosion	0.00 0.00 0.68	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
Drummond-----	40	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.37	Fair Shrink-swell	0.56	Poor Too Clayey Salinity	0.00 0.88
173VB: Vanoss-----	100	Poor Low content of organic matter Too acid Too clayey No water erosion limitation	0.00 0.97 0.98 0.99	Fair Shrink-swell	0.90	Fair Too Clayey	0.49

CONSTRUCTION MATERIALS--Continued
Harvey 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
1191: Blazefork-----	90	Poor Too clayey Low content of organic matter Too acid Water erosion	0.00 0.06 0.32 0.90	Poor Low strength Shrink-swell	0.00 0.50	Poor Too Clayey	0.00
1324: Carway-----	50	Fair Low content of organic matter Too acid No water erosion limitation	0.12 0.95 0.99	Poor Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.89	Poor Depth to saturated zone	0.00
Carbika-----	30	Fair Too clayey Low content of organic matter Too acid No water erosion limitation	0.74 0.88 0.95 0.99	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone Too Clayey	0.00 0.53
1357: Carway-----	40	Poor Wind erosion Low content of organic matter Too acid No water erosion limitation	0.00 0.12 0.95 0.99	Poor Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.89	Poor Depth to saturated zone	0.00
Dillhut-----	30	Poor Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.95	Fair Depth to saturated zone	0.14	Poor Too sandy Depth to saturated zone	0.00 0.14
Solvay-----	30	Fair Low content of organic matter Too acid	0.04 0.97	Good		Good	
1553: Darlow-----	70	Poor Sodium content Too alkaline Low content of organic matter Too acid Salinity Water erosion	0.00 0.00 0.08 0.16 0.88 0.90	Good		Poor Sodium content Salinity	0.00 0.00
Elmer-----	20	Poor Too alkaline Too acid Low content of organic matter Sodium content No water erosion limitation	0.00 0.16 0.46 0.78 0.99	Fair Shrink-swell	0.99	Poor Sodium content	0.00
1554: Dillhut-----	70	Poor Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.95	Fair Depth to saturated zone	0.14	Poor Too sandy Depth to saturated zone	0.00 0.14

CONSTRUCTION MATERIALS--Continued
Harvey 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
1556: Dillhut-----	30	Poor Wind erosion Low content of organic matter Too acid	0.00 0.00 0.99	Good		Good	
Solvay-----	30	Fair Low content of organic matter Too acid	0.04 0.97	Good		Good	
2391: Kaskan-----	75	Fair Too sandy Low content of organic matter No water erosion limitation	0.01 0.12 0.99	Good		Fair Too sandy	0.01
2395: Kisiwa-----	90	Poor Sodium content Too alkaline Too clayey Water erosion Low content of organic matter	0.00 0.00 0.19 0.90 0.91	Poor Depth to saturated zone Shrink-swell	0.00 0.97	Poor Depth to saturated zone Sodium content Too Clayey	0.00 0.00 0.14
2556: Langdon-----	50	Poor Wind erosion Low content of organic matter Too sandy Droughty Too acid	0.00 0.00 0.00 0.38 0.61	Good		Poor Too sandy Too acid	0.00 0.99
2812: Mahone-----	95	Poor Wind erosion Too acid Low content of organic matter	0.00 0.39 0.82	Good		Good	
2957: Nickerson-----	50	Fair Low content of organic matter Too acid	0.01 0.74	Good		Good	
Punkin-----	50	Poor Low content of organic matter Sodium content Too clayey	0.00 0.00 0.00	Fair Shrink-swell	0.81	Poor Sodium content Too Clayey	0.00 0.00
3181: Pratt-----	45	Poor Wind erosion Too sandy Low content of organic matter Too acid	0.00 0.00 0.00 0.74	Good		Poor Too sandy	0.00
Turon-----	30	Poor Too sandy Wind erosion Too acid Low content of organic matter	0.00 0.00 0.39 0.88	Good		Poor Too sandy Too acid	0.00 0.92
3190: Punkin-----	90	Poor Sodium content Too clayey Water erosion	0.00 0.00 0.90	Poor Low strength Shrink-swell	0.00 0.25	Poor Sodium content Too Clayey	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Harvey 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
3191: Punkin-----	70	Poor Sodium content Too clayey Water erosion	0.00 0.00 0.90	Poor Low strength Shrink-swell	0.00 0.25	Poor Sodium content Too Clayey	0.00 0.00
Taver-----	20	Poor Too clayey No water erosion limitation	0.00 0.99	Poor Low strength Shrink-swell	0.00 0.27	Poor Too Clayey	0.00
3511: Saltcreek-----	70	Fair Too acid Low content of organic matter No water erosion limitation	0.12 0.12 0.99	Poor Low strength Shrink-swell	0.00 0.95	Good	
Naron, sandy substratum-----	30	Poor Low content of organic matter	0.00	Good		Good	
3540: Solvay-----	90	Fair Low content of organic matter Too acid	0.04 0.97	Good		Good	
3639: Taver-----	90	Poor Too clayey No water erosion limitation	0.00 0.99	Poor Low strength Shrink-swell	0.00 0.27	Poor Too Clayey	0.00
3641: Tivin-----	45	Poor Too sandy Wind erosion Low content of organic matter Droughty Too acid	0.00 0.00 0.00 0.36 0.99	Good		Poor Too sandy Slope	0.00 0.84
Dillhut-----	40	Poor Wind erosion Low content of organic matter Too acid	0.00 0.00 0.99	Good		Good	
3900: Warnut-----	75	Fair Low content of organic matter Too acid Too sandy	0.12 0.74 0.90	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone Too sandy	0.00 0.90
3966: Willowbrook-----	90	Poor Too sandy Low content of organic matter Too acid	0.00 0.00 0.99	Good		Poor Too sandy Rock fragments	0.00 0.50
Ad: Fluents-----	100	Poor Low content of organic matter Water erosion	0.00 0.90	Fair Shrink-swell	0.87	Fair Slope	0.84
Ba: Clime-----	70	Poor Too clayey Droughty Depth to bedrock	0.00 0.20 0.58	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock Slope	0.00 0.58 0.63
Hobbs-----	30	Fair Low content of organic matter	0.50	Good		Good	

CONSTRUCTION MATERIALS--Continued
Harvey 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
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Poor Low content of organic matter Too clayey Too acid No water erosion limitation	0.00 0.00 0.97 0.99	Poor Depth to saturated zone Shrink-swell	0.00 0.35	Poor Depth to saturated zone Too Clayey	0.00 0.00
Cc: Clark-----	100	Poor Low content of organic matter Carbonate content	0.00 0.68	Fair Shrink-swell	0.87	Fair Carbonate content	0.68
Cd: Clime-----	100	Poor Too clayey Droughty Depth to bedrock	0.00 0.42 0.54	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock	0.00 0.54
Ce: Clime-----	100	Poor Too clayey Droughty Depth to bedrock	0.00 0.20 0.29	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock	0.00 0.29
Cf: Clime-----	100	Poor Too clayey Droughty Depth to bedrock	0.00 0.46 0.54	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock	0.00 0.54
Cm: Clime-----	100	Poor Too clayey Droughty Depth to bedrock	0.00 0.20 0.29	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too Clayey Depth to bedrock Slope	0.00 0.29 0.96
Cr: Crete-----	100	Poor Too clayey Too acid Low content of organic matter Water erosion	0.00 0.84 0.88 0.90	Poor Low strength Shrink-swell	0.00 0.12	Poor Too Clayey	0.00
Ct: Crete-----	100	Poor Too clayey Too acid Low content of organic matter Water erosion	0.00 0.84 0.88 0.90	Poor Low strength Shrink-swell	0.00 0.12	Poor Too Clayey	0.00
De: Detroit-----	100	Poor Low content of organic matter Too clayey No water erosion limitation	0.00 0.00 0.99	Fair Shrink-swell	0.49	Poor Too Clayey	0.00
Dp: Dillwyn-----	65	Poor Wind erosion Low content of organic matter Too sandy Droughty	0.00 0.00 0.36 0.79	Fair Depth to saturated zone	0.53	Fair Too sandy Depth to saturated zone	0.36 0.53
Plevna-----	35	Poor Low content of organic matter	0.00	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone	0.00

CONSTRUCTION MATERIALS--Continued
Harvey 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
Dt: Dillwyn-----	55	Poor Wind erosion Low content of organic matter Too sandy Droughty	0.00 0.00 0.36 0.79	Fair Depth to saturated zone	0.53	Fair Too sandy Depth to saturated zone	0.36 0.53
Tivoli-----	45	Poor Too sandy Wind erosion Low content of organic matter Droughty	0.00 0.00 0.00 0.00	Good		Poor Too sandy Slope	0.00 0.84
Du: Drummond-----	75	Poor Low content of organic matter Too clayey Water erosion Salinity Droughty	0.00 0.00 0.68 0.88 0.96	Fair Shrink-swell	0.12	Poor Too Clayey Salinity	0.00 0.00
Fa: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Fc: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Fd: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.98	Good	
Fe: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.98	Good	
Fs: Farnum-----	65	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Drummond-----	35	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.37	Fair Shrink-swell	0.12	Poor Too Clayey Salinity	0.00 0.88
Gc: Geary-----	100	Poor Low content of organic matter Water erosion Too acid Too clayey	0.00 0.90 0.95 0.98	Fair Shrink-swell	0.87	Fair Too Clayey	0.49
Gd: Geary-----	100	Poor Low content of organic matter Water erosion Too acid Too clayey	0.00 0.90 0.95 0.98	Fair Shrink-swell	0.87	Fair Too Clayey	0.49
Ge: Geary-----	100	Poor Low content of organic matter Water erosion Too acid Too clayey	0.00 0.90 0.95 0.98	Fair Shrink-swell	0.87	Fair Too Clayey	0.49

CONSTRUCTION MATERIALS--Continued
Harvey 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
Go: Goessel-----	100	Poor Too clayey Low content of organic matter	0.00 0.00	Fair Shrink-swell Depth to saturated zone	0.12 0.89	Poor Too Clayey Depth to saturated zone	0.00 0.89
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Poor Too clayey Low content of organic matter	0.00 0.00	Fair Shrink-swell Depth to saturated zone	0.12 0.89	Poor Too Clayey Depth to saturated zone	0.00 0.89
Ho: Hobbs-----	100	Fair Low content of organic matter	0.50	Good		Good	
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Poor Too clayey	0.00	Fair Shrink-swell	0.16	Poor Too Clayey	0.00
Is: Irwin-----	100	Poor Too clayey	0.00	Fair Shrink-swell	0.14	Poor Too Clayey	0.00
It: Irwin-----	100	Poor Too clayey	0.00	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
Ka: Kaski-----	100	Good		Fair Shrink-swell	0.99	Good	
La: Ladysmith-----	100	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.31	Poor Too Clayey	0.00
Lb: Ladysmith-----	100	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.31	Poor Too Clayey	0.00
Ld: Lela-----	60	Poor Too clayey Low content of organic matter Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.12	Poor Too Clayey Rock fragments	0.00 0.94
Drummond-----	40	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.37	Fair Shrink-swell	0.12	Poor Too Clayey Salinity	0.00 0.88
Le: Lesho-----	100	Poor Low content of organic matter	0.00	Good		Good	
Na: Naron-----	100	Poor Low content of organic matter	0.00	Good		Good	
Nb: Naron-----	100	Poor Low content of organic matter	0.00	Good		Good	

CONSTRUCTION MATERIALS--Continued
Harvey 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
Pa: Pratt-----	100	Poor Wind erosion Low content of organic matter Too sandy	0.00 0.00 0.00	Good		Poor Too sandy	0.00
Pc: Pratt-----	60	Poor Wind erosion Low content of organic matter Too sandy	0.00 0.00 0.00	Fair Depth to saturated zone	0.14	Poor Too sandy Depth to saturated zone	0.00 0.14
Carwile-----	40	Poor Low content of organic matter Too clayey Too acid No water erosion limitation	0.00 0.00 0.00 0.97 0.99	Poor Depth to saturated zone Shrink-swell	0.00 0.35	Poor Depth to saturated zone Too Clayey	0.00 0.00
Pt: Pratt-----	60	Poor Wind erosion Low content of organic matter Too sandy	0.00 0.00 0.00	Good		Poor Too sandy Slope	0.00 0.84
Tivoli-----	40	Poor Too sandy Wind erosion Low content of organic matter Droughty	0.00 0.00 0.00 0.02	Good		Poor Too sandy Slope	0.00 0.84
Ro: Rosehill-----	100	Poor Too clayey Low content of organic matter Droughty Depth to bedrock	0.00 0.00 0.33 0.84	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Depth to bedrock	0.00 0.84
Rs: Rosehill-----	100	Poor Too clayey Low content of organic matter Droughty Depth to bedrock	0.00 0.00 0.33 0.84	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Depth to bedrock	0.00 0.84
Sm: Smolan-----	90	Poor Too clayey No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.49	Poor Too Clayey	0.00
Tv: Tivoli-----	100	Poor Too sandy Wind erosion Low content of organic matter Droughty	0.00 0.00 0.00 0.00	Fair Slope	0.50	Poor Too sandy Slope	0.00 0.00
W: Water-----	100	Not rated		Not rated		Not rated	

RECREATIONAL INTERPRETATIONS
Harvey 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
Harvey 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
015VE: Verdigris-----	85	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding Slope	1.00 0.00
113CB: Cass-----	100	Very limited Flooding	1.00	Not limited		Not limited	
113TO: Tobin-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
115CM: Clime-----	90	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability Slope	0.39 0.00
115CP: Clime-----	90	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Slope Depth to bedrock Restricted permeability	0.87 0.46 0.39
115WB: Wells-----	90	Not limited		Not limited		Somewhat limited Slope	0.00
115WC: Wells-----	90	Not limited		Not limited		Somewhat limited Slope	0.87
173EA: Elandco-----	100	Very limited Flooding	1.00	Not limited		Not limited	
173EB: Elandco-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
173EC: Elandco-----	100	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
173TB: Tabler-----	60	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Drummond-----	40	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
173VB: Vanoss-----	100	Not limited		Not limited		Somewhat limited Slope	0.00
1191: Blazefork-----	90	Very limited Flooding Restricted permeability	1.00 0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39
1324: Carway-----	50	Very limited Depth to saturated zone Ponding Restricted permeability	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	1.00 1.00 1.00
Carbika-----	30	Very limited Depth to saturated zone Ponding Restricted permeability	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	1.00 1.00 1.00
1357: Carway-----	40	Very limited Depth to saturated zone Ponding Restricted permeability Too sandy	1.00 1.00 1.00 0.82	Very limited Ponding Depth to saturated zone Restricted permeability Too sandy	1.00 1.00 1.00 0.82	Very limited Depth to saturated zone Ponding Restricted permeability Too sandy	1.00 1.00 1.00 0.82
Dillhut-----	30	Very limited Too sandy Depth to saturated zone	1.00 0.98	Very limited Too sandy Depth to saturated zone	1.00 0.75	Very limited Too sandy Depth to saturated zone	1.00 0.98
Solvay-----	30	Somewhat limited		Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
1553: Darlow-----	70	Too sandy	0.38	Too sandy	0.38	Too sandy	0.38
Elmer-----	20	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45
1554: Dillhut-----	70	Very limited Sodium content Restricted permeability	1.00 0.39	Very limited Sodium content Restricted permeability	1.00 0.39	Very limited Sodium content Restricted permeability	1.00 0.39
1556: Dillhut-----	30	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy	1.00
Solvay-----	30	Somewhat limited Too sandy	0.38	Somewhat limited Too sandy	0.38	Somewhat limited Too sandy	0.38
2391: Kaskan-----	75	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
2395: Kisiwa-----	90	Very limited Depth to saturated zone Sodium content	1.00 1.00	Very limited Ponding Depth to saturated zone Sodium content	1.00 1.00	Very limited Depth to saturated zone Sodium content	1.00 1.00
2556: Langdon-----	50	Ponding Restricted permeability	1.00 1.00	Ponding Restricted permeability	1.00 1.00	Ponding Restricted permeability	1.00 1.00
2812: Mahone-----	95	Very limited Too sandy Slope	1.00 0.00	Very limited Too sandy Slope	1.00 0.00	Very limited Too sandy Slope	1.00 1.00
2957: Nickerson-----	50	Somewhat limited Too sandy	0.59	Somewhat limited Too sandy	0.59	Somewhat limited Too sandy	0.59
Punkin-----	50	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45
3181: Pratt-----	45	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy	1.00
Turon-----	30	Somewhat limited Too sandy	0.98	Somewhat limited Too sandy	0.98	Somewhat limited Too sandy	0.13
3190: Punkin-----	90	Somewhat limited Too sandy Slope	0.98	Somewhat limited Too sandy Slope	0.98	Somewhat limited Too sandy Slope	0.13
3191: Punkin-----	70	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45
Taver-----	20	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45	Very limited Sodium content Restricted permeability	1.00 0.45
3511: Saltcreek-----	70	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39
Naron, sandy substratum-----	30	Somewhat limited		Somewhat limited		Somewhat limited	
3540: Solvay-----	90	Too sandy	0.08	Too sandy	0.08	Too sandy	0.08
3639: Taver-----	90	Somewhat limited Too sandy	0.37	Somewhat limited Too sandy	0.37	Somewhat limited Too sandy	0.37
	90	Somewhat limited		Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
3641: Tivin-----	45	Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
		Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy	1.00
Dillhut-----	40	Slope	0.16	Slope	0.16	Slope	1.00
		Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy	1.00
						Slope	0.13
3900: Warnut-----	75	Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00	Very limited Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
3966: Willowbrook-----	90	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Ad: Fluents-----	100	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
Ba: Clime-----	70	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Very limited Slope	1.00
		Restricted	0.39	Restricted	0.39	Too clayey	0.50
		permeability		permeability		Depth to bedrock	0.42
		Slope	0.37	Slope	0.37	Restricted permeability	0.39
Hobbs-----	30	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Restricted	0.94	Restricted	0.94	Restricted	0.94
		permeability		permeability		permeability	
Cc: Clark-----	100	Not limited		Not limited		Somewhat limited Slope	0.00
Cd: Clime-----	100	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50
		Restricted	0.39	Restricted	0.39	Restricted	0.39
		permeability		permeability		permeability	
						Slope	0.00
Ce: Clime-----	100	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Somewhat limited Slope	0.87
		Restricted	0.39	Restricted	0.39	Depth to bedrock	0.71
		permeability		permeability		Too clayey	0.50
						Restricted	0.39
						permeability	
Cf: Clime-----	100	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Somewhat limited Slope	0.50
		Restricted	0.39	Restricted	0.39	Too clayey	0.50
		permeability		permeability		Depth to bedrock	0.46
						Restricted	0.39
						permeability	
Cm: Clime-----	100	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Very limited Slope	1.00
		Restricted	0.39	Restricted	0.39	Depth to bedrock	0.71
		permeability		permeability		Too clayey	0.50
		Slope	0.04	Slope	0.04	Restricted	0.39
						permeability	
Cr: Crete-----	100	Somewhat limited Restricted	0.39	Somewhat limited Restricted	0.39	Somewhat limited Restricted	0.39
		permeability		permeability		permeability	
Ct: Crete-----	100	Somewhat limited		Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
De: Detroit-----	100	Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability Slope	0.00
		Very limited Flooding	1.00	Somewhat limited Restricted permeability	0.39	Somewhat limited Restricted permeability	0.39
		Restricted permeability	0.39				
Dp: Dillwyn-----	65	Somewhat limited Depth to saturated zone Too sandy	0.39	Somewhat limited Too sandy	0.37	Somewhat limited Depth to saturated zone Too sandy	0.39
			0.37	Depth to saturated zone	0.19		0.37
Plevna-----	35	Very limited Flooding	1.00	Very limited Depth to saturated zone Flooding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	1.00		0.40	Depth to saturated zone	1.00
Dt: Dillwyn-----	55	Somewhat limited Depth to saturated zone Too sandy	0.39	Somewhat limited Too sandy	0.37	Somewhat limited Depth to saturated zone Too sandy	0.39
			0.37	Depth to saturated zone	0.19		0.37
Tivoli-----	45	Very limited Too sandy Slope	1.00 0.16	Very limited Too sandy Slope	1.00 0.16	Very limited Too sandy Slope	1.00 1.00
Du: Drummond-----	75	Very limited Salinity Restricted permeability	1.00 0.45	Very limited Salinity Restricted permeability	1.00 0.45	Very limited Salinity Restricted permeability	1.00 0.45
Fa: Farnum-----	100	Not limited		Not limited		Not limited	
Fc: Farnum-----	100	Not limited		Not limited		Not limited	
Fd: Farnum-----	100	Not limited		Not limited		Somewhat limited Slope	0.00
Fe: Farnum-----	100	Not limited		Not limited		Somewhat limited Slope	0.87
Fs: Farnum----- Drummond-----	65	Not limited		Not limited		Not limited	
	35	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Gc: Geary-----	100	Not limited		Not limited		Not limited	
Gd: Geary-----	100	Not limited		Not limited		Somewhat limited Slope	0.00
Ge: Geary-----	100	Not limited		Not limited		Somewhat limited Slope	0.87
Go: Goessel-----	100	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability	0.50 0.45
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability Slope	0.00
Ho: Hobbs-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Somewhat limited		Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
Is: Irwin-----	100	Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability Slope	0.45 0.00
		Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Slope Restricted permeability	0.87 0.45
It: Irwin-----	100	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Slope	0.50
						Restricted permeability	0.45
Ka: Kaski-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
La: Ladysmith-----	100	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Lb: Ladysmith-----	100	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability Slope	0.45 0.00
Ld: Lela-----	60	Very limited Flooding	1.00	Somewhat limited Restricted permeability	0.45	Somewhat limited Flooding	0.60
		Restricted permeability	0.45			Restricted permeability	0.45
Drummond-----	40	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45	Somewhat limited Restricted permeability	0.45
Le: Lesho-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Na: Naron-----	100	Not limited		Not limited		Not limited	
Nb: Naron-----	100	Not limited		Not limited		Somewhat limited Slope	0.13
Pa: Pratt-----	100	Somewhat limited Too sandy	0.37	Somewhat limited Too sandy	0.37	Somewhat limited Too sandy Slope	0.37 0.13
Pc: Pratt-----	60	Somewhat limited Depth to saturated zone Too sandy	0.98 0.37	Somewhat limited Depth to saturated zone Too sandy	0.75 0.37	Somewhat limited Depth to saturated zone Too sandy Slope	0.98 0.37 0.13
Carwile-----	40	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	1.00 0.94
Pt: Pratt-----	60	Somewhat limited Too sandy Slope	0.37 0.16	Somewhat limited Too sandy Slope	0.37 0.16	Very limited Slope Too sandy	1.00 0.37
Tivoli-----	40	Somewhat limited Too sandy Slope	0.92 0.16	Somewhat limited Too sandy Slope	0.92 0.16	Very limited Slope Too sandy	1.00 0.92
Ro: Rosehill-----	100	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability Slope	0.50 0.45 0.00
Rs: Rosehill-----	100	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Too clayey Restricted permeability	0.50 0.45	Somewhat limited Slope Too clayey	0.72 0.50
						Restricted permeability Depth to bedrock	0.45 0.16
Sm: Smolan-----	90	Somewhat limited		Somewhat limited		Somewhat limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
Tv: Tivoli-----	100	Restricted permeability	0.39	Restricted permeability	0.39	Restricted permeability	0.39
						Slope	0.00
		Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Slope	1.00
W: Water-----	100	Slope	1.00	Slope	1.00	Too sandy	1.00
		Not rated		Not rated		Not rated	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
015VE: Verdigris-----	85	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
113CB: Cass-----	100	Not limited		Not limited	
113TO: Tobin-----	100	Not limited		Somewhat limited Flooding	0.60
115CM: Clime-----	90	Not limited		Somewhat limited Depth to bedrock	0.46
115CP: Clime-----	90	Not limited		Somewhat limited Depth to bedrock	0.46
115WB: Wells-----	90	Not limited		Not limited	
115WC: Wells-----	90	Not limited		Not limited	
173EA: Elandco-----	100	Not limited		Not limited	
173EB: Elandco-----	100	Not limited		Somewhat limited Flooding	0.60
173EC: Elandco-----	100	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
173TB: Tabler-----	60	Not limited		Not limited	
Drummond-----	40	Not limited		Not limited	
173VB: Vanoss-----	100	Not limited		Not limited	
1191: Blazefork-----	90	Not limited		Not limited	
1324: Carway-----	50	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Carbika-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
1357: Carway-----	40	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Dillhut-----	30	Too sandy Very limited Too sandy	0.82 1.00	Somewhat limited Depth to saturated zone	0.75
		Depth to saturated zone	0.44	Droughty	0.31
Solvay-----	30	Somewhat limited Too sandy	0.38	Not limited	
1553: Darlow-----	70	Not limited		Very limited Sodium content	1.00
Elmer-----	20	Not limited		Very limited Sodium content	1.00
1554: Dillhut-----	70	Very limited Too sandy	1.00	Somewhat limited Depth to saturated zone	0.75
		Depth to saturated zone	0.44	Droughty	0.31
1556: Dillhut-----	30	Very limited Too sandy	1.00	Somewhat limited Droughty	0.15
Solvay-----	30	Somewhat limited Too sandy	0.38	Not limited	
2391: Kaskan-----	75	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
2395: Kisiwa-----	90	Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
		Ponding	1.00	Sodium content Depth to saturated zone	1.00 1.00
2556: Langdon-----	50	Very limited Too sandy	1.00	Somewhat limited Droughty Slope	0.97 0.00
2812: Mahone-----	95	Somewhat limited Too sandy	0.11	Not limited	
2957: Nickerson-----	50	Somewhat limited Too sandy	0.59	Not limited	
Punkin-----	50	Not limited		Very limited Sodium content	1.00
3181: Pratt-----	45	Very limited Too sandy	1.00	Not limited	
Turon-----	30	Somewhat limited Too sandy	0.98	Not limited	
3190: Punkin-----	90	Not limited		Very limited Sodium content	1.00
3191: Punkin-----	70	Not limited		Very limited Sodium content	1.00
Taver-----	20	Not limited		Not limited	
3511: Saltcreek-----	70	Not limited		Not limited	
Naron, sandy substratum-----	30	Somewhat limited Too sandy	0.08	Not limited	
3540: Solvay-----	90	Somewhat limited Too sandy	0.37	Not limited	
3639: Taver-----	90	Not limited		Not limited	
3641: Tivin-----	45	Very limited Too sandy	1.00	Somewhat limited Droughty Slope	0.98 0.16
Dillhut-----	40	Very limited Too sandy	1.00	Somewhat limited Droughty	0.15
3900: Warnut-----	75	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
3966: Willowbrook-----	90	Not limited		Somewhat limited Flooding	0.60
Ad: Fluents-----	100	Somewhat limited Flooding	0.40	Very limited Flooding Slope	1.00 0.16
Ba: Clime-----	70	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock Slope Droughty	1.00 0.42 0.37 0.00
Hobbs-----	30	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated	
Ca: Carwile-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Cc: Clark-----	100	Not limited		Not limited	
Cd: Clime-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock	1.00 0.46
Ce: Clime-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
				Depth to bedrock Droughty	0.71 0.00
Cf: Cline-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock	1.00 0.46
Cm: Cline-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock Slope Droughty	1.00 0.71 0.04 0.00
Cr: Crete-----	100	Not limited		Not limited	
Ct: Crete-----	100	Not limited		Not limited	
De: Detroit-----	100	Not limited		Not limited	
Dp: Dillwyn-----	65	Somewhat limited Too sandy	0.37	Somewhat limited Droughty Depth to saturated zone	0.22 0.19
Plevna-----	35	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Flooding Depth to saturated zone	1.00 1.00
Dt: Dillwyn-----	55	Somewhat limited Too sandy	0.37	Somewhat limited Droughty Depth to saturated zone	0.22 0.19
Tivoli-----	45	Very limited Too sandy	1.00	Very limited Droughty Slope	1.00 0.16
Du: Drummond-----	75	Not limited		Very limited Salinity Droughty	1.00 0.06
Fa: Farnum-----	100	Not limited		Not limited	
Fc: Farnum-----	100	Not limited		Not limited	
Fd: Farnum-----	100	Not limited		Not limited	
Fe: Farnum-----	100	Not limited		Not limited	
Fs: Farnum-----	65	Not limited		Not limited	
Drummond-----	35	Not limited		Not limited	
Gc: Geary-----	100	Not limited		Not limited	
Gd: Geary-----	100	Not limited		Not limited	
Ge: Geary-----	100	Not limited		Not limited	
Go: Goessel-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated	
Gs: Goessel-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
Ho: Hobbs-----	100	Not limited		Somewhat limited Flooding	0.60
INT: Intermittent Lakes--	100	Not rated		Not rated	
Ir: Irwin-----	100	Not limited		Not limited	
Is: Irwin-----	100	Not limited		Not limited	
It: Irwin-----	100	Not limited		Not limited	

RECREATIONAL INTERPRETATIONS--Continued
Harvey 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
Ka: Kaski-----	100	Not limited		Somewhat limited Flooding	0.60
La: Ladysmith-----	100	Not limited		Not limited	
Lb: Ladysmith-----	100	Not limited		Not limited	
Ld: Lela-----	60	Not limited		Somewhat limited Flooding	0.60
Drummond-----	40	Not limited		Not limited	
Le: Lesho-----	100	Not limited		Somewhat limited Flooding	0.60
Na: Naron-----	100	Not limited		Not limited	
Nb: Naron-----	100	Not limited		Not limited	
Pa: Pratt-----	100	Somewhat limited Too sandy	0.37	Not limited	
Pc: Pratt-----	60	Somewhat limited Depth to saturated zone Too sandy	0.44	Somewhat limited Depth to saturated zone	0.75
Carwile-----	40	Very limited Depth to saturated zone	0.37 1.00	Very limited Depth to saturated zone	1.00
Pt: Pratt-----	60	Somewhat limited Too sandy	0.37	Somewhat limited Slope	0.16
Tivoli-----	40	Somewhat limited Too sandy	0.92	Somewhat limited Droughty Slope	0.96 0.16
Ro: Rosehill-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock	1.00 0.16
Rs: Rosehill-----	100	Somewhat limited Too clayey	0.50	Very limited Too clayey Depth to bedrock	1.00 0.16
Sm: Smolan-----	90	Not limited		Not limited	
Tv: Tivoli-----	100	Very limited Too sandy Slope	1.00 0.50	Very limited Slope Droughty	1.00 1.00
W: Water-----	100	Not rated		Not rated	

WILDLIFE INTERPRETATIONS Harvey 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 gorden 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
Harvey 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
015VE: VERDIGRIS-----	Poor	Fair	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Poor	Good
113CB: CASS-----	Good	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor	Good
113TO: TOBIN-----	Good	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor	Good
115CM: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
115CP: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
115WB: WELLS-----	Good	Good	Good	---	---	Fair	Very poor	Very poor	Good	---	Very poor	Fair
115WC: WELLS-----	Good	Good	Good	---	---	Fair	Very poor	Very poor	Good	---	Very poor	Fair
173EA: ELANDCO-----	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
173EB: ELANDCO-----	Good	Good	Fair	---	---	Good	Poor	Very poor	Good	---	Very poor	Fair
173EC: ELANDCO-----	Very poor	Poor	Fair	---	---	Good	Poor	Very poor	Poor	---	Very poor	Fair
173TB: TABLER-----	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
DRUMMOND-----	Poor	Fair	Fair	---	Poor	Poor	Fair	Fair	Fair	---	Fair	Poor
173VB: VANOSS-----	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
1191: BLAZEFORK-----	Good	Good	Fair	Good	Good	Good	Good	Poor	Fair	Good	Fair	Fair
1324: CARWAY-----	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
CARBIKA-----	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
1357: CARWAY-----	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
DILLHUT-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
SOLVAY-----	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
1553: DARLOW-----	Fair	Fair	Poor	Fair	Poor	Poor	Good	Fair	Fair	Fair	Fair	Poor
ELMER-----	Fair	Fair	Poor	Fair	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Poor
1554: DILLHUT-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
1556: DILLHUT-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
SOLVAY-----	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
2391: KASKAN-----	Good	Good	Good	Good	Fair	Good	Fair	Good	Good	Good	Fair	Poor
2395: KISIWA-----	Poor	Fair	Poor	Fair	Fair	Very poor	Good	Good	Fair	Fair	Good	Poor

WILDLIFE INTERPRETATIONS--Continued
Harvey 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
2556: LANGDON-----	Poor	Poor	Fair	Good	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor	Poor
2812: MAHONE-----	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Good	Fair	Poor
2957: NICKERSON-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Fair	Poor	Good
PUNKIN-----	Fair	Fair	Poor	Fair	Fair	Poor	Good	Fair	Fair	Poor	Fair	Poor
3181: PRATT-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Poor	Very poor	Fair
TURON-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Poor	Very poor	Fair
3190: PUNKIN-----	Fair	Fair	Poor	Fair	Fair	Poor	Good	Fair	Fair	Poor	Fair	Poor
3191: PUNKIN-----	Fair	Fair	Poor	Fair	Fair	Poor	Good	Fair	Fair	Poor	Fair	Poor
TAVER-----	Good	Good	Good	Good	Fair	Fair	Poor	Poor	Good	Fair	Poor	Good
3511: SALTCREEK-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor	Fair
NARON-----	Good	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Fair	Very poor	Good
3540: SOLVAY-----	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
3639: TAVER-----	Good	Good	Good	Good	Fair	Fair	Poor	Poor	Good	Fair	Poor	Good
3641: TIVIN-----	Poor	Poor	Fair	Fair	Fair	Poor	Very poor	Very poor	Poor	Poor	Very poor	Poor
DILLHUT-----	Fair	Good	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
3900: WARNUT-----	Fair	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair	Good
3966: WILLOWBROOK-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Fair	Fair	Poor	Fair
Ad: FLUVENTS-----	Poor	Poor	Fair	Poor	Good	---	Poor	Very poor	Poor	Fair	Very poor	Fair
Ba: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
HOBBS-----	Poor	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor	Fair
BOP: BORROW PITS-----	---	---	---	---	---	---	---	---	---	---	---	---
Ca: CARWILE-----	Fair	Good	Good	---	---	Good	Good	Fair	Good	---	Fair	Good
Cc: CLARK-----	Fair	Good	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Cd: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Ce: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Harvey 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
Cf: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Cm: CLIME-----	Fair	Fair	Good	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Cr: CRETE-----	Good	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Good
Ct: CRETE-----	Good	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Good
De: DETROIT-----	Good	Good	Good	---	---	Good	Good	Good	Good	---	Good	Good
Dp: DILLWYN-----	Poor	Fair	Good	---	---	Fair	Fair	Fair	Fair	---	Fair	Fair
PLEVNA-----	Poor	Fair	Fair	---	---	Fair	Good	Good	Fair	---	Good	Fair
Dt: DILLWYN-----	Poor	Fair	Good	---	---	Fair	Fair	Fair	Fair	---	Fair	Fair
TIVOLI-----	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
Du: DRUMMOND-----	Poor	Fair	Fair	---	Poor	Poor	Fair	Fair	Fair	---	Fair	Poor
Fa: FARNUM-----	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
Fc: FARNUM-----	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
Fd: FARNUM-----	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
Fe: FARNUM-----	Fair	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
Fs: FARNUM-----	Good	Good	Good	---	---	Good	Poor	Poor	Good	---	Poor	Good
DRUMMOND-----	Poor	Fair	Fair	---	Poor	Poor	Fair	Fair	Fair	---	Fair	Poor
Gc: GEARY-----	Good	Good	Good	Fair	Fair	Fair	Poor	Poor	Good	Fair	Poor	Good
Gd: GEARY-----	Good	Good	Good	Fair	Fair	Fair	Poor	Poor	Good	Fair	Poor	Good
Ge: GEARY-----	Fair	Good	Good	Fair	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor	Good
Go: GOESSEL-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
GRP: GRAVEL PITS-----	---	---	---	---	---	---	---	---	---	---	---	---
Gs: GOESSEL-----	Fair	Fair	Fair	---	---	Fair	Poor	Fair	Fair	---	Poor	Fair
Ho: HOBBS-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	Good
INT: INTERMITTENT LAKES-----	---	---	---	---	---	---	---	---	---	---	---	---
Ir: IRWIN-----	Good	Good	Good	---	---	Fair	Poor	Poor	Good	---	Poor	Fair
Is: IRWIN-----	Good	Good	Good	---	---	Fair	Poor	Poor	Good	---	Poor	Fair

WILDLIFE INTERPRETATIONS--Continued
Harvey 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
It: IRWIN-----	Good	Good	Good	---	---	Fair	Poor	Poor	Good	---	Poor	Fair
Ka: KASKI-----	Good	Good	Good	---	---	Good	Poor	Very poor	Good	---	Very poor	Good
La: LADYSMITH-----	Fair	Good	Good	---	---	Good	Poor	Fair	Good	---	Poor	Good
Lb: LADYSMITH-----	Fair	Good	Good	---	---	Good	Poor	Fair	Good	---	Poor	Good
Ld: LELA-----	Fair	Good	Fair	---	---	Fair	Fair	Fair	Fair	---	Fair	Fair
DRUMMOND-----	Poor	Fair	Fair	---	Poor	Poor	Fair	Fair	Fair	---	Fair	Poor
Le: LESHO-----	Fair	Fair	Fair	---	---	Fair	Fair	Fair	Fair	---	Fair	Fair
Na: NARON-----	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
Nb: NARON-----	Good	Good	Good	---	---	Fair	Poor	Very poor	Good	---	Very poor	Fair
Pa: PRATT-----	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
Pc: PRATT-----	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
CARWILE-----	Fair	Good	Good	---	---	Good	Good	Fair	Good	---	Fair	Good
Pt: PRATT-----	Fair	Good	Fair	---	---	Fair	Very poor	Very poor	Fair	---	Very poor	Fair
TIVOLI-----	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
Ro: ROSEHILL-----	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Rs: ROSEHILL-----	Fair	Good	Fair	---	---	Fair	Poor	Very poor	Fair	---	Very poor	Fair
Sm: SMOLAN-----	Good	Good	Fair	---	---	Fair	Poor	Fair	Good	---	Poor	Fair
Tv: TIVOLI-----	Poor	Poor	Fair	---	---	Poor	Very poor	Very poor	Poor	---	Very poor	Poor
W: WATER-----	---	---	---	---	---	---	---	---	---	---	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND
Harvey 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. On 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 PER ACRE OF PASTURE AND HAYLAND--Continued
Harvey County, Kansas

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(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		Smooth brome grass	
	N	I	N	I	N	I
			Tons	Tons	AUM	AUM
015VE: Verdigris-----	5w	---	---	---	---	---
113CB: Cass-----	2e	2e	3.00	6.00	---	---
113TO: Tobin-----	2w	---	---	---	---	---
115CM: Clime-----	3e	---	---	---	---	---
115CP: Clime-----	4e	---	---	---	---	---
115WB: Wells-----	2e	---	---	---	---	---
115WC: Wells-----	3e	---	---	---	---	---
173EA: Elandco-----	1	---	---	---	---	---
173EB: Elandco-----	2w	---	---	---	---	---
173EC: Elandco-----	5w	---	---	---	---	---
173TB: Tabler-----	2s	---	---	---	---	---
Drummond-----	6s	---	---	---	---	---
173VB: Vanoss-----	2e	---	3.00	6.00	---	---
1191: Blazefork-----	2w	2s	3.50	6.00	---	---
1324: Carway-----	2w	---	5.00	---	7.00	---
Carbika-----	2w	---	5.00	---	7.00	---
1357: Carway-----	2w	---	5.00	---	7.00	---
Dillhut-----	3e	3e	---	5.50	3.00	8.00
Solvay-----	2e	---	5.00	6.00	5.00	6.00
1553: Darlow-----	4s	4s	3.00	5.00	---	---
Elmer-----	3s	3s	3.50	5.00	---	---
1554: Dillhut-----	3e	3e	---	5.50	3.00	8.00
1556: Dillhut-----	3e	3e	---	5.50	3.00	8.00
Solvay-----	2e	---	5.00	6.00	5.00	6.00
2391: Kaskan-----	5w	---	---	---	---	---
2395: Kisiwa-----	4s	---	---	---	---	---
2556: Langdon-----	6e	---	---	---	---	---
2812: Mahone-----	2w	---	---	---	---	---
2957: Nickerson-----	3e	3e	3.00	7.00	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Harvey County, Kansas

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(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		Smooth brome grass	
	N	I	N	I	N	I
			Tons	Tons	AUM	AUM
Punkin-----	3s	3s	3.00	5.00	---	---
3181: Pratt-----	3e	3e	---	5.50	3.00	8.00
Turon-----	3e	3e	---	5.50	3.00	8.00
3190: Punkin-----	3s	3s	3.00	5.00	---	---
3191: Punkin-----	3s	3s	3.00	5.00	---	---
Taver-----	2s	---	4.00	8.00	6.00	11.00
3511: Saltcreek-----	3e	1	3.00	7.00	5.00	10.00
Naron, sandy substratum--	2e	2e	3.00	7.00	5.00	10.00
3540: Solvay-----	2e	---	5.00	6.00	5.00	6.00
3639: Taver-----	2s	---	4.00	8.00	6.00	11.00
3641: Tivin-----	6e	---	---	---	---	---
Dillhut-----	3e	3e	---	5.50	3.00	8.00
3900: Warnut-----	2w	---	5.00	---	7.00	---
3966: Willowbrook-----	3e	2e	4.00	7.00	---	---
Ad: Fluvents-----	6w	---	---	---	---	---
Ba: Clime-----	6e	---	---	---	---	---
Hobbs-----	5w	---	---	---	---	---
BOP: Borrow Pits-----	---	---	---	---	---	---
Ca: Carwile-----	2w	---	---	---	---	---
Cc: Clark-----	3e	---	---	---	---	---
Cd: Clime-----	3e	---	1.80	---	---	---
Ce: Clime-----	4e	---	1.60	---	---	---
Cf: Clime-----	6e	---	---	---	---	---
Cm: Clime-----	6e	---	---	---	---	---
Cr: Crete-----	2s	2s	3.20	5.50	---	---
Ct: Crete-----	2e	2e	3.20	5.50	---	---
De: Detroit-----	1	1	---	---	---	---
Dp: Dillwyn-----	4w	---	---	---	---	---
Plevna-----	5w	---	---	---	---	---

YIELDS PER ACRE OF PASTURE AND HAYLAND--Continued
Harvey County, Kansas

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(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		Smooth brome grass	
	N	I	N	I	N	I
			Tons	Tons	AUM	AUM
Dt: Dillwyn-----	4w	---	---	---	---	---
Tivoli-----	7e	---	---	---	---	---
Du: Drummond-----	6s	---	---	---	---	---
Fa: Farnum-----	1	1	3.50	7.00	---	---
Fc: Farnum-----	1	1	3.50	7.00	6.00	10.00
Fd: Farnum-----	2e	2e	3.00	6.50	---	---
Fe: Farnum-----	3e	---	---	---	---	---
Fs: Farnum-----	2s	---	3.50	7.00	---	---
Drummond-----	6s	---	---	---	---	---
Gc: Geary-----	1	1	3.60	7.00	---	---
Gd: Geary-----	2e	2e	3.40	7.00	---	---
Ge: Geary-----	3e	3e	3.00	6.50	---	---
Go: Goessel-----	2s	---	3.00	---	---	---
GRP: Gravel Pits-----	---	---	---	---	---	---
Gs: Goessel-----	3e	---	2.60	---	---	---
Ho: Hobbs-----	2w	2w	4.00	6.00	---	---
INT: Intermittent Lakes-----	---	---	---	---	---	---
Ir: Irwin-----	3e	---	3.00	6.50	5.00	10.00
Is: Irwin-----	4e	---	2.60	---	---	---
It: Irwin-----	4e	---	2.20	---	---	---
Ka: Kaski-----	2w	---	3.00	6.50	---	---
La: Ladysmith-----	2s	---	3.00	---	---	---
Lb: Ladysmith-----	3e	---	3.00	---	---	---
Ld: Lela-----	4s	---	3.50	---	---	---
Drummond-----	6s	---	---	---	---	---
Le: Lesho-----	3w	---	3.00	5.00	---	---
Na: Naron-----	2e	1	3.00	7.00	---	---
Nb: Naron-----	3e	2e	3.00	6.50	---	---

(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		Smooth brome grass	
	N	I	N	I	N	I
			Tons	Tons	AUM	AUM
Pa: Pratt-----	3e	3e	---	5.50	---	---
Pc: Pratt-----	3e	3e	---	5.50	---	---
Carwile-----	2w	---	---	---	---	---
Pt: Pratt-----	6e	---	---	---	---	---
Tivoli-----	7e	---	---	---	---	---
Ro: Rosehill-----	3e	---	1.80	---	---	---
Rs: Rosehill-----	4e	---	1.40	---	---	---
Sm: Smolan-----	2e	2e	---	---	---	---
Tv: Tivoli-----	7e	---	---	---	---	---
W: Water-----	---	---	---	---	---	---

CONSERVATION TREE AND SHRUB MANAGEMENT
Harvey 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
Harvey 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
015VE: Verdigris-----	1	Well suited	Well suited	Well suited	Well suited	Low
113CB: Cass-----	1	Well suited	Well suited	Well suited	Well suited	Low
113TO: Tobin-----	1	Well suited	Well suited	Well suited	Well suited	Low
115CM: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
115CP: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
115WB: Wells-----	3	Well suited	Well suited	Well suited	Well suited	Low
115WC: Wells-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
173EA: Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
173EB: Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
173EC: Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
173TB: Tabler-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Salinity
173VB: Vanoss-----	3	Well suited	Well suited	Well suited	Well suited	Low
1191: Blazefork-----	4	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
1324: Carway-----	2	Well suited	Well suited	Well suited	Well suited	High Wetness
Carbika-----	2	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
1357: Carway-----	2	Well suited	Well suited	Well suited	Well suited	High Wetness
Dillhut-----	7	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	High
Solvay-----	5	Well suited	Well suited	Well suited	Well suited	Available water Moderate Available water
1553: Darlow-----	8	Well suited	Well suited	Well suited	Well suited	Moderate Available water Salinity Low
Elmer-----	8	Well suited	Well suited	Well suited	Well suited	High
1554: Dillhut-----	7	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	Available water
1556: Dillhut-----	7	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	High
Solvay-----	5	Well suited	Well suited	Well suited	Well suited	Available water Moderate Available water
2391: Kaskan-----	1	Well suited	Well suited	Well suited	Well suited	Low
2395: Kisiwa-----	9W	Unsuited Wetness	Poorly suited Wetness	Unsuited Wetness	Unsuited Wetness	High Wetness Soil reaction

CONSERVATION TREE AND SHRUB MANAGEMENT
Harvey 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
2556: Langdon-----	7	Moderately suited Sandiness	Moderately suited Sandiness Slope	Well suited	Well suited	Low
2812: Mahone-----	1	Well suited	Well suited	Well suited	Well suited	Low
2957: Nickerson-----	5	Well suited	Well suited	Well suited	Well suited	Low
Punkin-----	9	Well suited	Well suited	Well suited	Well suited	Low
3181: Pratt-----	7	Well suited	Well suited	Well suited	Well suited	Low
Turon-----	7	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	Low
3190: Punkin-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
3191: Punkin-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
Taver-----	3	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Available water
3511: Saltcreek-----	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water Low
Naron, sandy substratum-----	5	Well suited	Well suited	Well suited	Well suited	
3540: Solvay-----	5	Well suited	Well suited	Well suited	Well suited	Moderate Available water
3639: Taver-----	3	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Available water
3641: Tivin-----	7	Moderately suited Sandiness	Moderately suited Sandiness Slope	Well suited	Well suited	Low
Dillhut-----	7	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	High Available water
3900: Warnut-----	2	Well suited	Well suited	Well suited	Well suited	High Wetness
3966: Willowbrook-----	1	Well suited	Well suited	Well suited	Well suited	Moderate Available water
Ad: Fluvents-----		Well suited	Moderately suited Slope	Well suited	Well suited	Low
Ba: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Hobbs-----	1	Well suited	Well suited	Well suited	Well suited	Low
BOP: Borrow Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Ca: Carwile-----	1	Well suited	Well suited	Well suited	Well suited	High Wetness
Cc: Clark-----	8	Well suited	Well suited	Well suited	Well suited	Moderate Lime Soil reaction
Cd: Clime-----	8	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Harvey 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
Ce: Cline-----	8	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Cf: Cline-----	8	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
Cm: Cline-----	8	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Cr: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Ct: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
De: Detroit-----	1	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
Dp: Dillwyn-----	1	Well suited	Well suited	Well suited	Well suited	Low
Plevna-----	2	Well suited	Well suited	Well suited	Unsuited Wetness	High Wetness
Dt: Dillwyn-----	1	Well suited	Well suited	Well suited	Well suited	Low
Tivoli-----	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Well suited	Well suited	Low
Du: Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Salinity Soil reaction
Fa: Farnum-----	3	Well suited	Well suited	Well suited	Well suited	Low
Fc: Farnum-----	3	Well suited	Well suited	Well suited	Well suited	Low
Fd: Farnum-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Fe: Farnum-----	3	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Fs: Farnum-----	3	Well suited	Well suited	Well suited	Well suited	Low
Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Salinity
Gc: Geary-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Gd: Geary-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Ge: Geary-----	3	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Go: Goessel-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
GRP: Gravel Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Gs: Goessel-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low

CONSERVATION TREE AND SHRUB MANAGEMENT
Harvey 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
Ho: Hobbs-----	1	Well suited	Well suited	Well suited	Well suited	Low
INT: Intermittent Lakes--		Not rated	Not rated	Not rated	Not rated	Not rated
Ir: Irwin-----	4C	Well suited	Well suited	Well suited	Well suited	Low
Is: Irwin-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	Low
It: Irwin-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Ka: Kaski-----	1	Well suited	Well suited	Well suited	Well suited	Low
La: Ladysmith-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Lb: Ladysmith-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Ld: Lela-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Drummond-----		Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Salinity
Le: Lesho-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
Na: Naron-----	5	Well suited	Well suited	Well suited	Well suited	Low
Nb: Naron-----	5	Well suited	Well suited	Well suited	Well suited	Low
Pa: Pratt-----	7	Well suited	Well suited	Well suited	Well suited	Low
Pc: Pratt-----	7	Well suited	Well suited	Well suited	Well suited	Low
Carwile-----	1	Well suited	Well suited	Well suited	Well suited	High Wetness
Pt: Pratt-----	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Tivoli-----	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Well suited	Well suited	Low
Ro: Rosehill-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Rs: Rosehill-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Sm: Smolan-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Tv: Tivoli-----	7	Moderately suited Sandiness	Poorly suited Slope Sandiness	Poorly suited Slope	Poorly suited Slope	Low
W: Water-----		Not rated	Not rated	Not rated	Not rated	Not rated

ENGINEERING INDEX PROPERTIES
Harvey 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
Harvey 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	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
015VE: Verdigris-----	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	65-100	22-35	2-13
113CB: Cass-----	8-57	Silty clay loam	CL	A-6, A-7, A-4	0	0	100	100	95-100	80-100	30-45	8-23
	0-7	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	85-95	20-40	15-20	NP-5
	7-51	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	85-95	20-50	15-20	NP-5
113TO: Tobin-----	51-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	95-100	95-100	50-75	5-30	0-10	NP
	0-20	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	20-32	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	32-60	Silt loam	CL	A-6, A-7	0	0	100	100	85-100	70-95	30-45	10-20
115CM: Clime-----	0-10	Silty clay loam	CL	A-7-6	0	0-5	90-100	90-100	85-100	80-95	40-50	20-25
	10-30	Silty clay loam	CH, CL, MH	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	>30	Unweathered bedrock			---	---	---	---	---	---	---	---
115CP: Clime-----	0-10	Silty clay loam	CL	A-7-6	0	0-5	90-100	90-100	85-100	80-95	40-50	20-25
	10-30	Silty clay loam	CH, CL	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	30-34	Unweathered bedrock			---	---	---	---	---	---	---	---
115WB: Wells-----	0-15	Loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	15-36	Sandy clay loam	CL, SC	A-6, A-7	0	0	100	100	85-100	40-80	35-45	10-20
	36-60	Sandy loam	CL, ML, SC, SM	A-6, A-4	0	0	100	100	70-100	35-80	20-40	NP-15
115WC: Wells-----	0-15	Loam	CL	A-4, A-6	0	0	100	100	85-95	60-75	30-35	10-15
	15-36	Sandy clay loam	CL, SC	A-4, A-6, A-7	0	0	100	100	85-100	40-80	35-45	10-20
	36-60	Sandy loam	CL, ML, SC, SM	A-4, A-6	0	0	100	100	70-100	35-80	20-40	NP-15
173EA: Elandco-----	0-40	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-95	20-40	4-20
	40-60	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	65-95	20-45	4-25
173EB: Elandco-----	0-40	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-95	20-40	4-20
	40-60	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	65-95	20-45	4-25
173EC: Elandco-----	0-40	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	85-95	20-40	4-20
	40-60	Silt loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	95-100	65-95	20-45	4-25
173TB: Tabler-----	0-9	Silt loam	CL, CL-ML, ML	A-4	0	0	100	100	96-100	65-97	22-31	2-10
	9-32	Silty clay	CH, CL	A-7	0	0	100	100	96-100	90-99	41-65	18-35
	32-60	Silty clay	CH, CL	A-6, A-7	0	0	96-100	96-100	92-100	80-99	38-60	15-35
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
	8-48	Silty clay	CH, CL	A-6, A-7	0	0	100	100	96-100	80-98	35-60	15-35
	48-60	Variable			---	---	---	---	---	---	---	---
173VB: Vanoss-----	0-13	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-95	22-37	2-14
	13-16	Silty clay loam	CL	A-4, A-6, A-7	0	0	100	100	96-100	65-98	30-43	8-20
	16-60	Silty clay loam	CL	A-6, A-7	0	0	100	100	96-100	80-98	33-43	12-20
1191: Blazefork-----	0-3	Silty clay loam	CL, CH	A-7-6	0	0	100	100	95-100	85-95	45-55	25-35
	3-7	Silty clay loam	CH, CL	A-7-6	0	0	100	100	95-100	85-95	45-55	25-35
	7-14	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-95	50-65	30-40
	14-22	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-95	50-65	30-40
	22-29	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-95	50-65	30-40
	29-34	Silty clay	CH	A-7-6	0	0	100	100	95-100	90-95	50-65	30-40
	34-40	Silty clay	CL	A-7-6	0	0	100	100	85-100	75-85	40-50	20-30
	40-48	Silty clay loam	CL	A-7-6	0	0	100	100	85-100	75-85	40-50	20-30
	48-61	Clay loam	CL	A-7-6	0	0	100	100	85-100	75-85	40-50	20-30
	61-80	Loam	CL	A-7-6	0	0	100	100	85-100	75-85	40-50	20-30
1324: Carway-----	0-7	Fine sandy loam	SC, CL	A-2-6, A-6	0	0	100	100	80-95	30-55	20-30	10-15
	7-10	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	10-15	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	15-22	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	22-35	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	35-40	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	40-54	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	54-63	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	63-72	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	72-80	Clay loam	SC, CL	A-6	0	0	100	100	75-90	45-60	25-35	10-15
1324: Carbika-----	0-11	Silt loam	SC-SM, SM	A-2-4, A-4	0	0	100	100	90-100	30-45	20-30	1-7
	11-15	Clay	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	30-35
	15-22	Clay loam	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	30-35
	22-34	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	34-41	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	41-60	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15
	60-80	Clay loam	CL, SC	A-4, A-6	0	0	100	100	85-100	45-60	30-35	10-15

ENGINEERING INDEX PROPERTIES--Continued
Harvey 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	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct					Pct	
1357: Carway-----	In											
	0-7	Loamy fine sand	SM, SC-SM	A-2-4	0	0	100	100	85-100	15-30	10-20	NP-5
	7-10	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	10-15	Sandy clay loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	15-22	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	22-35	Fine sandy loam	SC, CL	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	35-40	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	40-54	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	54-63	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	63-72	Clay loam	CL, CH	A-7-6	0	0	100	100	90-100	85-99	45-60	25-40
	72-80	Clay loam	SC, CL	A-6	0	0	100	100	75-90	45-60	25-35	10-15
Dillhut-----	0-10	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP
	10-29	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP
	29-35	Fine sandy loam	CL, SC	A-6	0	0	100	100	80-100	40-55	30-40	10-20
	35-43	Fine sandy loam	CL, SC	A-6	0	0	100	100	80-100	40-55	30-40	10-20
	43-54	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25
	54-66	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25
	66-80	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25
Solvay-----	0-5	Loamy fine sand	CL-ML, SC, SC-SM, SM	A-2-4, A-4	0	0	100	100	80-100	25-49	20-30	3-10
	5-14	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	14-23	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	23-37	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	37-58	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	58-76	Loamy fine sand	SC, SC-SM, CL, CL-ML	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	76-80	Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
1553: Darlow-----	0-5	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-95	53-75	21-30	4-11
	5-8	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-95	53-75	21-30	4-11
	8-14	Loam	CL	A-6	0	0	100	100	90-100	60-80	30-39	11-18
	14-20	Clay loam	CL	A-6	0	0	100	100	90-100	60-80	30-39	11-18
	20-26	Loam	CL	A-6	0	0	100	100	90-100	60-80	30-39	11-18
	26-33	Loam	CL	A-6, A-7-6	0	0	100	100	90-100	55-80	30-44	11-22
	33-44	Loam	CL	A-6, A-7-6	0	0	100	100	90-100	55-80	30-44	11-22
	44-53	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	90-100	40-52	23-37	6-16
	53-68	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	90-100	40-52	23-37	6-16
Elmer-----	68-80	Sandy loam	SC-SM, SM	A-2	0	0	100	99-100	80-90	16-32	10-18	NP-5
	0-6	Fine sandy loam	CL, CL-ML, ML	A-4	0	0	100	100	90-100	50-60	20-30	3-10
	6-9	Fine sandy loam	CL, CL-ML, ML	A-4	0	0	100	100	90-100	50-60	20-30	3-10
	9-19	Fine sandy loam	CL, CL-ML, ML	A-4	0	0	100	100	90-100	50-60	20-30	3-10
	19-26	Fine sandy loam	CL, SC	A-6	0	0	100	98-100	90-100	45-60	25-35	10-20
	26-37	Fine sandy loam	CL, SC	A-6	0	0	100	98-100	90-100	45-60	25-35	10-20
	37-43	Loam	CL	A-6, A-7-6	0	0	99-100	98-100	90-100	65-85	30-45	15-25
	43-51	Clay loam	CL	A-6, A-7-6	0	0	99-100	98-100	90-100	65-85	30-45	15-25
	51-61	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0	98-100	97-100	85-95	34-55	20-30	6-16
	61-72	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0	98-100	97-100	85-95	34-55	20-30	6-16
	72-80	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0	98-100	97-100	85-95	34-55	20-30	6-16
1554: Dillhut-----	0-10	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP
	10-29	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP
	29-35	Fine sandy loam	CL, SC	A-6	0	0	100	100	80-100	40-55	30-40	10-20
	35-43	Fine sandy loam	CL, SC	A-6	0	0	100	100	80-100	40-55	30-40	10-20
	43-54	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25
	54-66	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25
	66-80	Clay loam	CL	A-7-6	0	0	100	100	90-100	70-100	40-50	20-25

ENGINEERING INDEX PROPERTIES--Continued
Harvey 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	Plas- ticity index	
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200			
	In				Pct	Pct					Pct		
1556: Dillhut-----	0-4	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP	
	4-9	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP	
	9-18	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP	
	18-26	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP	
	26-41	Fine sandy loam	CL, SC, SC-SM	A-6	0	0	100	100	80-100	36-55	30-40	10-20	
	41-55	Fine sandy loam	CL-ML, SC, SC-SM, CL	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11	
	55-65	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11	
	65-70	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11	
	70-80	Fine sandy loam	SC, SC-SM, SM, SP-SC, SP-SM	A-2-4	0	0	100	100	50-70	5-25	22-30	NP-10	
	Solvay-----	0-5	Fine sandy loam	CL-ML, SC, SC-SM, SM	A-2-4, A-4	0	0	100	100	80-100	25-49	20-30	3-10
5-14		Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15	
14-23		Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15	
23-37		Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15	
37-58		Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10	
58-76		Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10	
76-80		Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10	
2391: Kaskan-----	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	85-100	35-45	15-20	
	9-13	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	85-100	35-45	15-20	
	13-17	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	75-95	40-65	20-30	5-10	
	17-21	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	75-95	40-65	20-30	5-10	
	21-27	Fine sandy loam	SC-SM, CL, CL-ML, SC	A-4	0	0	100	100	75-95	40-65	20-30	5-10	
	27-43	Stratified fine sand to loamy fine sand	SM	A-2-4	0	0	100	95-100	65-85	15-30	0-0	NP	
	43-57	Stratified fine sand to fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	100	95-100	70-85	30-45	0-20	NP-5	
	57-80	Stratified fine sand to fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	100	95-100	70-85	30-45	0-20	NP-5	
2395: Kisiwa-----	0-4	Loam	CL	A-4, A-6	0	0	100	100	85-96	60-75	30-35	10-15	
	4-7	Loam	CL	A-6, A-7	0	0	100	100	85-96	60-75	30-35	10-15	
	7-14	Clay loam	CL	A-7-6, A-6	0	0	100	95-100	90-100	65-95	35-45	15-20	
	14-23	Clay loam	CL	A-7-6, A-6	0	0	100	95-100	90-100	65-95	35-45	15-20	
	23-31	Clay	CL, CH	A-7-6, A-6	0	0	100	95-100	90-100	70-80	35-55	15-30	
	31-40	Clay	CL, CH	A-7-6, A-6	0	0	100	95-100	90-100	70-80	35-55	15-30	
	40-46	Loam	CL, CH	A-7-6, A-6	0	0	94-100	90-100	85-100	55-80	35-55	15-30	
	46-52	Fine sandy loam	SM, SC, SC-SM	A-4	0	0	85-100	82-100	60-95	40-50	0-30	NP-10	
	52-58	Fine sandy loam	SM, SC, SC-SM	A-4	0	0	89-100	80-100	60-95	40-50	0-30	NP-10	
	58-65	Stratified coarse sand to fine sandy loam	SM, SC, SC-SM	A-2-4	0	0	100	95-100	50-90	15-60	0-25	NP-10	
	65-80	Stratified coarse sand	SM, SC, SC-SM	A-2-4	0	0	100	100	50-70	15-30	0-25	NP-10	
	2556: Langdon-----	0-8	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
		8-47	Stratified sand to loamy sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
		47-64	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-20	0-0	NP
		64-80	Stratified sand to loamy sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP

ENGINEERING INDEX PROPERTIES--Continued
Harvey 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	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
2812: Mahone-----	0-8	Loamy fine sand	SC-SM, SM	A-2-4, A-4	0	0	100	100	75-95	25-45	0-20	NP-5
	8-14	Fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	100	100	75-95	25-45	0-20	NP-5
	14-20	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	90-100	75-95	45-65	20-30	5-10
	20-25	Very fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	90-100	75-95	45-65	20-30	5-10
	25-33	Silt loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	90-100	75-95	45-65	20-30	5-10
	33-39	Stratified silt loam to fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	90-100	75-95	45-65	20-30	5-10
	39-42	Clay loam	CL	A-6, A-7-6	0	0	100	100	98-100	85-95	30-45	10-25
	42-48	Fine sandy loam	CL	A-7-6, A-6, A-4	0	0	100	100	98-100	85-95	30-45	10-25
	48-54	Very fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	65-100	40-90	20-35	5-20
	54-61	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	65-100	40-90	20-35	5-20
	61-66	Fine sandy loam	CL-ML, SC, SC-SM, CL	A-4, A-6	0	0	100	95-100	65-100	40-90	20-35	5-20
	66-71	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	65-100	40-90	20-35	5-20
	71-78	Loamy fine sand	SP-SM, SP	A-1-b, A-3, A-2-4	0	0	99-100	85-100	35-75	1-10	0-0	NP
	78-80	Coarse sand	SP-SM, SP	A-1-b, A-3	0	0	99-100	85-100	35-75	1-10	0-0	NP
2957: Nickerson-----	0-6	Fine sandy loam	SM, SC-SM, SC	A-4	0	0	100	100	90-100	35-50	15-25	5-10
	6-12	Loamy fine sand	SM, SC, SC-SM, SP-SM	A-4, A-2-4	0	0	100	100	90-95	23-49	10-20	NP-10
	12-18	Fine sandy loam	SM, SC-SM, SC	A-4, A-2-4	0	0	100	100	90-100	33-65	15-25	5-10
	18-29	Sandy clay loam	CL, SC, SC-SM, CL-ML	A-4	0	0	100	100	65-95	40-50	20-30	5-10
	29-34	Loam	SC, CL-ML, SC-SM, CL	A-4	0	0	100	99-100	65-95	40-58	20-30	5-10
	34-38	Very fine sandy loam	CL-ML, SC-SM, CL, SC	A-4	0	0	99-100	95-100	65-91	40-58	15-25	5-10
	38-45	Loamy fine sand	SC-SM, SM	A-4, A-2-4	0	0	100	99-100	65-91	26-50	5-20	NP-10
	45-53	Fine sand	SP-SM, SC-SM, SM	A-2-4	0	0	100	100	65-80	40-50	0-20	NP-5
	53-57	Fine sand	SP-SM, SC-SM, SM	A-2-4	0	0	100	100	65-80	40-50	0-20	NP-5
	57-80	Sand	SC-SM, SM	A-4	0	0	100	100	65-80	40-50	0-20	NP-5
	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	60-85	30-55	0-25	NP-7
	6-14	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	60-85	30-55	0-25	NP-7
	14-22	Clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	22-32	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
32-41	Sandy clay loam	CL	A-4, A-6	0	0	100	100	80-100	60-85	30-35	10-15	
41-51	Sandy clay loam	CL	A-4, A-6	0	0	100	100	80-100	60-85	30-35	10-15	
51-63	Sand	SM	A-3	0	0	100	80-95	65-85	20-35	0-0	NP	
63-80	Stratified coarse sand to sand	SP-SM	A-1-b, A-3	0	0	100	75-95	35-55	5-12	0-0	NP	
3181: Pratt-----	0-8	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	65-100	5-35	0-14	NP
	8-24	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	95-100	90-100	15-40	0-20	NP-6
	24-64	Stratified fine sand to loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	95-100	90-100	15-40	0-20	NP-6
Turon-----	64-80	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	0-14	NP
	0-8	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-25	0-0	NP
	8-28	Loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	80-100	10-25	0-20	NP-3
	28-40	Stratified loamy fine sand to fine sandy loam	SC-SM, SM, SP-SM	A-2-4	0	0	100	100	80-100	10-30	0-23	NP-6
3190: Punkin-----	40-58	Silty clay	CH, CL	A-6, A-7-6	0	0	100	100	80-100	80-99	36-52	16-25
	58-75	Silty clay	CH, CL	A-6, A-7-6	0	0	100	100	80-100	80-99	36-52	16-25
	75-80	Silty clay	CH, CL	A-6, A-7-6	0	0	100	100	80-100	80-99	36-52	16-25
	0-4	Silt loam	CL	A-4, A-6	0	0	100	100	85-95	60-75	25-35	8-15
3190: Punkin-----	4-8	Silty clay	CL	A-4, A-6	0	0	100	100	85-95	60-75	25-35	8-15
	8-15	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	15-21	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	21-39	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	39-47	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	47-64	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	64-78	Sandy clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-95	35-50	15-25
	78-80	Sandy clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-95	35-50	15-25

ENGINEERING INDEX PROPERTIES--Continued
Harvey County, Kansas

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Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3191: Punkin-----	0-4	Silt loam	CL	A-4, A-6	0	0	100	100	85-95	60-75	25-35	8-15
	4-8	Silty clay	CL	A-4, A-6	0	0	100	100	85-95	60-75	25-35	8-15
	8-15	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	15-21	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	21-39	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	39-47	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	47-64	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	75-95	45-65	20-40
	64-78	Sandy clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-95	35-50	15-25
Taver-----	78-80	Sandy clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-95	35-50	15-25
	0-7	Loam	CL	A-4, A-6	0	0	100	100	96-100	65-85	28-34	9-14
	7-17	Silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	17-33	Silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	33-53	Silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	53-64	Clay loam	CL	A-4, A-6	0	0	100	100	90-100	60-80	30-40	15-20
	64-80	Sandy clay loam	CL	A-4, A-6	0	0	100	100	90-100	60-80	30-40	15-20
3511: Saltcreek-----	0-5	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	80-95	30-55	20-30	1-7
	5-10	Sandy clay loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	100	80-95	30-55	20-30	1-7
	10-26	Sandy clay loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-20
	26-39	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-20
	39-56	Silty clay	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	56-66	Silty clay loam	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
	66-80	Silty clay loam	CH, CL	A-7-6	0	0	100	100	90-100	85-99	45-55	25-35
Naron, sandy substratum----	0-7	Fine sandy loam	SC, SC-SM, CL-ML	A-4	0	0	100	100	70-85	35-55	10-20	5-10
	7-19	Fine sandy loam	SC, SC-SM, CL-ML	A-4	0	0	100	100	70-85	35-55	10-20	5-10
	19-34	Loam	CL	A-4, A-6	0	0	100	100	80-95	50-70	30-35	10-15
	34-41	Sandy clay loam	CL	A-6	0	0	100	100	80-90	50-70	30-35	10-15
	41-61	Stratified loam to loamy fine sand to fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-90	20-50	0-25	NP-10
	61-80	Coarse sand	SM	A-2-4	0	0	100	85-95	45-65	15-35	0-0	NP
3540: Solvay-----	0-5	Loamy fine sand	SC-SM, SM	A-2-4	0	0	100	100	85-100	15-30	10-20	NP-5
	5-14	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	14-23	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	23-37	Fine sandy loam	CL, SC	A-6	0	0	100	100	85-100	45-60	25-35	10-15
	37-58	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	58-76	Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
	76-80	Loamy fine sand	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	55-100	20-52	20-30	5-10
3639: Taver-----	0-7	Loam	CL	A-4, A-6	0	0	100	100	96-100	65-85	28-34	9-14
	7-17	Silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	17-33	Silty clay	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	33-53	Silty clay loam	CH, CL	A-7-6	0	0	100	100	96-100	90-99	48-60	30-40
	53-64	Clay loam	CL	A-4, A-6	0	0	100	100	90-100	60-80	30-40	15-20
	64-80	Sandy clay loam	CL	A-4, A-6	0	0	100	100	90-100	60-80	30-40	15-20
3641: Tivin-----	0-7	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	90-100	5-25	0-0	NP
	7-18	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-25	0-0	NP
	18-80	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-25	0-0	NP
Dillhut-----	0-4	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP
	4-9	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	80-100	5-15	0-0	NP
	9-18	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP
	18-26	Fine sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	80-100	5-15	0-0	NP
	26-41	Fine sandy loam	CL, SC	A-6	0	0	100	100	80-100	36-55	30-40	10-20
	41-55	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11
	55-65	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11
	65-70	Fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6	0	0	100	100	80-95	30-55	26-32	7-11
	70-80	Fine sandy loam	SC, SC-SM, SM, SP-SC, SP-SM	A-2-4	0	0	100	100	50-70	5-25	22-30	NP-10
3900: Warnut-----	0-2	Fine sandy loam	SC, SC-SM	A-2-4, A-4	0	0	100	100	85-100	25-40	20-25	5-10
	2-5	Loam	CL, SC	A-4, A-6	0	0	100	100	80-95	45-60	30-35	10-15
	5-11	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	100	80-95	45-60	30-35	10-15
	11-15	Fine sandy loam	CL, SC	A-2-6, A-4, A-6	0	0	100	100	80-95	30-52	25-30	10-15
	15-22	Fine sandy loam	CL, SC	A-2-6, A-4, A-6	0	0	100	100	80-95	30-52	25-30	10-15
	22-37	Sandy loam	CL, SC	A-2-6, A-4, A-6	0	0	100	100	80-95	30-52	25-30	10-15
	37-60	Loamy sand	SC, SC-SM, SM	A-2-4	0	0	100	100	70-90	15-30	0-25	NP-10
	60-80	Sand	SC, SC-SM, SM	A-2-4	0	0	100	100	70-90	15-30	0-25	NP-10

ENGINEERING INDEX PROPERTIES--Continued
Harvey County, Kansas

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Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3966: Willowbrook----	0-4	Fine sandy loam	SC, SC-SM	A-4	0	0	100	99-100	90-100	36-45	20-30	5-10
	4-9	Fine sandy loam	SC, SC-SM	A-4	0	0	100	99-100	90-100	36-45	20-30	5-10
	9-13	Fine sandy loam	SC-SM, SC	A-4	0	0	100	99-100	92-100	34-42	20-30	5-10
	13-17	Fine sandy loam	SM, SC-SM, SC	A-2-4, A-4	0	0	100	99-100	90-100	34-42	20-30	5-10
	17-19	Loam	SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	90-100	70-95	25-58	15-25	NP-10
	19-26	Fine sandy loam	SC, SC-SM, SM	A-2-4, A-4	0	0	98-100	90-100	70-95	25-45	15-25	NP-10
	26-45	Coarse sand	SP-SM, SP	A-3, A-1-b	0	0	90-100	80-100	35-75	1-10	0-0	NP
	45-51	Coarse sand	SP-SM, SP	A-1-b, A-3	0	0	85-100	75-95	35-55	1-10	0-0	NP
	51-80	Stratified gravelly coarse sand to sand	SP-SM, SP	A-1-b, A-3	0	0	85-100	75-95	35-55	1-10	0-0	NP
	Ad: Fluvents-----	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	60-90	20-35
	6-60	Silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	60-95	20-40	5-20
Ba: Clime-----	0-9	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	9-27	Silty clay	CH, CL	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	>27	Unweathered bedrock			---	---	---	---	---	---	---	---
Hobbs-----	0-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-100	25-40	5-20
	26-60		CL, CL-ML, MH	A-4, A-6, A-7	0	0	100	100	95-100	80-100	25-55	5-25
BOP: Borrow Pits----	---	---	---	---	---	---	---	---	---	---	---	---
Ca: Carwile-----	0-18	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	98-100	90-100	36-60	15-26	NP-7
	18-37	Clay loam	CH, CL, SC	A-6, A-7	0	0	100	100	90-100	40-95	35-70	14-38
	37-60	Clay loam	CH, CL, SC	A-4, A-6, A-7	0	0	100	100	90-100	36-95	25-70	7-38
Cc: Clark-----	0-10	Clay loam	CL	A-6	0	0	100	95-100	90-100	50-90	30-40	10-20
	10-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	55-90	25-40	10-25
Cd: Clime-----	0-9	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	9-30	Silty clay	CH, CL, MH	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	>30	Unweathered bedrock			---	---	---	---	---	---	---	---
Ce: Clime-----	0-9	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	9-27	Silty clay	CH, CL, MH	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	27-34	Unweathered bedrock			---	---	---	---	---	---	---	---
Cf: Clime-----	0-6	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	6-30	Silty clay	CH, CL, MH	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	>30	Unweathered bedrock			---	---	---	---	---	---	---	---
Cm: Clime-----	0-9	Silty clay	CH	A-7-6	0	0-5	90-100	90-100	85-100	80-95	50-60	25-35
	9-27	Silty clay	CH, CL, MH	A-7	0	0	95-100	95-100	95-100	85-95	45-65	20-40
	>27	Unweathered bedrock			---	---	---	---	---	---	---	---
Cr: Crete-----	0-5	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	90-100	30-40	5-15
	5-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	35-50	15-30
	9-19	Silty clay loam	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	19-27	Silty clay	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	27-38	Silty clay	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	38-48	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	100	95-100	30-55	10-35
	48-80	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	100	95-100	30-55	10-35
Ct: Crete-----	0-5	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	90-100	30-40	5-15
	5-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	35-50	15-30
	9-19	Silty clay	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	19-27	Silty clay	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	27-38	Silty clay	CH	A-7	0	0	100	100	100	90-100	50-65	25-40
	38-48	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	100	95-100	30-55	10-35
	48-80	Silt loam	CH, CL	A-6, A-7	0	0	100	100	100	95-100	30-55	10-35
De: Detroit-----	0-11	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-50	20-30
	11-36	Silty clay	CH	A-7	0	0	100	100	95-100	90-100	50-60	25-35
	36-60	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	25-45	10-25
Dp: Dillwyn-----	0-8	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	70-90	5-35	---	NP
	8-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	90-100	70-90	5-35	---	NP
Plevna-----	0-18	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0	100	95-100	70-100	20-50	15-26	NP-6
	18-42	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	70-100	30-50	15-26	NP-6
	42-60	Sand	SM, SP	A-2, A-3	0	0	100	90-100	50-90	4-35	---	NP
Dt: Dillwyn-----	0-8	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	70-90	5-35	---	NP
	8-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	90-100	70-90	5-35	---	NP
Tivoli-----	0-7	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
	7-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
Du: Drummond-----	0-9	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	65-97	22-39	3-15
	9-60	Silty clay loam	CH, CL, MH	A-6, A-7	0	0	100	100	96-100	80-98	35-60	15-35

ENGINEERING INDEX PROPERTIES--Continued
Harvey 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	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct					Pct	
Fa: Farnum-----	0-14 14-45 45-60	Fine sandy loam Clay loam Sandy loam	ML, SM CL, SC CL, CL-ML, SC, SC-SM	A-2, A-4 A-6, A-7-6 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 95-100	70-100 70-100 65-100	30-55 45-80 30-80	15-30 35-50 20-35	NP-5 15-30 5-15
Fc: Farnum-----	0-14 14-46 46-60	Loam Clay loam Clay loam	CL, CL-ML CL, SC CL, CL-ML, SC, SC-SM	A-4, A-6 A-6, A-7-6 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 95-100	90-100 70-100 65-100	60-85 45-80 30-80	20-35 35-50 20-35	5-15 15-30 5-15
Fd: Farnum-----	0-12 12-45 45-60	Loam Clay loam Sandy loam	CL, CL-ML CL, SC CL, CL-ML, SC, SC-SM	A-4, A-6 A-6, A-7-6 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 95-100	90-100 70-100 65-100	60-85 45-80 30-80	20-35 35-50 20-35	5-15 15-30 5-15
Fe: Farnum-----	0-11 11-45 45-60	Loam Clay loam Sandy loam	CL, CL-ML CL, SC CL, CL-ML, SC, SC-SM	A-4, A-6 A-6, A-7-6 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 95-100	90-100 70-100 65-100	60-85 45-80 30-80	20-35 35-50 20-35	5-15 15-30 5-15
Fs: Farnum-----	0-14 14-45 45-60	Loam Clay loam Sandy loam	CL, CL-ML CL, SC CL, CL-ML, SC, SC-SM	A-4, A-6 A-6, A-7-6 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 100 95-100	90-100 70-100 65-100	60-85 45-80 30-80	20-35 35-50 20-35	5-15 15-30 5-15
Drummond-----	0-8 8-60	Loam Clay loam	CL, CL-ML, ML CH, CL, MH	A-4, A-6 A-6, A-7	0 0	0 0	100 100	100 100	96-100 96-100	65-97 80-98	22-39 35-60	3-15 15-35
Gc: Geary-----	0-9 9-35 35-60	Silt loam Silty clay loam Clay loam	CL, CL-ML CL CL	A-4, A-6 A-6, A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 96-100 96-100	80-100 85-100 85-100	25-40 35-50 30-45	4-15 15-25 11-22
Gd: Geary-----	0-7 7-32 32-60	Silt loam Silty clay loam Silty clay loam	CL, CL-ML CL CL	A-4, A-6 A-6, A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 96-100 96-100	80-100 85-100 85-100	25-40 35-50 30-45	4-15 15-25 11-22
Ge: Geary-----	0-9 9-35 35-60	Silt loam Silty clay loam Clay loam	CL, CL-ML CL CL	A-4, A-6 A-6, A-7 A-6, A-7	0 0 0	0 0 0	100 100 100	100 100 100	95-100 96-100 96-100	80-100 85-100 85-100	25-40 35-50 30-45	4-15 15-25 11-22
Go: Goessel-----	0-15 15-50 50-60	Silty clay Silty clay Silty clay	CH CH, MH CH, CL	A-7-6 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 90-100	85-95 85-95 70-95	50-70 50-75 40-65	30-45 30-50 20-40
GRP: Gravel Pits----	---	---	---	---	---	---	---	---	---	---	---	---
Gs: Goessel-----	0-15 15-50 50-60	Silty clay Silty clay Silty clay	CH CH, MH CH, CL	A-7-6 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 90-100	85-95 85-95 70-95	50-70 50-75 40-65	30-45 30-50 20-40
Ho: Hobbs-----	0-26 26-60	Silt loam Silt loam	CL, CL-ML CL, CL-ML, MH	A-4, A-6 A-4, A-6, A-7	0 0	0 0	100 100	100 100	95-100 95-100	85-100 80-100	25-40 25-55	5-20 5-25
INT: Intermittent Lakes-----	---	---	---	---	---	---	---	---	---	---	---	---
Ir: Irwin-----	0-13 13-52 52-60	Silty clay loam Silty clay Silty clay	CL CH CH, CL	A-6, A-7-6 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	95-100 95-100 100	90-100 95-100 95-100	80-95 85-95 80-95	35-45 50-60 40-60	15-20 25-30 20-30
Is: Irwin-----	0-11 11-44 44-60	Silty clay loam Silty clay Silty clay	CL CH, MH CH, CL	A-6, A-7-6 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	95-100 95-100 100	90-100 95-100 95-100	80-95 85-95 80-95	35-45 50-60 40-60	15-20 25-30 20-30
It: Irwin-----	0-6 6-44 44-60	Silty clay loam Silty clay Silty clay	CL CH, MH CH, CL	A-6, A-7-6 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	95-100 95-100 100	90-100 95-100 95-100	80-95 85-95 80-95	35-45 50-60 40-60	15-20 25-30 20-30
Ka: Kaski-----	0-24 24-41 41-60	Loam Clay loam Clay loam	CL, CL-ML CL, SC CL, ML, SC, SM	A-4, A-6, A-7 A-4, A-6, A-7 A-2, A-4, A-6	0 0 0	0 0 0	100 100 100	100 95-100 95-100	85-100 85-100 60-100	50-85 45-85 30-80	20-45 25-45 15-35	5-25 7-25 NP-20
La: Ladysmith-----	0-10 10-45 45-60	Silty clay loam Silty clay Silty clay loam	CL CH CH, CL	A-6, A-7 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	85-95 85-95 85-95	30-45 50-70 40-65	15-25 30-50 25-45
Lb: Ladysmith-----	0-10 10-45 45-60	Silty clay loam Silty clay Silty clay loam	CL CH CH, CL	A-6, A-7 A-7-6 A-7-6	0 0 0	0 0 0	100 100 100	100 100 100	95-100 95-100 95-100	85-95 85-95 85-95	30-45 50-70 40-65	15-25 30-50 25-45
Ld: Lela-----	0-11 11-60 0-8 8-60	Silty clay loam Silty clay Silty clay loam Clay loam	CL CL, CL, MH CL CH, CL, MH	A-6, A-7 A-7 A-6, A-7 A-6, A-7	0 0 0 0	0 0 0 0	100 75-98 100 100	100 75-98 100 100	98-100 70-98 96-100 96-100	90-98 52-95 80-98 80-98	37-50 41-70 37-50 35-60	15-25 20-38 15-26 15-35

ENGINEERING INDEX PROPERTIES--Continued
Harvey 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	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Le: Lesho-----	0-17	Loam	CL	A-4, A-6	0	0	100	100	85-100	60-85	25-40	7-20
	17-30	Clay loam	CL	A-4, A-6, A-7-6	0	0	100	100	85-100	65-95	25-45	7-22
	30-60	Loamy sand	SM, SP-SM	A-1, A-2, A-3, A-4	0	0	100	95-100	30-85	5-45	---	NP
Na: Naron-----	0-12	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	25-60	15-26	1-7
	12-40	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	95-100	80-100	36-60	26-40	8-18
Nb: Naron-----	40-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	20-50	15-26	NP-7
	0-10	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	25-60	15-26	1-7
Pa: Pratt-----	10-40	Sandy clay loam	CL, SC	A-4, A-6	0	0	100	95-100	80-100	36-60	26-40	8-18
	40-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	75-100	20-50	15-26	NP-7
Pc: Pratt-----	0-12	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	12-30	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	30-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Carwile-----	0-18	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0	100	98-100	90-100	36-60	15-26	NP-7
	18-37		CH, CL, SC	A-7, A-6	0	0	100	100	90-100	40-95	35-70	14-38
	37-60		CH, CL, SC	A-4, A-6, A-7	0	0	100	100	90-100	36-95	25-70	7-38
Pt: Pratt-----	0-12	Loamy fine sand	SM	A-2	0	0	100	95-100	70-100	15-35	---	NP
	12-30	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	95-100	90-100	15-40	15-20	NP-6
	30-60	Loamy fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-35	---	NP
Tivoli-----	0-7	Loamy fine sand	SM	A-2	0	0	100	95-100	90-100	15-35	---	NP
	7-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
Ro: Rosehill-----	0-9	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-75	35-50
	9-34	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-75	35-50
	>34	Unweathered bedrock			---	---	---	---	---	---	---	---
Rs: Rosehill-----	0-9	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-75	35-50
	9-34	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-75	35-50
	>34	Unweathered bedrock			---	---	---	---	---	---	---	---
Sm: Smolan-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	95-100	85-100	42-50	22-28
	8-15	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-28
	15-40	Silty clay	CH	A-7	0	0	100	100	95-100	90-100	50-65	28-40
	40-60	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	42-50	22-28
Tv: Tivoli-----	0-7	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
	7-60	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	95-100	80-100	5-25	---	NP
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 ($K \rightarrow \text{sat}$) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity ($K \rightarrow \text{sat}$). 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 2 3 5 7	310 1/ 250 220 180 160
2	Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, organic soil materials.	10	134
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
Harvey 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	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
015VE: Verdigris----	0-8	1-15	50-75	18-27	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
	8-57	1-10	50-70	18-35	1.40-1.60	0.60-2.00	0.17-0.22	3.0-5.9	0.8-1.5	.32	.32			
113CB: Cass-----	0-7	68	20	7-17	1.40-1.60	2.00-6.00	0.16-0.18	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	7-51	64	26	5-15	1.40-1.60	2.00-6.00	0.15-0.17	0.0-2.9	---	.20	.20			
	51-60	87	7	2-10	1.50-1.70	5.95-19.98	0.08-0.10	0.0-2.9	---	.20	.20			
113TO: Tobin-----	0-20	10	68	18-27	1.30-1.40	0.60-2.00	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	20-32	9	64	18-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	1.0-4.0	.32	.32			
	32-60	9	64	18-35	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	0.5-0.5	.43	.43			
115CM: Clime-----	0-10	1-10	55	32-40	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	3	4	86
	10-30	1-10	45	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	>30			---	---	---	---	---	0.0-0.0	---	---			
115CP: Clime-----	0-10	5-15	40-60	32-40	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	3	4	86
	10-30	5-15	35-50	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	0.5-2.0	.28	.28			
	30-34			---	---	---	---	---	---	---	---			
115WB: Wells-----	0-15	40-60	15-30	18-27	1.35-1.50	0.60-2.00	0.20-0.22	0.0-2.9	1.0-4.0	.28	.28	5	6	48
	15-36	40-60	15-25	27-35	1.35-1.50	0.60-2.00	0.15-0.19	3.0-5.9	1.0-3.0	.32	.32			
	36-60	40-70	15-25	10-30	1.35-1.60	0.60-2.00	0.12-0.18	0.0-2.9	0.5-2.0	.32	.32			
115WC: Wells-----	0-15	30-52	28-50	18-27	1.35-1.50	0.60-2.00	0.20-0.22	0.0-2.9	1.0-4.0	.28	.28	5	6	48
	15-36	20-45	20-50	27-35	1.35-1.50	0.60-2.00	0.15-0.19	3.0-5.9	1.0-3.0	.32	.32			
	36-60	45-65	10-28	10-30	1.35-1.60	0.60-2.00	0.12-0.18	0.0-2.9	0.5-2.0	.32	.32			
173EA: Elandco-----	0-40	10	68	18-27	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	40-60	9	64	18-35	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	---	.43	.43			
173EB: Elandco-----	0-40	10	68	18-27	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	40-60	9	64	18-35	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	---	.43	.43			
173EC: Elandco-----	0-40	10	68	18-27	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	40-60	9	64	18-35	1.30-1.50	0.60-2.00	0.15-0.22	3.0-5.9	---	.43	.43			
173TB: Tabler-----	0-9	27	54	12-27	1.30-1.55	0.60-2.00	0.15-0.24	0.0-2.9	1.0-3.0	.49	.49	5	6	48
	9-32	6	47	40-55	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	---	.37	.37			
	32-60	7	48	35-55	1.35-1.65	0.00-0.06	0.12-0.22	6.0-8.9	---	.37	.37			
Drummond----	0-8	24	51	20-30	1.35-1.55	0.60-2.00	0.11-0.18	0.0-2.9	0.5-1.0	.49	.49	2	4L	48
	8-48	6	47	35-60	1.40-1.65	0.00-0.06	0.09-0.17	6.0-8.9	---	.55	.55			
	48-60			---	---	---	---	---	---	---	---			
173VB: Vanoss-----	0-13	11	68	15-26	1.30-1.50	0.60-2.00	0.15-0.24	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	13-16	8	68	18-30	1.40-1.70	0.60-2.00	0.15-0.24	3.0-5.9	---	.32	.32			
	16-60	7	62	27-35	1.45-1.70	0.60-2.00	0.15-0.22	3.0-5.9	---	.32	.32			
1191: Blazefork----	0-3	6	58	35-50	1.20-1.45	0.20-0.60	0.21-0.23	6.0-8.9	2.0-4.0	.37	.37	5	7	38
	3-7	6	57	35-50	1.35-1.45	0.20-0.60	0.21-0.23	6.0-8.9	2.0-4.0	.37	.37			
	7-14	7	50	35-50	1.25-1.55	0.06-0.20	0.11-0.14	6.0-8.9	1.0-2.0	.43	.43			
	14-22	6	50	35-50	1.25-1.55	0.06-0.20	0.11-0.14	6.0-8.9	1.0-2.0	.43	.43			
	22-29	7	48	35-50	1.25-1.55	0.06-0.20	0.11-0.14	6.0-8.9	1.0-2.0	.43	.43			
	29-34	8	48	35-50	1.25-1.55	0.06-0.20	0.11-0.14	6.0-8.9	0.5-2.0	.43	.43			
	34-40	8	50	35-50	1.30-1.55	0.20-0.60	0.15-0.18	3.0-5.9	0.5-1.0	.32	.32			
	40-48	16	49	35-50	1.35-1.55	0.20-0.60	0.15-0.18	3.0-5.9	0.2-1.0	.32	.32			
	48-61	23	48	26-35	1.35-1.55	0.20-0.60	0.15-0.18	3.0-5.9	0.1-1.0	.32	.32			
	61-80	31	43	18-27	1.35-1.55	0.20-0.60	0.15-0.18	3.0-5.9	0.1-1.0	.32	.32			
1324: Carway-----	0-7	67	20	10-16	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	7-10	61	18	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	10-15	61	18	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	15-22	62	19	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	22-35	62	19	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	35-40	34	37	28-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	40-54	33	32	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	54-63	29	31	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	63-72	30	32	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	72-80	35	33	15-34	1.45-1.65	0.60-2.00	0.13-0.18	0.0-2.9	0.0-0.5	.28	.28			
Carbika-----	0-11	27	55	10-22	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	1.0-2.0	.24	.24	5	5	56
	11-15	30	30	35-42	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	15-22	30	32	35-42	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	22-34	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	34-41	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	41-60	35	33	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	60-80	34	32	21-35	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Harvey 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	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
1357: Carway-----	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
	0-7	84	10	2-10	1.50-1.60	6.00-19.99	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	7-10	61	19	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	10-15	61	18	20-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	15-22	64	17	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	22-35	63	18	18-29	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.5-1.0	.28	.28			
	35-40	34	36	28-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	40-54	32	33	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	54-63	30	30	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	63-72	30	32	30-45	1.40-1.60	0.00-0.06	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	72-80	28	40	15-34	1.45-1.65	0.60-2.00	0.13-0.18	0.0-2.9	0.0-0.5	.28	.28			
Dillhut-----	0-10	92	6	1-3	1.40-1.55	6.00-19.99	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15	4	1	220
	10-29	94	4	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	29-35	70	16	13-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	35-43	75	15	10-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	43-54	26	35	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
	54-66	30	31	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
	66-80	35	26	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
Solvay-----	0-5	79	12	9-16	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.17	.17	5	3	86
	5-14	58	23	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.8	.28	.28			
	14-23	57	26	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	23-37	56	31	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-58	77	12	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	58-76	87	3	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	76-80	86	5	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
1553: Darlow-----	0-5	42	48	8-20	1.30-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.43	.43	2	5	56
	5-8	36	53	8-20	1.30-1.70	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32			
	8-14	32	47	20-30	1.30-1.45	0.20-0.60	0.09-0.13	3.0-5.9	1.0-3.0	.28	.28			
	14-20	26	46	20-30	1.30-1.45	0.20-0.60	0.09-0.13	3.0-5.9	0.8-3.0	.28	.28			
	20-26	30	44	20-30	1.30-1.45	0.20-0.60	0.09-0.13	3.0-5.9	0.2-3.0	.28	.28			
	26-33	34	42	20-35	1.30-1.50	0.00-0.06	0.09-0.13	0.0-2.9	0.0-2.0	.28	.28			
	33-44	38	38	20-35	1.30-1.50	0.00-0.06	0.09-0.13	0.0-2.9	0.0-2.0	.28	.28			
	44-53	39	36	12-27	1.30-1.60	0.20-0.60	0.10-0.16	0.0-2.9	0.0-1.0	.24	.24			
	53-68	49	35	12-27	1.30-1.80	0.20-0.60	0.10-0.16	0.0-2.9	0.0-1.0	.24	.24			
	68-80	75	14	8-12	1.50-1.80	0.60-2.00	0.02-0.10	0.0-2.9	0.0-0.5	.20	.20			
Elmer-----	0-6	53	36	10-17	1.50-1.70	2.00-6.00	0.17-0.20	0.0-2.9	1.0-2.0	.32	.32	2	3	86
	6-9	51	34	10-17	1.50-1.70	2.00-6.00	0.17-0.20	0.0-2.9	1.0-2.0	.28	.28			
	9-19	53	30	10-17	1.50-1.75	2.00-6.00	0.17-0.20	0.0-2.9	1.0-2.0	.28	.28			
	19-26	60	21	17-25	1.55-1.65	0.20-0.60	0.12-0.16	0.0-2.9	0.5-1.0	.32	.32			
	26-37	65	18	17-25	1.55-1.70	0.20-0.60	0.12-0.16	0.0-2.9	0.0-1.0	.32	.32			
	37-43	40	35	20-28	1.50-1.60	0.06-0.20	0.12-0.16	6.0-8.9	0.0-0.5	.37	.37			
	43-51	25	47	20-28	1.50-1.60	0.06-0.20	0.12-0.16	6.0-8.9	0.0-0.5	.37	.37			
	51-61	52	28	14-22	1.60-1.80	0.20-0.60	0.10-0.16	0.0-2.9	0.0-0.5	.28	.28			
	61-72	68	17	14-22	1.60-1.80	0.20-0.60	0.10-0.16	0.0-2.9	0.0-0.5	.28	.28			
	72-80	72	14	14-20	1.60-1.80	0.20-0.60	0.10-0.16	0.0-2.9	0.0-0.5	.28	.28			
1554: Dillhut-----	0-10	92	6	1-3	1.40-1.55	6.00-19.99	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15	4	1	220
	10-29	94	4	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	29-35	70	16	13-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	35-43	75	15	10-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	43-54	26	35	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
	54-66	30	31	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
	66-80	35	26	35-43	1.55-1.65	0.00-0.06	0.13-0.17	3.0-5.9	0.0-0.0	.32	.32			
1556: Dillhut-----	0-4	92	6	1-3	1.40-1.55	6.00-19.99	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	4-9	95	4	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15			
	9-18	96	3	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	18-26	93	5	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	26-41	70	16	13-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	41-55	75	15	10-22	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	55-65	77	13	9-17	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	65-70	57	25	10-20	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	70-80	76	15	5-15	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.0	.15	.15			
Solvay-----	0-5	79	12	9-16	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-2.0	.20	.20	5	3	86
	5-14	58	23	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.8	.28	.28			
	14-23	57	26	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	23-37	56	31	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-58	77	12	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	58-76	87	3	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	76-80	86	5	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
2391: Kaskan-----	0-9	17	52	27-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	9-13	14	55	27-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37			
	13-17	60	26	10-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	17-21	62	25	10-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	21-27	65	23	10-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	27-43	84	13	0-5	1.50-1.60	5.95-19.98	0.06-0.09	0.0-2.9	0.0-0.5	.10	.10			
	43-57	82	10	1-15	1.45-1.55	1.98-19.98	0.07-0.11	0.0-2.9	0.0-1.0	.10	.10			
	57-80	83	10	1-15	1.45-1.55	1.98-19.98	0.07-0.11	0.0-2.9	0.0-1.0	.10	.10			

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Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
2395: Kisiwa-----	0-4	51	29	18-26	1.30-1.40	0.60-2.00	0.20-0.22	0.0-2.9	1.0-4.0	.43	.43	2	6	48
	4-7	49	30	18-28	1.30-1.50	0.60-2.00	0.20-0.22	0.0-2.9	1.0-4.0	.32	.32			
	7-14	42	27	27-40	1.30-1.60	0.00-0.06	0.15-0.18	3.0-5.9	0.0-1.0	.37	.37			
	14-23	39	24	27-37	1.35-1.60	0.00-0.06	0.15-0.18	3.0-5.9	0.0-1.0	.37	.37			
	23-31	30	29	26-45	1.30-1.60	0.00-0.06	0.08-0.15	3.0-5.9	0.0-1.0	.37	.37			
	31-40	27	29	26-45	1.30-1.60	0.00-0.06	0.08-0.15	3.0-5.9	0.0-1.0	.37	.37			
	40-46	45	28	26-45	1.45-1.60	0.00-0.06	0.08-0.15	3.0-5.9	0.0-0.5	.37	.37			
	46-52	58	29	5-18	1.30-1.70	2.00-6.00	0.11-0.17	0.0-2.9	0.0-0.5	.20	.20			
	52-58	64	27	5-18	1.30-1.70	2.00-6.00	0.11-0.17	0.0-2.9	0.0-0.5	.20	.20			
	58-65	61	30	0-12	1.30-1.70	5.95-19.98	0.05-0.10	0.0-2.9	0.0-0.5	.10	.10			
	65-80	97	3	0-12	1.30-1.40	5.95-19.98	0.05-0.10	0.0-2.9	0.0-0.5	.10	.10			
2556: Langdon-----	0-8	96	1	0-6	1.35-1.50	6.00-19.99	0.07-0.09	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	8-47			0-12	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.15	.15			
	47-64	96	1	0-5	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.15	.15			
	64-80			0-12	1.50-1.70	6.00-19.99	0.02-0.08	0.0-2.9	0.0-0.0	.15	.15			
2812: Mahone-----	0-8	75	21	3-11	1.50-1.60	6.00-19.99	0.07-0.11	0.0-2.9	0.0-0.8	.17	.17	5	2	134
	8-14	74	21	3-11	1.50-1.60	5.95-19.98	0.07-0.11	0.0-2.9	0.0-0.8	.17	.17			
	14-20	72	23	5-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	20-25	54	40	5-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	25-33	32	61	7-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	33-39	16	74	8-17	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	0.0-1.0	.24	.24			
	39-42	26	40	18-34	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-2.0	.32	.32			
	42-48	63	28	8-34	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-2.0	.32	.32			
	48-54	59	28	12-28	1.45-1.55	2.00-6.00	0.14-0.19	0.0-2.9	0.0-0.5	.24	.24			
	54-61	53	35	12-28	1.45-1.55	2.00-6.00	0.14-0.19	0.0-2.9	0.0-0.5	.24	.24			
	61-66	66	23	10-28	1.45-1.55	2.00-6.00	0.14-0.19	0.0-2.9	0.0-0.5	.24	.24			
	66-71	68	21	10-28	1.45-1.55	2.00-6.00	0.14-0.19	0.0-2.9	0.0-0.5	.24	.24			
	71-78	76	16	0-10	1.55-1.65	5.95-19.98	0.02-0.07	0.0-2.9	0.0-0.0	.05	.05			
	78-80	91	6	0-4	1.55-1.65	5.95-19.98	0.02-0.07	0.0-2.9	0.0-0.0	.05	.05			
2957: Nickerson----	0-6	81	7	9-15	1.45-1.60	6.00-19.99	0.20-0.22	0.0-2.9	0.0-0.8	.17	.17	4	3	86
	6-12	85	9	5-26	1.40-1.80	0.60-2.00	0.15-0.18	0.0-2.9	0.0-0.6	.24	.24			
	12-18	78	10	10-21	1.40-1.70	2.00-6.00	0.15-0.19	0.0-2.9	0.0-0.6	.17	.17			
	18-29	59	20	0-28	1.40-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.6	.10	.10			
	29-34	52	32	0-20	1.40-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.5	.10	.10			
	34-38	53	35	0-15	1.40-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.4	.10	.10			
	38-45	82	12	0-10	1.40-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.2	.10	.10			
	45-53	91	9	0-10	1.40-1.70	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.1	.10	.10			
	53-57	93	7	0-10	1.40-1.50	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.1	.10	.10			
	57-80	88	11	0-10	1.40-1.50	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.1	.10	.10			
Punkin-----	0-6	68	24	7-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.32	.32	2	3	86
	6-14	64	25	7-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20			
	14-22	41	24	34-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-3.0	.32	.28			
	22-32	32	25	34-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-3.0	.32	.28			
	32-41	49	24	20-27	1.30-1.40	0.06-0.20	0.16-0.18	3.0-5.9	1.0-2.0	.24	.24			
	41-51	43	37	20-27	1.30-1.40	0.06-0.20	0.16-0.18	3.0-5.9	1.0-2.0	.24	.24			
	51-63	95	2	0-5	1.30-1.45	5.95-19.98	0.05-0.07	0.0-2.9	0.0-0.0	.05	.05			
	63-80	97	1	0-5	1.30-1.45	5.95-19.98	0.02-0.05	0.0-2.9	0.0-0.0	.02	.02			
3181: Pratt-----	0-8	90	4	1-7	1.40-1.55	6.00-19.99	0.07-0.09	0.0-2.9	0.5-1.0	.15	.15	5	1	220
	8-24	87	3	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	0.0-0.5	.17	.17			
	24-64	89	3	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	0.0-0.5	.17	.17			
	64-80	89	4	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.5	.17	.17			
Turon-----	0-8	88	8	1-5	1.40-1.55	6.00-19.99	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	8-28	88	4	3-10	1.40-1.55	5.95-19.98	0.09-0.12	0.0-2.9	0.5-1.0	.17	.17			
	28-40	88	3	2-18	1.40-1.55	1.98-19.98	0.10-0.15	0.0-2.9	0.0-0.0	.24	.24			
	40-58	11	49	27-41	1.45-1.60	0.00-0.60	0.12-0.18	3.0-5.9	0.0-0.5	.32	.32			
	58-75	6	53	27-45	1.45-1.60	0.00-0.60	0.12-0.18	3.0-5.9	0.0-0.5	.32	.32			
	75-80	4	54	27-45	1.45-1.60	0.00-0.60	0.12-0.18	3.0-5.9	0.0-0.5	.32	.32			
3190: Punkin-----	0-4	26	59	15-27	1.30-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.43	.43	2	5	56
	4-8	14	42	35-50	1.30-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.28	.28			
	8-15	13	46	35-60	1.30-1.45	0.60-2.00	0.09-0.13	0.0-2.9	1.0-3.0	.28	.28			
	15-21	10	45	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-3.0	.28	.28			
	21-39	8	49	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	39-47	5	51	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	47-64	4	56	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	64-78	22	46	25-40	1.30-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.5-1.0	.32	.32			
	78-80	54	14	25-40	1.30-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.5-1.0	.32	.32			

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Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
3191: Punkin-----	0-4	26	59	15-27	1.30-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.43	.43	2	5	56
	4-8	14	42	35-50	1.30-1.55	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.28	.28			
	8-15	13	46	35-60	1.30-1.45	0.60-2.00	0.09-0.13	0.0-2.9	1.0-3.0	.28	.28			
	15-21	10	45	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-3.0	.28	.28			
	21-39	8	49	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	39-47	5	51	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	47-64	4	56	35-60	1.30-1.45	0.00-0.06	0.09-0.13	6.0-8.9	1.0-2.0	.32	.32			
	64-78	22	46	25-40	1.30-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.5-1.0	.32	.32			
	78-80	54	14	25-40	1.30-1.60	0.00-0.06	0.10-0.16	6.0-8.9	0.5-1.0	.32	.32			
Taver-----	0-7	36	44	17-25	1.30-1.55	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	7-17	15	49	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	17-33	5	55	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	33-53	5	56	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	53-64	30	35	20-35	1.45-1.65	0.20-0.60	0.15-0.19	0.0-2.9	0.5-1.0	.28	.28			
	64-80	50	22	20-30	1.45-1.65	0.60-2.00	0.15-0.19	0.0-2.9	0.5-1.0	.28	.28			
3511: Saltcreek----	0-5	67	20	10-19	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	5-10	58	20	10-27	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	1.0-2.0	.20	.20			
	10-26	58	21	16-28	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.0-1.0	.28	.28			
	26-39	63	18	16-28	1.40-1.60	0.60-2.00	0.15-0.18	0.0-2.9	0.0-1.0	.28	.28			
	39-56	17	42	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	56-66	8	56	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
	66-80	10	59	28-42	1.40-1.60	0.06-0.20	0.10-0.17	6.0-8.9	0.0-0.5	.37	.37			
Naron, sandy substratum--	0-7	74	16	8-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	7-19	70	18	8-15	1.45-1.55	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20			
	19-34	45	35	18-28	1.45-1.55	2.00-6.00	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	34-41	65	15	18-28	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	41-61	70	20	2-15	1.55-1.60	2.00-6.00	0.10-0.15	0.0-2.9	0.0-0.0	.15	.15			
	61-80	90	6	0-5	1.55-1.60	5.95-19.98	0.05-0.07	0.0-2.9	0.0-0.0	.05	.05			
3540: Solway-----	0-5	79	16	3-8	1.50-1.60	2.00-6.00	0.07-0.11	0.0-2.9	0.5-1.0	.17	.17	5	3	86
	5-14	62	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.8	.28	.28			
	14-23	63	19	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	23-37	66	20	13-34	1.50-1.80	0.20-2.00	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-58	63	26	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	58-76	83	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
	76-80	84	6	7-22	1.50-1.80	2.00-6.00	0.11-0.16	0.0-2.9	0.0-0.5	.24	.24			
3639: Taver-----	0-7	36	44	17-25	1.30-1.55	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	7-17	15	49	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	17-33	5	55	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	33-53	5	56	35-45	1.35-1.60	0.00-0.06	0.12-0.18	6.0-8.9	0.0-2.0	.37	.37			
	53-64	30	35	20-35	1.45-1.65	0.20-0.60	0.15-0.19	0.0-2.9	0.5-1.0	.28	.28			
	64-80	50	22	20-30	1.45-1.65	0.60-2.00	0.15-0.19	0.0-2.9	0.5-1.0	.28	.28			
3641: Tivin-----	0-7	97	1	0-2	1.35-1.50	6.00-19.98	0.07-0.09	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	7-18	97	1	0-2	1.35-1.50	5.95-19.98	0.02-0.08	0.0-2.9	0.0-0.5	.10	.10			
	18-80	97	0	0-3	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	0.0-0.0	.10	.10			
Dillhut-----	0-4	92	6	1-3	1.40-1.55	6.00-19.99	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15	5	1	220
	4-9	95	4	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-1.0	.15	.15			
	9-18	96	3	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	18-26	93	5	1-3	1.40-1.55	5.95-19.98	0.02-0.10	0.0-2.9	0.0-0.5	.15	.15			
	26-41	70	16	13-30	1.40-1.55	0.60-2.00	0.12-0.15	0.0-2.9	0.0-0.0	.24	.24			
	41-55	75	15	10-21	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	55-65	77	13	9-17	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	65-70	57	25	10-20	1.55-1.65	2.00-6.00	0.11-0.15	0.0-2.9	0.0-0.0	.17	.17			
	70-80	76	15	5-15	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-0.0	.15	.15			
3900: Walnut-----	0-2	52	29	8-20	1.45-1.55	2.00-6.00	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	2-5	58	23	18-29	1.50-1.60	0.60-2.00	0.16-0.19	0.0-2.9	0.5-1.0	.28	.28			
	5-11	66	16	18-29	1.50-1.60	0.60-2.00	0.16-0.19	0.0-2.9	0.5-1.0	.28	.28			
	11-15	65	17	12-21	1.40-1.60	2.00-6.00	0.15-0.18	0.0-2.9	0.0-0.5	.20	.20			
	15-22	73	13	12-17	1.40-1.60	2.00-6.00	0.15-0.18	0.0-2.9	0.0-0.5	.20	.20			
	22-37	73	14	12-17	1.40-1.60	2.00-6.00	0.15-0.18	0.0-2.9	0.0-0.5	.20	.20			
	37-60	87	7	2-15	1.50-1.60	1.98-19.98	0.07-0.11	0.0-2.9	0.0-0.5	.15	.15			
	60-80	90	6	2-15	1.50-1.60	1.98-19.98	0.07-0.11	0.0-2.9	0.0-0.5	.15	.15			
3966: Willowbrook--	0-4	62-75	20	8-18	1.45-1.80	2.00-6.00	0.16-0.18	0.0-2.9	1.0-2.0	.20	.20	4	3	86
	4-9	62-75	21	8-18	1.45-1.80	2.00-6.00	0.16-0.18	0.0-2.9	1.0-2.0	.20	.20			
	9-13	64-78	20	5-15	1.50-1.80	2.00-6.00	0.16-0.19	0.0-2.9	0.5-1.0	.20	.20			
	13-17	50-78	20	5-15	1.50-1.80	2.00-6.00	0.16-0.19	0.0-2.9	0.5-1.0	.20	.20			
	17-19	50-76	38	5-15	1.50-1.80	2.00-6.00	0.13-0.17	0.0-2.9	0.2-1.0	.24	.24			
	19-26	50-76	21	5-15	1.50-1.80	2.00-6.00	0.13-0.17	0.0-2.9	0.2-1.0	.24	.24			
	26-45	88-100	3	0-5	1.60-1.80	6.00-19.99	0.02-0.07	0.0-2.9	0.0-0.5	.05	.05			
	45-51	86-100	1	0-1	1.60-1.80	6.00-19.99	0.02-0.05	0.0-2.9	0.0-0.1	.05	.05			
	51-80	86-100	1	0-1	1.60-1.80	6.00-19.99	0.02-0.05	0.0-2.9	0.0-0.0	.05	.05			
Ad: Fluvents-----	0-6	27	54	10-27	1.30-1.45	0.60-2.00	0.20-0.24	0.0-2.9	0.5-2.0	.37	.37	5	4L	86
	6-60	20	58	10-35	1.30-1.45	0.60-2.00	0.18-0.22	3.0-5.9	---	.43	.43			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Harvey 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	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Ba:														
Clime-----	0-9	7	48	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
	9-27	6	47	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	>27													
Hobbs-----	0-26	11	68	15-27	1.20-1.40	0.60-2.00	0.21-0.24	0.0-2.9	2.0-4.0	.32	.32	5	6	48
	26-60	10	68	15-30	1.20-1.40	0.60-2.00	0.18-0.22		0.0-1.0					
BOP:														
Borrow Pits--	---			---	---	---	---	---	---	---	---	-	---	---
Ca:														
Carwile-----	0-18	62	26	5-18	1.30-1.65	0.60-2.00	0.11-0.20	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	18-37	25	27	35-60	1.35-1.75	0.06-0.20	0.12-0.20	6.0-8.9		.37	.37			
	37-60	35	33	20-45	1.35-1.75	0.20-2.00	0.12-0.20	6.0-8.9		.32	.32			
Cc:														
Clark-----	0-10	34	37	27-32	1.35-1.45	0.60-2.00	0.17-0.22	3.0-5.9	1.0-2.0	.28	.28	5	4L	86
	10-60	35	38	18-35	1.35-1.70	0.60-2.00	0.14-0.19	3.0-5.9		.28	.28			
Cd:														
Clime-----	0-9	7	48	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
	9-30	6	47	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	>30													
Ce:														
Clime-----	0-9	7	48	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
	9-27	6	47	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	27-34													
Cf:														
Clime-----	0-6	7	48	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
	6-30	6	47	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	>30													
Cm:														
Clime-----	0-9	7	48	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
	9-27	6	47	35-60	1.35-1.50	0.06-0.20	0.12-0.18	3.0-5.9	1.0-4.0	.28	.28			
	>27													
Cr:														
Crete-----	0-5	24	52	20-27	1.20-1.40	0.60-2.00	0.22-0.24	3.0-5.9	2.0-4.0	.37	.37	5	6	48
	5-9	20	49	27-35	1.20-1.40	0.20-0.60	0.21-0.23	6.0-8.9	1.0-3.0	.37	.37			
	9-19	7	48	35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	19-27	7	48	35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	27-38	7	48	35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	38-48	20	48	25-40	1.20-1.40	0.20-2.00	0.18-0.22	6.0-8.9	0.5-1.0	.43	.43			
	48-80	20	48	25-40	1.20-1.40	0.20-2.00	0.18-0.22	6.0-8.9	0.5-1.0	.43	.43			
Ct:														
Crete-----	0-5			20-27	1.20-1.40	0.60-2.00	0.22-0.24	3.0-5.9	2.0-4.0	.37	.37	5	6	48
	5-9			27-35	1.20-1.40	0.20-0.60	0.21-0.23	6.0-8.9	1.0-3.0	.37	.37			
	9-19			35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	19-27			35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	27-38			35-55	1.10-1.30	0.06-0.20	0.12-0.20	6.0-8.9	0.5-2.0	.37	.37			
	38-48			25-40	1.20-1.40	0.20-2.00	0.18-0.22	6.0-8.9	0.5-1.0	.43	.43			
	48-80			25-40	1.20-1.40	0.20-2.00	0.18-0.22	6.0-8.9	0.5-1.0	.43	.43			
De:														
Detroit-----	0-11	20	48	28-35	1.25-1.40	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	11-36	8	52	35-45	1.35-1.50	0.06-0.20	0.12-0.18	6.0-8.9		.37	.37			
	36-60	20	54	18-35	1.30-1.50	0.20-0.60	0.18-0.22	3.0-5.9		.37	.37			
Dp:														
Dillwyn-----	0-8	79	16	2-8	1.50-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-2.0	.17	.17	5	2	134
	8-60	79	16	2-8	1.50-1.60	5.95-19.98	0.06-0.10	0.0-2.9		.17	.17			
	0-18	67	20	8-18	1.40-1.50	2.00-6.00	0.14-0.16	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	18-42	67	20	8-18	1.40-1.50	2.00-6.00	0.12-0.16	0.0-2.9		.20	.20			
	42-60	95	1	1-7	1.50-1.60	2.00-6.00	0.05-0.07	0.0-2.9		.20	.20			
Dt:														
Dillwyn-----	0-8	79	16	2-8	1.50-1.60	5.95-19.98	0.08-0.12	0.0-2.9	0.0-2.0	.17	.17	5	2	134
	8-60	79	16	2-8	1.50-1.60	5.95-19.98	0.06-0.10	0.0-2.9		.17	.17			
	0-7	93	1	1-10	1.35-1.50	5.95-19.98	0.02-0.08	0.0-2.9	0.0-1.0	.17	.17	5	1	250
	7-60	93	1	1-10	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9		.17	.17			
Du:														
Drummond-----	0-9	38	36	20-30	1.35-1.55	0.60-2.00	0.08-0.12	0.0-2.9	0.5-1.0	.49	.49	2	4L	48
	9-60	6	46	35-60	1.40-1.65	0.00-0.06	0.06-0.12	6.0-8.9		.37	.37			
Fa:														
Farnum-----	0-14	63	26	8-14	1.45-1.55	2.00-6.00	0.13-0.18	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	14-45	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9		.28	.28			
	45-60	65	15	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9		.28	.28			
Fc:														
Farnum-----	0-14	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	14-46	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9		.28	.28			
	46-60	38	41	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9		.28	.28			
Fd:														
Farnum-----	0-12	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	12-45	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9		.28	.28			
	45-60	65	15	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9		.28	.28			
Fe:														
Farnum-----	0-11	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	11-45	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9		.28	.28			
	45-60	65	15	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9		.28	.28			

PHYSICAL PROPERTIES OF THE SOILS--Continued
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Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Fs:														
Farnum-----	0-14	42	38	14-27	1.35-1.45	0.60-2.00	0.19-0.22	0.0-2.9	1.0-3.0	.28	.28	5	6	48
	14-45	34	36	25-35	1.40-1.50	0.60-2.00	0.15-0.19	3.0-5.9	---	.28	.28			
	45-60	65	15	12-29	1.40-1.55	0.60-2.00	0.13-0.16	0.0-2.9	---	.28	.28			
Drummond----	0-8	38	36	20-30	1.35-1.55	0.60-2.00	0.11-0.18	0.0-2.9	0.5-1.0	.49	.49	2	4L	86
	8-60	25	27	35-60	1.40-1.65	0.00-0.06	0.09-0.17	6.0-8.9	---	.55	.55			
Gc:														
Geary-----	0-9	11	68	15-27	1.30-1.40	0.60-2.00	0.22-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	9-35	7	62	27-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	---	.43	.43			
	35-60	28	46	20-32	1.30-1.40	0.60-2.00	0.15-0.19	3.0-5.9	---	.43	.43			
Gd:														
Geary-----	0-7	11	68	15-27	1.30-1.40	0.60-2.00	0.22-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	7-32	7	62	27-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	---	.43	.43			
	32-60	7	67	20-32	1.30-1.40	0.60-2.00	0.15-0.19	3.0-5.9	---	.43	.43			
Ge:														
Geary-----	0-9	11	68	15-27	1.30-1.40	0.60-2.00	0.22-0.24	0.0-2.9	1.0-4.0	.32	.32	5	6	48
	9-35	7	62	27-35	1.35-1.50	0.60-2.00	0.17-0.20	3.0-5.9	---	.43	.43			
	35-60	28	46	20-32	1.30-1.40	0.60-2.00	0.15-0.19	3.0-5.9	---	.43	.43			
Go:														
Goessel-----	0-15	6	47	40-55	1.30-1.40	0.00-0.06	0.12-0.16	6.0-8.9	1.0-4.0	.28	.28	5	4	86
	15-50	6	47	40-55	1.35-1.45	0.00-0.06	0.10-0.15	6.0-8.9	---	.28	.28			
	50-60	8	52	30-50	1.40-1.55	0.00-0.06	0.09-0.14	6.0-8.9	---	.28	.28			
GRP:														
Gravel Pits--	---			---	---	---	---	---	---	---	---	-	---	---
Gs:														
Goessel-----	0-15	6	47	40-55	1.30-1.40	0.00-0.06	0.12-0.16	6.0-8.9	1.0-4.0	.28	.28	5	4	86
	15-50	6	47	40-55	1.35-1.45	0.00-0.06	0.10-0.15	6.0-8.9	---	.28	.28			
	50-60	8	52	30-50	1.40-1.55	0.00-0.06	0.09-0.14	6.0-8.9	---	.28	.28			
Ho:														
Hobbs-----	0-26	11	68	15-27	1.20-1.40	0.60-2.00	0.21-0.24	0.0-2.9	2.0-4.0	.32	.32	5	6	48
	26-60	10	68	15-30	1.20-1.40	0.60-2.00	0.18-0.22	---	0.0-1.0	---	---			
INT:														
Intermittent	---			---	---	---	---	---	---	---	---	-	---	---
Lakes-----														
Ir:														
Irwin-----	0-13	20	48	28-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.32	.32	5	7	38
	13-52	5	45	40-60	1.40-1.50	0.00-0.06	0.10-0.13	6.0-8.9	1.0-3.0	.28	.28			
	52-60	7	48	35-55	1.40-1.50	0.06-0.20	0.09-0.19	6.0-8.9	0.5-2.0	.32	.32			
Is:														
Irwin-----	0-11	20	48	28-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.32	.32	5	7	38
	11-44	5	45	40-60	1.40-1.50	0.00-0.06	0.10-0.13	6.0-8.9	1.0-3.0	.28	.28			
	44-60	7	48	35-55	1.40-1.50	0.06-0.20	0.09-0.19	6.0-8.9	0.5-2.0	.32	.32			
It:														
Irwin-----	0-6	20	48	28-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.32	.32	5	7	38
	6-44	5	45	40-60	1.40-1.50	0.00-0.06	0.10-0.13	6.0-8.9	1.0-3.0	.28	.28			
	44-60	7	48	35-55	1.40-1.50	0.06-0.20	0.09-0.19	6.0-8.9	0.5-2.0	.32	.32			
Ka:														
Kaski-----	0-24	40	38	18-27	1.35-1.45	0.60-2.00	0.18-0.22	3.0-5.9	1.0-3.0	.28	.28	5	6	48
	24-41	35	38	18-35	1.40-1.50	0.60-2.00	0.13-0.19	3.0-5.9	---	.28	.28			
	41-60	39	42	8-30	1.45-1.55	0.60-2.00	0.13-0.19	0.0-2.9	---	.28	.28			
La:														
Ladysmith----	0-10	20	48	28-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	10-45	5	45	40-60	1.35-1.50	0.00-0.06	0.10-0.15	6.0-8.9	1.0-3.0	.37	.37			
	45-60	7	48	35-55	1.40-1.60	0.00-0.60	0.10-0.19	3.0-5.9	0.0-1.0	.37	.37			
Lb:														
Ladysmith----	0-10	20	48	28-35	1.35-1.45	0.20-0.60	0.21-0.23	3.0-5.9	2.0-4.0	.37	.37	5	7	38
	10-45	5	45	40-60	1.35-1.50	0.00-0.06	0.10-0.15	6.0-8.9	1.0-3.0	.37	.37			
	45-60	7	48	35-55	1.40-1.60	0.00-0.60	0.10-0.19	3.0-5.9	0.0-1.0	.37	.37			
Ld:														
Lela-----	0-11	8	55	35-40	1.30-1.60	0.00-0.06	0.10-0.18	6.0-8.9	1.0-3.0	.43	.43	5	7	38
	11-60	5	45	40-60	1.35-1.60	0.00-0.06	0.10-0.14	6.0-8.9	---	.37	.37			
Drummond----	0-8	18	52	27-32	1.30-1.60	0.20-0.60	0.13-0.20	3.0-5.9	0.5-1.0	.43	.43	2	4L	86
	8-60	25	27	35-60	1.40-1.65	0.00-0.06	0.09-0.17	6.0-8.9	---	.55	.55			
Le:														
Lesho-----	0-17	40	38	18-27	1.30-1.40	0.60-2.00	0.20-0.22	0.0-2.9	1.0-3.0	.28	.28	4	4L	86
	17-30	35	38	18-35	1.35-1.45	0.20-0.60	0.16-0.19	3.0-5.9	---	.28	.28			
	30-60	80	16	1-8	1.45-1.55	1.98-19.98	0.02-0.10	0.0-2.9	---	.15	.15			
Na:														
Naron-----	0-12	63	26	8-14	1.40-1.50	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	12-40	60	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	---	.32	.32			
	40-60	65	27	2-14	1.50-1.60	2.00-6.00	0.10-0.15	0.0-2.9	---	.32	.32			
Nb:														
Naron-----	0-10	63	26	8-14	1.40-1.50	2.00-6.00	0.14-0.18	0.0-2.9	1.0-3.0	.20	.20	5	3	86
	10-40	60	18	18-27	1.45-1.55	0.60-2.00	0.15-0.18	0.0-2.9	---	.32	.32			
	40-60	65	27	2-14	1.50-1.60	2.00-6.00	0.10-0.15	0.0-2.9	---	.32	.32			
Pa:														
Pratt-----	0-12	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	12-30	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	30-60	79	16	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			

PHYSICAL PROPERTIES OF THE SOILS--Continued
Harvey 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	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										K	Kf	T		
Pc:	In	Pct	Pct	Pct	g/cc	in/hr	In/in	Pct	Pct					
Pratt-----	0-12	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	12-30	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	30-60	79	16	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			
Carwile-----	0-18	62	26	5-18	1.30-1.65	0.60-2.00	0.11-0.20	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	18-37	25	27	35-60	1.35-1.75	0.06-0.20	0.12-0.20	6.0-8.9	---	.37	.37			
	37-60	35	33	20-45	1.35-1.75	0.20-2.00	0.12-0.20	6.0-8.9	---	.32	.32			
Pt:														
Pratt-----	0-12	79	16	2-8	1.40-1.55	5.95-19.98	0.10-0.13	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	12-30	86	7	4-11	1.45-1.55	5.95-19.98	0.09-0.12	0.0-2.9	---	.17	.17			
	30-60	79	16	1-8	1.45-1.60	5.95-19.98	0.08-0.12	0.0-2.9	---	.17	.17			
Tivoli-----	0-7	86	7	5-10	1.35-1.50	5.95-19.98	0.07-0.11	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	7-60	93	1	1-10	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	---	.17	.17			
Ro:														
Rosehill-----	0-9	5	45	40-60	1.20-1.35	0.00-0.06	0.12-0.14	6.0-8.9	1.0-3.0	.28	.28	3	4	86
	9-34	5	45	40-60	1.30-1.45	0.00-0.06	0.10-0.14	6.0-8.9	---	.28	.28			
	>34			---	---	---	---	---	---	---	---			
Rs:														
Rosehill-----	0-9	5	45	40-60	1.20-1.35	0.00-0.06	0.12-0.14	6.0-8.9	1.0-3.0	.28	.28	3	4	86
	9-34	5	45	40-60	1.30-1.45	0.00-0.06	0.10-0.14	6.0-8.9	---	.28	.28			
	>34			---	---	---	---	---	---	---	---			
Sm:														
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			
Tv:														
Tivoli-----	0-7	93	1	1-10	1.35-1.50	5.95-19.98	0.02-0.08	0.0-2.9	0.0-1.0	.17	.17	5	1	250
	7-60	93	1	1-10	1.50-1.70	5.95-19.98	0.02-0.08	0.0-2.9	---	.17	.17			
W:														
Water-----	---			---	---	---	---	---	---	---	---	-	---	---

CHEMICAL PROPERTIES OF THE SOILS
Harvey 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
Harvey County, Kansas

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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	
015VE:							
Verdigris-----	0-8	6.0-19	5.6-7.3	0	0	0	0
	8-57	7.0-21	5.6-7.3	0	0	0	0
113CB:							
Cass-----	0-7	3.0-11	5.6-7.3	0	0	0	0
	7-51	2.0-9.0	6.1-8.4	0	0	0	0
	51-60	0.0-6.0	6.1-8.4	0	0	0	0
113TO:							
Tobin-----	0-20	7.0-19	5.6-7.8	---	---	---	---
	20-32	7.0-24	7.4-8.4	---	---	---	---
	32-60	7.0-21	7.4-8.4	---	---	---	---
115CM:							
Clime-----	0-10	13-27	6.6-8.4	5-10	---	---	---
	10-30	14-39	7.4-8.4	5-10	---	---	---
	>30	---	---	---	---	---	---
115CP:							
Clime-----	0-10	13-27	6.6-8.4	5-10	0	0	0
	10-30	14-39	7.4-8.4	5-10	0	0	0
	30-34	---	---	---	---	---	---
115WB:							
Wells-----	0-15	7.0-19	5.6-6.5	0	0	0	0
	15-36	0.0-21	5.6-7.3	0	0	0	0
	36-60	4.0-18	6.1-7.8	0	0	0	0
115WC:							
Wells-----	0-15	7.0-19	5.6-6.5	0	0	0	0
	15-36	10-21	5.6-7.3	0	0	0	0
	36-60	4.0-18	6.1-7.8	0	0	0	0
173EA:							
Elandco-----	0-40	7.0-18	6.6-8.4	---	0	---	0
	40-60	7.0-21	7.4-8.4	---	0	---	0
173EB:							
Elandco-----	0-40	7.0-18	6.6-8.4	---	0	---	0
	40-60	7.0-21	7.4-8.4	---	0	---	0
173EC:							
Elandco-----	0-40	7.0-18	6.6-8.4	---	0	---	0
	40-60	7.0-21	7.4-8.4	---	0	---	0
173TB:							
Tabler-----	0-9	5.0-18	5.6-8.4	0	0	0	0
	9-32	16-33	6.1-8.4	0	0	0	0
	32-60	14-33	7.4-8.4	0	0	0	0
Drummond-----	0-8	8.0-19	6.1-8.4	---	---	0.0-4.0	---
	8-48	14-36	7.4-9.0	---	---	2.0-8.0	---
	48-60	---	---	---	---	---	---
173VB:							
Vanoss-----	0-13	6.0-18	5.1-7.3	0	0	0	0
	13-16	7.0-18	5.1-7.3	0	0	0	0
	16-60	10-21	5.1-7.3	0	0	0	0
1191:							
Blazefork-----	0-3	15-32	4.5-6.5	0	0	0	0
	3-7	15-32	4.5-6.5	0	0	0	0
	7-14	19-40	6.1-8.4	0	0	0	0
	14-22	19-40	6.1-8.4	0	0	0	0
	22-29	19-40	6.1-8.4	0	0	0	0
	29-34	19-40	6.1-8.4	0	0	0	0
	34-40	14-30	7.4-8.4	0	0	0	0
	40-48	14-26	7.4-8.4	0	0	0	0
	48-61	14-26	7.4-8.4	0	0	0	0
	61-80	14-26	7.4-8.4	0	0	0	0

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

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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	
1324:							
Carway-----	0-7	7.0-12	5.6-6.5	0	0	0	0
	7-10	12-18	6.1-7.3	0	0	0	0
	10-15	12-18	6.1-7.3	0	0	0	0
	15-22	12-18	6.1-7.3	0	0	0	0
	22-35	12-18	6.1-7.3	0	0	0	0
	35-40	24-35	6.6-7.8	0-5	0	0	0
	40-54	24-35	6.6-7.8	0-5	0	0	0
	54-63	24-35	6.6-7.8	0-5	0	0	0
	63-72	24-35	6.6-7.8	0-5	0	0	0
	72-80	9.0-16	6.6-7.8	0-5	0	0	0
Carbika-----	0-11	7.0-12	6.1-7.3	0	0	0	0
	11-15	28-38	6.1-8.4	0-5	0	0	0
	15-22	28-38	6.1-8.4	0-5	0	0	0
	22-34	12-16	6.1-8.4	0-5	0	0	0
	34-41	12-16	6.1-8.4	0-5	0	0	0
	41-60	12-16	6.1-8.4	0-5	0	0	0
	60-80	12-16	7.4-8.4	0-5	0	0	0
1357:							
Carway-----	0-7	1.0-5.0	5.6-6.5	0	0	0	0
	7-10	12-18	6.1-7.3	0	0	0	0
	10-15	12-18	6.1-7.3	0	0	0	0
	15-22	12-18	6.1-7.3	0	0	0	0
	22-35	12-18	6.1-7.3	0	0	0	0
	35-40	24-35	6.6-7.8	0-5	0	0	0
	40-54	24-35	6.6-7.8	0-5	0	0	0
	54-63	24-35	6.6-7.8	0-5	0	0	0
	63-72	24-35	6.6-7.8	0-5	0	0	0
	72-80	9.0-16	6.6-7.8	0-5	0	0	0
Solvay-----	0-5	5.0-12	6.1-6.5	0	0	0	0
	5-14	8.0-19	6.1-7.3	0	0	0	0
	14-23	8.0-19	6.1-7.3	0	0	0	0
	23-37	8.0-19	6.1-7.3	0	0	0	0
	37-58	5.0-12	6.1-7.3	0	0	0	0
	58-76	5.0-12	6.1-7.3	0	0	0	0
	76-80	5.0-12	6.1-7.3	0	0	0	0
Dillhut-----	0-10	1.0-3.0	5.6-6.5	0	0	0	0
	10-29	0.0-2.0	5.6-6.5	0	0	0	0
	29-35	10-18	6.6-7.3	0	0	0	0
	35-43	10-18	6.6-7.3	0	0	0	0
	43-54	17-22	6.6-7.3	0	0	0	0
	54-66	17-22	6.6-7.3	0	0	0	0
	66-80	17-22	6.6-7.3	0	0	0	0
1553:							
Darlow-----	0-5	5.0-15	4.5-7.8	0	0	0.0-2.0	0-5
	5-8	5.0-15	4.5-7.8	0	0	0.0-2.0	0-5
	8-14	15-25	6.6-9.0	0-2	0	2.0-8.0	10-40
	14-20	15-25	6.6-9.0	0-2	0	2.0-8.0	15-40
	20-26	15-25	6.6-9.0	0-2	0	2.0-8.0	15-40
	26-33	15-30	7.9-9.0	0-1	0	4.0-16.0	30-40
	33-44	15-30	7.9-9.0	0-1	0	4.0-16.0	30-40
	44-53	10-20	7.9-8.4	0-1	0	0.0-4.0	25-35
	53-68	10-15	7.9-8.4	0-1	0	0.0-4.0	25-35
	68-80	0.0-10	7.4-8.4	0-1	0	0.0-2.0	10-30
Elmer-----	0-6	5.0-12	4.5-7.3	0	0	0.0-2.0	0-1
	6-9	5.0-12	4.5-7.3	0	0	0.0-2.0	0-1
	9-19	5.0-12	4.5-7.3	0	0	0.0-2.0	0-1
	19-26	10-18	7.4-9.0	0	0	0.0-2.0	7-20
	26-37	10-18	7.4-9.0	0	0	1.0-2.0	7-20
	37-43	15-20	7.9-9.0	1-2	0	1.0-4.0	20-30
	43-51	15-20	7.9-9.0	1-2	0	1.0-4.0	20-30
	51-61	8.0-15	7.4-9.0	0-1	0	1.0-2.0	5-25
	61-72	8.0-15	7.4-9.0	0-1	0	1.0-2.0	5-20
	72-80	8.0-15	7.4-9.0	0-1	0	0.0-2.0	5-20

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

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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	
1554: Dillhut-----	0-10	1.0-3.0	5.6-6.5	0	0	0	0
	10-29	0.0-2.0	5.6-6.5	0	0	0	0
	29-35	10-18	6.6-7.3	0	0	0	0
	35-43	10-18	6.6-7.3	0	0	0	0
	43-54	17-22	6.6-7.3	0	0	0	0
	54-66	17-22	6.6-7.3	0	0	0	0
	66-80	17-22	6.6-7.3	0	0	0	0
1556: Dillhut-----	0-4	1.0-3.0	5.6-6.5	0	0	0	0
	4-9	1.0-3.0	5.6-6.5	0	0	0	0
	9-18	0.0-2.0	5.6-6.5	0	0	0	0
	18-26	0.0-2.0	5.6-6.5	0	0	0	0
	26-41	10-18	6.6-7.3	0	0	0	0
	41-55	7.0-10	6.6-7.3	0	0	0	0
	55-65	7.0-10	6.6-7.3	0	0	0	0
	65-70	7.0-10	6.6-7.3	0	0	0	0
	70-80	3.0-9.0	6.1-7.3	0	0	0	0
Solvay-----	0-5	5.0-12	6.1-6.5	0	0	0	0
	5-14	8.0-19	6.1-7.3	0	0	0	0
	14-23	8.0-19	6.1-7.3	0	0	0	0
	23-37	8.0-19	6.1-7.3	0	0	0	0
	37-58	5.0-12	6.1-7.3	0	0	0	0
	58-76	5.0-12	6.1-7.3	0	0	0	0
	76-80	5.0-12	6.1-7.3	0	0	0	0
2391: Kaskan-----	0-9	20-30	6.1-7.3	0	0	0	0
	9-13	20-30	6.1-7.3	0	0	0	0
	13-17	6.0-10	6.1-7.8	0-1	0	0	0
	17-21	6.0-10	6.1-7.8	0-1	0	0	0
	21-27	6.0-10	6.1-7.8	0-1	0	0	0
	27-43	0.0-3.0	6.1-7.8	0	0	0	0
	43-57	0.0-8.0	6.1-7.8	0-1	0	0	0
	57-80	0.0-8.0	6.1-7.8	0-1	0	0	0
2395: Kisiwa-----	0-4	10-25	7.4-9.0	0-2	0	1.0-4.0	2-11
	4-7	10-25	7.4-9.0	0-2	0	1.0-4.0	2-8
	7-14	14-26	7.9-9.0	5-10	0	1.0-8.0	15-30
	14-23	14-26	7.9-9.0	5-10	0	1.0-8.0	15-30
	23-31	14-30	7.9-9.0	5-10	0	2.0-4.0	2-26
	31-40	14-30	7.9-9.0	5-10	0	1.0-4.0	2-18
	40-46	14-30	7.9-9.0	5-10	0	0.0-4.0	2-15
	46-52	3.0-10	7.9-9.0	5-10	0	0.0-4.0	2-4
	52-58	3.0-10	7.9-9.0	5-10	0	0.0-4.0	2-4
	58-65	0.0-6.0	7.9-9.0	0-2	0	0.0-4.0	2-4
	65-80	0.0-6.0	7.9-9.0	0-2	0	0.0-4.0	2-4
2556: Langdon-----	0-8	0.0-3.0	5.1-7.3	0	0	0	0
	8-47	0.0-4.0	5.1-7.3	0	0	0	0
	47-64	0.0-1.0	5.1-7.3	0	0	0	0
	64-80	0.0-4.0	4.5-6.5	0	0	0	0
2812: Mahone-----	0-8	1.0-5.0	5.1-7.3	0	0	0	0
	8-14	1.0-5.0	5.1-7.3	0	0	0	0
	14-20	6.0-10	6.1-7.3	0	0	0	0
	20-25	6.0-10	6.1-7.3	0	0	0	0
	25-33	6.0-10	6.1-7.3	0	0	0	0
	33-39	6.0-10	6.1-8.4	0	0	0	0
	39-42	12-21	7.4-8.4	0-1	0	0	0
	42-48	12-21	7.4-8.4	0-1	0	0	0
	48-54	8.0-16	7.4-8.4	0-1	0	0	0
	54-61	8.0-16	7.4-8.4	0-1	0	0	0
	61-66	8.0-16	7.4-8.4	0-1	0	0	0
	66-71	8.0-16	7.4-8.4	0-1	0	0	0
	71-78	0.0-3.0	6.6-8.4	0	0	0	0
	78-80	0.0-3.0	6.6-8.4	0	0	0	0

CHEMICAL PROPERTIES OF THE SOILS--Continued
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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	
2957: Nickerson-----	0-6	5.0-10	5.1-7.3	0	0	0	0
	6-12	10-15	5.6-7.3	0	0	0	0
	12-18	7.0-12	5.6-7.3	0-5	0	0	0
	18-29	0.0-7.0	6.1-7.8	1-5	0	0	0
	29-34	0.0-7.0	7.4-8.4	1-5	0	0	0
	34-38	0.0-7.0	7.4-8.4	1-5	0	0	0
	38-45	0.0-7.0	6.6-8.4	1-5	0	0	0
	45-53	0.0-7.0	6.6-8.4	1-5	0	0	0
	53-57	0.0-7.0	6.6-8.4	1-5	0	0	0
	57-80	0.0-7.0	6.6-8.4	1-5	0	0	0
Punkin-----	0-6	5.0-15	6.6-7.8	0	0	0.0-2.0	2-8
	6-14	5.0-15	6.6-7.8	0	0	0.0-2.0	2-8
	14-22	25-55	7.9-8.4	0	0	2.0-4.0	13-25
	22-32	25-55	7.9-8.4	0	0	2.0-4.0	13-25
	32-41	12-15	6.6-8.4	1-5	0	2.0-8.0	13-25
	41-51	12-15	6.6-8.4	1-5	0	2.0-8.0	13-25
	51-63	0.0-2.0	7.9-8.4	0	0	0.0-2.0	0
	63-80	0.0-2.0	6.6-8.4	0	0	0	0
3181: Pratt-----	0-8	0.0-3.0	5.6-7.3	0	0	0	0
	8-24	2.0-5.0	5.6-7.3	0	0	0	0
	24-64	3.0-7.0	5.6-7.3	0	0	0	0
	64-80	1.0-3.0	6.1-7.3	0	0	0	0
Turon-----	0-8	1.0-3.0	5.1-7.3	0	0	0	0
	8-28	2.0-5.0	5.1-7.3	0	0	0	0
	28-40	3.0-7.0	5.1-7.3	0	0	0	0
	40-58	24-33	6.6-7.8	0	0	0	0
	58-75	24-33	6.6-7.8	0	0	0	0
	75-80	24-33	6.6-7.8	0	0	0	0
3190: Punkin-----	0-4	10-30	6.6-7.8	0	0	0.0-2.0	2-8
	4-8	10-30	6.6-7.8	0	0	0.0-2.0	2-8
	8-15	10-30	7.4-8.4	0	0	0.0-2.0	13-25
	15-21	10-30	7.4-8.4	0	0	2.0-4.0	13-25
	21-39	25-55	7.4-8.4	1-5	0	2.0-4.0	13-25
	39-47	25-50	7.4-8.4	1-5	1-5	2.0-8.0	13-25
	47-64	25-50	7.4-8.4	1-5	1-5	2.0-8.0	13-25
	64-78	15-35	6.6-8.4	0	0	4.0-8.0	20-40
	78-80	15-35	6.6-8.4	0	0	4.0-8.0	20-40
3191: Punkin-----	0-4	10-30	6.6-7.8	0	0	0.0-2.0	2-8
	4-8	10-30	6.6-7.8	0	0	0.0-2.0	2-8
	8-15	10-30	7.4-8.4	0	0	0.0-2.0	13-25
	15-21	10-30	7.4-8.4	0	0	2.0-4.0	13-25
	21-39	25-55	7.4-8.4	1-5	0	2.0-4.0	13-25
	39-47	25-50	7.4-8.4	1-5	1-5	2.0-8.0	13-25
	47-64	25-50	7.4-8.4	1-5	1-5	2.0-8.0	13-25
	64-78	15-35	6.6-8.4	0	0	4.0-8.0	20-40
	78-80	15-35	6.6-8.4	0	0	4.0-8.0	20-40
Taver-----	0-7	10-15	6.1-7.3	0	0	0	0
	7-17	30-40	6.6-8.4	0-5	0	0	0
	17-33	30-40	6.6-8.4	0-5	0	0	0
	33-53	30-40	6.6-8.4	0-5	0	0	0
	53-64	12-17	7.4-8.4	0-5	0	0	0
	64-80	12-17	7.4-8.4	0-5	0	0	0
3511: Saltcreek-----	0-5	5.0-10	4.5-6.6	0	0	0	0
	5-10	5.0-10	4.5-6.6	0	0	0	0
	10-26	10-18	6.1-7.3	0	0	0	0
	26-39	10-18	6.1-7.3	0	0	0	0
	39-56	24-35	6.1-8.4	0-5	0	0	0
	56-66	24-35	6.1-8.4	0-5	0	0	0
	66-80	24-35	6.1-8.4	0-5	0	0	0
Naron, sandy substratum-----	0-7	6.0-10	5.6-7.3	0	0	0	0
	7-19	6.0-10	5.6-7.3	0	0	0	0
	19-34	12-17	5.6-7.8	0	0	0	0
	34-41	12-17	5.6-7.8	0	0	0	0
	41-61	4.0-10	6.1-8.4	0-5	0	0	0
	61-80	0.0-1.0	6.1-8.4	0-1	0	0	0

CHEMICAL PROPERTIES OF THE SOILS--Continued
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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	
3540: Solvay-----	0-5	1.0-7.0	6.1-6.5	0	0	0	0
	5-14	8.0-19	6.1-7.3	0	0	0	0
	14-23	8.0-19	6.1-7.3	0	0	0	0
	23-37	8.0-19	6.1-7.3	0	0	0	0
	37-58	5.0-12	6.1-7.3	0	0	0	0
	58-76	5.0-12	6.1-7.3	0	0	0	0
	76-80	5.0-12	6.1-7.3	0	0	0	0
3639: Taver-----	0-7	10-15	6.1-7.3	0	0	0	0
	7-17	30-40	6.6-8.4	0-5	0	0	0
	17-33	30-40	6.6-8.4	0-5	0	0	0
	33-53	30-40	6.6-8.4	0-5	0	0	0
	53-64	12-17	7.4-8.4	0-5	0	0	0
	64-80	12-17	7.4-8.4	0-5	0	0	0
3641: Tivin-----	0-7	0.0-1.0	5.6-6.5	0	0	0.0-1.0	0
	7-18	0.0-1.0	6.1-7.3	0	0	0.0-1.0	0
	18-80	0.0-1.0	6.1-7.3	0	0	0.0-1.0	0
Dillhut-----	0-4	1.0-3.0	5.6-6.5	0	0	0	0
	4-9	1.0-3.0	5.6-6.5	0	0	0	0
	9-18	0.0-2.0	5.6-6.5	0	0	0	0
	18-26	0.0-2.0	5.6-6.5	0	0	0	0
	26-41	10-18	6.6-7.3	0	0	0	0
	41-55	7.0-10	6.6-7.3	0	0	0	0
	55-65	7.0-10	6.6-7.3	0	0	0	0
	65-70	7.0-10	6.6-7.3	0	0	0	0
	70-80	3.0-9.0	6.1-7.3	0	0	0	0
3900: Warnut-----	0-2	5.0-10	5.6-6.5	0	0	0	0
	2-5	11-16	6.1-7.3	0	0	0	0
	5-11	11-16	6.1-7.3	0	0	0	0
	11-15	8.0-10	6.1-7.3	0	0	0	0
	15-22	8.0-10	6.1-7.3	0	0	0	0
	22-37	8.0-10	6.1-7.3	0	0	0	0
	37-60	2.0-9.0	6.1-7.3	0	0	0	0
	60-80	2.0-9.0	6.1-7.3	0	0	0	0
3966: Willowbrook----	0-4	5.0-11	5.6-8.4	0	0	0	0
	4-9	5.0-11	5.6-8.4	0	0	0	0
	9-13	5.0-11	5.6-8.4	0	0	0	0
	13-17	5.0-11	5.6-8.4	0	0	0	0
	17-19	3.0-10	7.4-8.4	0-5	0	0	0
	19-26	3.0-10	7.4-8.4	0-5	0	0	0
	26-45	0.0-3.0	7.4-8.4	0	0	0	0
	45-51	0.0-2.0	7.4-8.4	0	0	0	0
	51-80	0.0-2.0	7.4-8.4	0	0	0	0
Ad: Fluvents-----	0-6	4.0-18	6.6-8.4	---	---	---	---
	6-60	4.0-21	7.4-8.4	---	---	---	---
Ba: Clime-----	0-9	16-33	6.6-8.4	5-10	---	---	---
	9-27	14-39	7.4-8.4	5-10	---	---	---
	>27	---	---	---	---	---	---
Hobbs-----	0-26	6.0-19	6.1-7.8	0	0	0	0
	26-60	6.0-19	6.6-8.4	0-5	0	0	0
BOP: Borrow Pits----	---	---	---	---	---	---	---
Ca: Carwile-----	0-18	2.0-13	5.1-7.3	---	---	---	---
	18-37	14-36	6.1-8.4	---	---	---	---
	37-60	8.0-27	6.6-8.4	---	---	---	---
Cc: Clark-----	0-10	11-21	7.4-8.4	0-5	---	---	---
	10-60	7.0-21	7.4-8.4	15-45	---	---	---
Cd: Clime-----	0-9	16-33	6.6-8.4	5-10	---	---	---
	9-30	14-39	7.4-8.4	5-10	---	---	---
	>30	---	---	---	---	---	---

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

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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	
Ce:							
Clime-----	0-9	16-33	6.6-8.4	5-10	---	---	---
	9-27	14-39	7.4-8.4	5-10	---	---	---
	27-34	---	---	---	---	---	---
Cf:							
Clime-----	0-6	16-33	6.6-8.4	5-10	---	---	---
	6-30	14-39	7.4-8.4	5-10	---	---	---
	>30	---	---	---	---	---	---
Cm:							
Clime-----	0-9	16-33	6.6-8.4	5-10	---	---	---
	9-27	14-39	7.4-8.4	5-10	---	---	---
	>27	---	---	---	---	---	---
Cr:							
Crete-----	0-5	16-23	5.6-6.0	0	0	0	0
	5-9	20-28	5.6-6.0	0	0	0	0
	9-19	25-41	6.1-7.3	0	0	0	0
	19-27	25-41	6.1-7.3	0	0	0	0
	27-38	25-41	6.1-7.3	0	0	0	0
	38-48	18-29	7.4-8.4	0-5	0	0	0
	48-80	18-29	7.4-8.4	0-5	0	0	0
Ct:							
Crete-----	0-5	16-23	5.6-6.0	0	0	0	0
	5-9	20-28	5.6-6.0	0	0	0	0
	9-19	25-41	6.1-7.3	0	0	0	0
	19-27	25-41	6.1-7.3	0	0	0	0
	27-38	25-41	6.1-7.3	0	0	0	0
	38-48	18-29	7.4-8.4	0-5	0	0	0
	48-80	18-29	7.4-8.4	0-5	0	0	0
De:							
Detroit-----	0-11	12-24	6.1-7.3	0	0	0	0
	11-36	14-27	6.6-7.8	0	0	0	0
	36-60	7.0-21	6.6-8.4	---	0	0	---
Dp:							
Dillwyn-----	0-8	0.0-6.0	5.6-7.3	---	---	---	---
	8-60	0.0-5.0	5.6-7.8	---	---	---	---
Plevna-----	0-18	3.0-12	6.6-8.4	0	0	0	0
	18-42	3.0-11	6.6-8.4	0	0	0	0
	42-60	0.0-4.0	6.6-8.4	0	0	0	0
Dt:							
Dillwyn-----	0-8	0.0-6.0	5.6-7.3	---	---	---	---
	8-60	0.0-5.0	5.6-7.8	---	---	---	---
Tivoli-----	0-7	0.0-7.0	6.1-7.8	---	---	---	---
	7-60	0.0-6.0	6.1-8.4	---	---	---	---
Du:							
Drummond-----	0-9	8.0-19	7.4-8.4	---	---	4.0-16.0	---
	9-60	14-36	7.9-9.0	---	---	4.0-16.0	---
Fa:							
Farnum-----	0-14	3.0-10	5.6-7.3	---	---	---	---
	14-45	10-21	6.1-8.4	---	---	---	---
	45-60	4.0-18	6.6-8.4	---	---	---	---
Fc:							
Farnum-----	0-14	6.0-18	5.6-7.3	---	---	---	---
	14-46	10-21	6.1-8.4	---	---	---	---
	46-60	4.0-18	6.6-8.4	---	---	---	---
Fd:							
Farnum-----	0-12	6.0-18	5.6-7.3	---	---	---	---
	12-45	10-21	6.1-8.4	---	---	---	---
	45-60	4.0-18	6.6-8.4	---	---	---	---
Fe:							
Farnum-----	0-11	6.0-18	5.6-7.3	---	---	---	---
	11-45	10-21	6.1-8.4	---	---	---	---
	45-60	4.0-18	6.6-8.4	---	---	---	---
Fs:							
Farnum-----	0-14	6.0-18	5.6-7.3	---	---	---	---
	14-45	10-21	6.1-8.4	---	---	---	---
	45-60	4.0-18	6.6-8.4	---	---	---	---
Drummond-----	0-8	8.0-19	6.1-8.4	---	---	0.0-4.0	---
	8-60	14-36	7.4-9.0	---	---	2.0-8.0	---

CHEMICAL PROPERTIES OF THE SOILS--Continued
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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	
Gc:							
Geary-----	0-9	6.0-19	5.6-6.5	0	0	0	0
	9-35	10-21	5.6-7.8	0	0	0	0
	35-60	8.0-19	6.1-8.4	0	0	0	0
Gd:							
Geary-----	0-7	6.0-19	5.6-6.5	0	0	0	0
	7-32	10-21	5.6-7.8	0	0	0	0
	32-60	8.0-19	6.1-8.4	0	0	0	0
Ge:							
Geary-----	0-9	6.0-19	5.6-6.5	0	0	0	0
	9-35	10-21	5.6-7.8	0	0	0	0
	35-60	8.0-19	6.1-8.4	0	0	0	0
Go:							
Goessel-----	0-15	16-36	6.1-7.3	---	---	---	---
	15-50	16-33	7.4-8.4	---	---	---	---
	50-60	12-30	7.9-8.4	---	---	---	---
GRP:							
Gravel Pits----	---	---	---	---	---	---	---
Gs:							
Goessel-----	0-15	16-36	6.1-7.3	---	---	---	---
	15-50	16-33	7.4-8.4	---	---	---	---
	50-60	12-30	7.9-8.4	---	---	---	---
Ho:							
Hobbs-----	0-26	6.0-19	6.1-7.8	0	0	0	0
	26-60	6.0-19	6.6-8.4	0-5	0	0	0
INT:							
Intermittent	---	---	---	---	---	---	---
Lakes-----							
Ir:							
Irwin-----	0-13	12-24	5.6-7.3	---	---	---	---
	13-52	16-38	5.6-8.4	---	---	---	---
	52-60	14-34	6.6-8.4	---	---	---	---
Is:							
Irwin-----	0-11	12-24	5.6-7.3	---	---	---	---
	11-44	16-38	5.6-8.4	---	---	---	---
	44-60	14-34	6.6-8.4	---	---	---	---
It:							
Irwin-----	0-6	12-24	5.6-7.3	---	---	---	---
	6-44	16-38	5.6-8.4	---	---	---	---
	44-60	14-34	6.6-8.4	---	---	---	---
Ka:							
Kaski-----	0-24	7.0-18	5.6-7.3	---	---	---	---
	24-41	7.0-21	5.6-7.8	---	---	---	---
	41-60	3.0-18	5.6-8.4	---	---	---	---
La:							
Ladysmith-----	0-10	12-24	5.6-7.3	---	---	---	---
	10-45	16-36	5.6-7.8	0-5	---	---	---
	45-60	14-33	7.4-8.4	0-5	---	---	---
Lb:							
Ladysmith-----	0-10	12-24	5.6-7.3	---	---	---	---
	10-45	16-36	5.6-7.8	0-5	---	---	---
	45-60	14-33	7.4-8.4	0-5	---	---	---
Ld:							
Lela-----	0-11	14-26	6.1-8.4	0	0	0	0
	11-60	16-36	7.4-8.4	---	0	0	0
Drummond-----	0-8	11-20	6.1-8.4	---	---	0.0-4.0	---
	8-60	14-36	7.4-9.0	---	---	2.0-8.0	---
Le:							
Lesho-----	0-17	7.0-18	7.4-8.4	---	---	0.0-4.0	---
	17-30	7.0-21	7.4-8.4	---	---	0.0-4.0	---
	30-60	0.0-5.0	7.4-9.0	---	---	0.0-4.0	---
Na:							
Naron-----	0-12	3.0-10	5.6-7.3	---	---	---	---
	12-40	7.0-16	5.6-7.8	---	---	---	---
	40-60	0.0-9.0	6.1-8.4	---	---	---	---
Nb:							
Naron-----	0-10	3.0-10	5.6-7.3	---	---	---	---
	10-40	7.0-16	5.6-7.8	---	---	---	---
	40-60	0.0-9.0	6.1-8.4	---	---	---	---

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

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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	
Pa:							
Pratt-----	0-12	1.0-5.0	5.6-7.3	---	---	---	---
	12-30	1.0-7.0	5.6-7.3	---	---	---	---
	30-60	0.0-5.0	6.1-7.3	---	---	---	---
Pc:							
Pratt-----	0-12	1.0-5.0	5.6-7.3	---	---	---	---
	12-30	1.0-7.0	5.6-7.3	---	---	---	---
	30-60	0.0-5.0	6.1-7.3	---	---	---	---
Carwile-----	0-18	2.0-13	5.1-7.3	---	---	---	---
	18-37	14-36	6.1-8.4	---	---	---	---
	37-60	8.0-27	6.6-8.4	---	---	---	---
Pt:							
Pratt-----	0-12	1.0-5.0	5.6-7.3	---	---	---	---
	12-30	1.0-7.0	5.6-7.3	---	---	---	---
	30-60	0.0-5.0	6.1-7.3	---	---	---	---
Tivoli-----	0-7	2.0-7.0	6.1-7.8	---	---	---	---
	7-60	0.0-6.0	6.1-8.4	---	---	---	---
Ro:							
Rosehill-----	0-9	16-38	6.1-7.3	---	---	---	---
	9-34	16-36	6.6-8.4	---	---	---	---
	>34	---	---	---	---	---	---
Rs:							
Rosehill-----	0-9	16-38	6.1-7.3	---	---	---	---
	9-34	16-36	6.6-8.4	---	---	---	---
	>34	---	---	---	---	---	---
Sm:							
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
Tv:							
Tivoli-----	0-7	0.0-7.0	6.1-7.8	---	---	---	---
	7-60	0.0-6.0	6.1-8.4	---	---	---	---
W:							
Water-----	---	---	---	---	---	---	---

WATER FEATURES Harvey 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
			Ft	Ft	Ft				
015VE: Verdigris-----	B	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
113CB: Cass-----	B	March	---	---	---	---	---	Brief	Rare
		April	---	---	---	---	---	Brief	Rare
		May	---	---	---	---	---	Brief	Rare
		June	---	---	---	---	---	Brief	Rare
113TO: Tobin-----	B	April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
		September	---	---	---	---	---	Very brief	Occasional
115CM: Clime-----	C	October	---	---	---	---	---	Very brief	Occasional
115CP: Clime-----	C		---	---	---	---	---	---	---
115WB: Wells-----	B		---	---	---	---	---	---	---
115WC: Wells-----	B		---	---	---	---	---	---	---
173EA: Elandco-----	B		---	---	---	---	---	---	---
173EB: Elandco-----	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
173EB: Elandco-----	B	January	---	---	---	---	---	Brief	Occasional
		February	---	---	---	---	---	Brief	Occasional
		March	---	---	---	---	---	Brief	Occasional
		April	---	---	---	---	---	Brief	Occasional
		May	---	---	---	---	---	Brief	Occasional
		October	---	---	---	---	---	Brief	Occasional
		November	---	---	---	---	---	Brief	Occasional
		December	---	---	---	---	---	Brief	Occasional
173EC: Elandco-----	B	January	---	---	---	---	---	Brief	Frequent
		February	---	---	---	---	---	Brief	Frequent
		March	---	---	---	---	---	Brief	Frequent
		April	---	---	---	---	---	Brief	Frequent
		May	---	---	---	---	---	Brief	Frequent
		October	---	---	---	---	---	Brief	Frequent
		November	---	---	---	---	---	Brief	Frequent
		December	---	---	---	---	---	Brief	Frequent
173TB: Tabler-----	D		---	---	---	---	---	---	---

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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		Ft	Ft	Ft				
		January	2.0-6.0	>6.0	---	---	---	---	None
		February	2.0-6.0	>6.0	---	---	---	---	None
		March	2.0-6.0	>6.0	---	---	---	---	None
		April	2.0-6.0	>6.0	---	---	---	---	None
		November	2.0-6.0	>6.0	---	---	---	---	None
		December	2.0-6.0	>6.0	---	---	---	---	None
173VB: Vanoss-----	B		---	---	---	---	---	---	---
1191: Blazefork-----	D								
		January	4.0	>6.0	---	---	---	---	Rare
		February	4.0	>6.0	---	---	---	---	Rare
		March	4.0	>6.0	---	---	---	---	Rare
		April	4.0	>6.0	---	---	---	---	Rare
		May	4.0	>6.0	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	4.0	>6.0	---	---	---	---	Rare
		December	4.0	>6.0	---	---	---	---	Rare
1324: Carway-----	D								
		January	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		February	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		March	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		April	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		May	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		June	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		July	---	---	0.3-1.0	Long	Occasional	---	None
		August	---	---	0.3-1.0	Brief	Rare	---	None
		September	---	---	0.3-1.0	Brief	Rare	---	None
		October	---	---	0.3-1.0	Long	Occasional	---	None
		November	---	---	0.3-1.0	Long	Occasional	---	None
		December	0.0	2.0	0.3-1.0	Long	Occasional	---	None
Carbika-----	D								
		January	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		February	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		March	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		April	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		May	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		June	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		July	---	---	0.3-1.0	Long	Occasional	---	None
		August	---	---	0.0-0.5	Brief	Rare	---	None
		September	---	---	0.0-0.5	Brief	Rare	---	None
		October	---	---	0.3-1.0	Long	Occasional	---	None
		November	---	---	0.3-1.0	Long	Occasional	---	None
		December	0.0	2.0	0.3-1.0	Long	Occasional	---	None
1357: Carway-----	D								
		January	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		February	0.0	2.0	0.3-1.0	Long	Occasional	---	None
		March	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		April	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		May	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		June	0.0	2.0	0.3-1.0	Long	Frequent	---	None
		July	---	---	0.3-1.0	Long	Occasional	---	None
		August	---	---	0.3-1.0	Brief	Rare	---	None
		September	---	---	0.3-1.0	Brief	Rare	---	None
		October	---	---	0.3-1.0	Long	Occasional	---	None
		November	---	---	0.3-1.0	Long	Occasional	---	None
		December	0.0	2.0	0.3-1.0	Long	Occasional	---	None
Dillhut-----	B								
		February	1.5	4.0	---	---	---	---	None
		March	1.5	4.0	---	---	---	---	None
		April	1.5	4.0	---	---	---	---	None
		May	1.5	4.0	---	---	---	---	None
Solvay-----	D								
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		May	2.0-4.0	>6.0	---	---	---	---	None
1553: Darlow-----	C								
			---	---	---	---	---	---	---
Elmer-----	C								
			---	---	---	---	---	---	---
1554:									

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Map symbol and soil name	Hydro- logic group	Month	Soil Saturation		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
Dillhut-----	B	February	1.5	4.0	---	---	---	---	None
		March	1.5	4.0	---	---	---	---	None
		April	1.5	4.0	---	---	---	---	None
		May	1.5	4.0	---	---	---	---	None
1556: Dillhut-----	B		---	---	---	---	---	---	---
Solvay-----	D	February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		May	2.0-4.0	>6.0	---	---	---	---	None
2391: Kaskan-----	B	January	---	---	---	---	---	Brief	Frequent
		February	5.0	>6.0	---	---	---	Brief	Frequent
		March	5.0	>6.0	---	---	---	Brief	Frequent
		April	5.0	>6.0	---	---	---	Brief	Frequent
		May	5.0	>6.0	---	---	---	Brief	Frequent
		June	5.0	>6.0	---	---	---	Brief	Frequent
		July	---	---	---	---	---	Brief	Frequent
		August	---	---	---	---	---	Brief	Frequent
		September	---	---	---	---	---	Brief	Frequent
		October	---	---	---	---	---	Brief	Frequent
		November	---	---	---	---	---	Brief	Frequent
		December	---	---	---	---	---	Brief	Frequent
2395: Kisiwa-----	D	January	0.0	1.5	0.0-2.0	Long	Occasional	---	None
		February	5.4	>6.0	---	---	---	---	---
		March	0.0	1.5	0.0-2.0	Long	Occasional	---	None
		April	5.4	>6.0	---	---	---	---	---
		May	0.0	1.5	0.0-2.0	Long	Occasional	---	None
		June	5.4	>6.0	---	---	---	---	---
		July	0.0	1.5	---	---	---	---	None
		August	5.4	>6.0	---	---	---	---	None
		September	5.4	>6.0	---	---	---	---	None
		October	0.0	1.5	---	---	---	---	None
		November	5.4	>6.0	---	---	---	---	None
		December	0.0	1.5	---	---	---	---	None
			5.4	>6.0	---	---	---	---	---
2556: Langdon-----	A		---	---	---	---	---	---	---
2812: Mahone-----	C	January	---	---	---	---	---	---	Rare
		February	5.0	>6.0	---	---	---	---	Rare
		March	5.0	>6.0	---	---	---	---	Rare
		April	5.0	>6.0	---	---	---	---	Rare
		May	5.0	>6.0	---	---	---	---	Rare
		June	5.0	>6.0	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
2957: Nickerson-----	B	January	2.0-4.0	---	---	---	---	---	None
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		December	2.0-4.0	>6.0	---	---	---	---	None
Punkin-----	D		---	---	---	---	---	---	---
3181: Pratt-----	A		---	---	---	---	---	---	---
Turon-----	A		---	---	---	---	---	---	---
3190: Punkin-----	D		---	---	---	---	---	---	---

(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				
3191: Punkin-----	D		---	---	---	---	---	---	---
Taver-----	D		---	---	---	---	---	---	---
3511: Saltcreek-----	C		---	---	---	---	---	---	---
Naron, sandy substratum---	B		---	---	---	---	---	---	---
3540: Solvay-----	D		---	---	---	---	---	---	---
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		May	2.0-4.0	>6.0	---	---	---	---	None
3639: Taver-----	D		---	---	---	---	---	---	---
3641: Tivin-----	A		---	---	---	---	---	---	---
Dillhut-----	B		---	---	---	---	---	---	---
3900: Walnut-----	D		---	---	---	---	---	---	---
		January	---	---	0.3-2.0	Long	Occasional	---	None
		February	---	---	0.3-2.0	Long	Occasional	---	None
		March	---	---	0.3-2.0	Long	Frequent	---	None
		April	0.0	>6.0	0.3-2.0	Long	Frequent	---	None
		May	0.0	>6.0	0.3-2.0	Long	Frequent	---	None
		June	0.0	>6.0	0.3-2.0	Long	Frequent	---	None
		July	---	---	0.3-2.0	Long	Occasional	---	None
		August	---	---	0.0-2.0	Brief	Rare	---	None
		September	---	---	0.0-2.0	Brief	Rare	---	None
		October	---	---	0.3-2.0	Long	Occasional	---	None
		November	---	---	0.3-2.0	Long	Occasional	---	None
		December	---	---	0.3-2.0	Long	Occasional	---	None
3966: Willowbrook-----	B		---	---	---	---	---	---	---
		February	2.0-4.0	>6.0	---	---	None	---	None
		March	2.0-4.0	>6.0	---	---	None	Brief	Occasional
		April	2.0-4.0	>6.0	---	---	None	Brief	Occasional
		May	2.0-4.0	>6.0	---	---	None	Brief	Occasional
		June	2.0-4.0	>6.0	---	---	None	Brief	Occasional
		July	---	---	---	---	None	Brief	Occasional
		August	---	---	---	---	None	Brief	Occasional
		September	---	---	---	---	None	Brief	Occasional
		October	---	---	---	---	None	Brief	Occasional
Ad: Fluvents-----	B		---	---	---	---	---	---	---
		April	---	---	---	---	---	Very brief	Frequent
		May	---	---	---	---	---	Very brief	Frequent
		June	---	---	---	---	---	Very brief	Frequent
		July	---	---	---	---	---	Very brief	Frequent
		August	---	---	---	---	---	Very brief	Frequent
		September	---	---	---	---	---	Very brief	Frequent
Ba: Clime-----	C		---	---	---	---	---	---	---
Hobbs-----	B		---	---	---	---	---	---	---
		April	---	---	---	---	---	Brief	Frequent
		May	---	---	---	---	---	Brief	Frequent
		June	---	---	---	---	---	Brief	Frequent
		July	---	---	---	---	---	Brief	Frequent
		August	---	---	---	---	---	Brief	Frequent
		September	---	---	---	---	---	Brief	Frequent
BOP: Borrow Pits-----	---		---	---	---	---	---	---	---
Ca: Carwile-----	D		---	---	---	---	---	---	---
		January	0.0	>6.0	0.0-1.0	Brief	---	---	None
		February	0.0	>6.0	0.0-1.0	Brief	---	---	None
		March	0.0	>6.0	0.0-1.0	Brief	---	---	None
		April	0.0	>6.0	0.0-1.0	Brief	---	---	None
		October	0.0	>6.0	0.0-1.0	Brief	---	---	None
		November	0.0	>6.0	0.0-1.0	Brief	---	---	None
		December	0.0	>6.0	0.0-1.0	Brief	---	---	None
Cc: Clark-----	B		---	---	---	---	---	---	---
Cd:			---	---	---	---	---	---	---

(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
Clime-----	C		Ft	Ft	Ft				
Ce: Clime-----	C		---	---	---	---	---	---	---
Cf: Clime-----	C		---	---	---	---	---	---	---
Cm: Clime-----	C		---	---	---	---	---	---	---
Cr: Crete-----	C		---	---	---	---	---	---	---
Ct: Crete-----	C		---	---	---	---	---	---	---
De: Detroit-----	C		---	---	---	---	---	---	---
		January	---	---	---	---	---	---	Rare
		February	---	---	---	---	---	---	Rare
		March	---	---	---	---	---	---	Rare
		April	---	---	---	---	---	---	Rare
		May	---	---	---	---	---	---	Rare
		June	---	---	---	---	---	---	Rare
		July	---	---	---	---	---	---	Rare
		August	---	---	---	---	---	---	Rare
		September	---	---	---	---	---	---	Rare
		October	---	---	---	---	---	---	Rare
		November	---	---	---	---	---	---	Rare
		December	---	---	---	---	---	---	Rare
Dp: Dillwyn-----	A		---	---	---	---	---	---	---
		January	1.0-3.0	>6.0	---	---	---	---	None
		February	1.0-3.0	>6.0	---	---	---	---	None
		March	1.0-3.0	>6.0	---	---	---	---	None
		April	1.0-3.0	>6.0	---	---	---	---	None
		May	1.0-3.0	>6.0	---	---	---	---	None
		June	1.0-3.0	>6.0	---	---	---	---	None
		July	1.0-3.0	>6.0	---	---	---	---	None
		August	1.0-3.0	>6.0	---	---	---	---	None
		September	1.0-3.0	>6.0	---	---	---	---	None
		October	1.0-3.0	>6.0	---	---	---	---	None
		November	1.0-3.0	>6.0	---	---	---	---	None
		December	1.0-3.0	>6.0	---	---	---	---	None
Plevna-----	D		---	---	---	---	---	---	---
		January	0.0-2.0	>6.0	---	---	---	---	None
		February	0.0-2.0	>6.0	---	---	---	---	None
		March	0.0-2.0	>6.0	---	---	---	Long	Frequent
		April	0.0-2.0	>6.0	---	---	---	Long	Frequent
		May	0.0-2.0	>6.0	---	---	---	Long	Frequent
		June	0.0-2.0	>6.0	---	---	---	Long	Frequent
		July	0.0-2.0	>6.0	---	---	---	Long	Frequent
		August	0.0-2.0	>6.0	---	---	---	Long	Frequent
		September	0.0-2.0	>6.0	---	---	---	Long	Frequent
		October	0.0-2.0	>6.0	---	---	---	Long	Frequent
		November	0.0-2.0	>6.0	---	---	---	---	None
		December	0.0-2.0	>6.0	---	---	---	---	None
Dt: Dillwyn-----	A		---	---	---	---	---	---	---
		January	1.0-3.0	>6.0	---	---	---	---	None
		February	1.0-3.0	>6.0	---	---	---	---	None
		March	1.0-3.0	>6.0	---	---	---	---	None
		April	1.0-3.0	>6.0	---	---	---	---	None
		May	1.0-3.0	>6.0	---	---	---	---	None
		June	1.0-3.0	>6.0	---	---	---	---	None
		July	1.0-3.0	>6.0	---	---	---	---	None
		August	1.0-3.0	>6.0	---	---	---	---	None
		September	1.0-3.0	>6.0	---	---	---	---	None
		October	1.0-3.0	>6.0	---	---	---	---	None
		November	1.0-3.0	>6.0	---	---	---	---	None
		December	1.0-3.0	>6.0	---	---	---	---	None
Tivoli-----	A		---	---	---	---	---	---	---
Du: Drummond-----	D		---	---	---	---	---	---	---
		January	2.0-4.0	>6.0	---	---	---	---	None
		February	2.0-4.0	>6.0	---	---	---	---	None
		March	2.0-4.0	>6.0	---	---	---	---	None
		April	2.0-4.0	>6.0	---	---	---	---	None
		November	2.0-4.0	>6.0	---	---	---	---	None
		December	2.0-4.0	>6.0	---	---	---	---	None
Fa:									

(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
Farnum-----	B		Ft	Ft	Ft				
Fc: Farnum-----	B		---	---	---	---	---	---	---
Fd: Farnum-----	B		---	---	---	---	---	---	---
Fe: Farnum-----	B		---	---	---	---	---	---	---
Fs: Farnum-----	B		---	---	---	---	---	---	---
Drummond-----	D		---	---	---	---	---	---	---
		January	2.0-6.0	>6.0	---	---	---	---	None
		February	2.0-6.0	>6.0	---	---	---	---	None
		March	2.0-6.0	>6.0	---	---	---	---	None
		April	2.0-6.0	>6.0	---	---	---	---	None
		November	2.0-6.0	>6.0	---	---	---	---	None
		December	2.0-6.0	>6.0	---	---	---	---	None
Gc: Geary-----	B		---	---	---	---	---	---	---
Gd: Geary-----	B		---	---	---	---	---	---	---
Ge: Geary-----	B		---	---	---	---	---	---	---
Go: Goessel-----	D		---	---	---	---	---	---	---
		April	2.0-3.0	>6.0	---	---	---	---	None
		May	2.0-3.0	>6.0	---	---	---	---	None
		June	2.0-3.0	>6.0	---	---	---	---	None
GRP: Gravel Pits-----	---		---	---	---	---	---	---	---
Gs: Goessel-----	D		---	---	---	---	---	---	---
		April	2.0-3.0	>6.0	---	---	---	---	None
		May	2.0-3.0	>6.0	---	---	---	---	None
		June	2.0-3.0	>6.0	---	---	---	---	None
Ho: Hobbs-----	B		---	---	---	---	---	---	---
		April	---	---	---	---	---	Brief	Occasional
		May	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	Brief	Occasional
		July	---	---	---	---	---	Brief	Occasional
		August	---	---	---	---	---	Brief	Occasional
		September	---	---	---	---	---	Brief	Occasional
INT: Intermittent Lakes-----	---		---	---	---	---	---	---	---
Ir: Irwin-----	D		---	---	---	---	---	---	---
Is: Irwin-----	D		---	---	---	---	---	---	---
It: Irwin-----	D		---	---	---	---	---	---	---
Ka: Kaski-----	B		---	---	---	---	---	---	---
		March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
La: Ladysmith-----	D		---	---	---	---	---	---	---
Lb: Ladysmith-----	D		---	---	---	---	---	---	---
Ld:			---	---	---	---	---	---	---

(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
Lela-----	D	March	---	---	---	---	---	Very brief	Occasional
		April	---	---	---	---	---	Very brief	Occasional
		May	---	---	---	---	---	Very brief	Occasional
		June	---	---	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
		August	---	---	---	---	---	Very brief	Occasional
Drummond-----	D	January	2.0-6.0	>6.0	---	---	---	---	None
		February	2.0-6.0	>6.0	---	---	---	---	None
		March	2.0-6.0	>6.0	---	---	---	---	None
		April	2.0-6.0	>6.0	---	---	---	---	None
		November	2.0-6.0	>6.0	---	---	---	---	None
		December	2.0-6.0	>6.0	---	---	---	---	None
Le: Lesho-----	C	March	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		April	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		May	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		June	2.0-4.0	>6.0	---	---	---	Very brief	Occasional
		July	---	---	---	---	---	Very brief	Occasional
Na: Naron-----	B		---	---	---	---	---	---	---
Nb: Naron-----	B		---	---	---	---	---	---	---
Pa: Pratt-----	A		---	---	---	---	---	---	---
Pc: Pratt-----	A	January	1.0-2.0	>6.0	---	---	---	---	None
		February	1.0-2.0	>6.0	---	---	---	---	None
		March	1.0-2.0	>6.0	---	---	---	---	None
		April	1.0-2.0	>6.0	---	---	---	---	None
		October	1.0-2.0	>6.0	---	---	---	---	None
		November	1.0-2.0	>6.0	---	---	---	---	None
		December	1.0-2.0	>6.0	---	---	---	---	None
Carwile-----	D	January	0.0	>6.0	0.0-1.0	Long	---	---	None
		February	0.0	>6.0	0.0-1.0	Long	---	---	None
		March	0.0	>6.0	0.0-1.0	Long	---	---	None
		April	0.0	>6.0	0.0-1.0	Long	---	---	None
		October	0.0	>6.0	0.0-1.0	Long	---	---	None
		November	0.0	>6.0	0.0-1.0	Long	---	---	None
		December	0.0	>6.0	0.0-1.0	Long	---	---	None
Pt: Pratt-----	A		---	---	---	---	---	---	---
Tivoli-----	A		---	---	---	---	---	---	---
Ro: Rosehill-----	D		---	---	---	---	---	---	---
Rs: Rosehill-----	D		---	---	---	---	---	---	---
Sm: Smolan-----	C		---	---	---	---	---	---	---
Tv: Tivoli-----	A		---	---	---	---	---	---	---
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
Harvey 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
015VE:		In	In				
Verdigris-----	---	---	---	---	---	Low	Low
113CB:							
Cass-----	---	---	---	---	Low	Moderate	Low
113TO:							
Tobin-----	---	---	---	---	Low	Low	Low
115CM:							
Clime-----	20-40	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Low
115CP:							
Clime-----	20-40	Bedrock (paralithic)	---	Weakly cemented	Moderate	High	Low
115WB:							
Wells-----	---	---	---	---	Moderate	Low	Moderate
115WC:							
Wells-----	---	---	---	---	Moderate	Low	Moderate
173EA:							
Elandco-----	---	---	---	---	Low	Moderate	Low
173EB:							
Elandco-----	---	---	---	---	Low	Moderate	Low
173EC:							
Elandco-----	---	---	---	---	Low	Moderate	Low
173TB:							
Tabler-----	---	---	---	---	Low	High	Low
Drummond-----	---	---	---	---	Low	High	High
173VB:							
Vanoss-----	---	---	---	---	Low	Moderate	Moderate
1191:							
Blazefork-----	---	---	---	---	Low	High	Low
1324:							
Carway-----	---	---	---	---	Low	High	Moderate
Carbika-----	---	---	---	---	Low	Moderate	Low
1357:							
Carway-----	---	---	---	---	Low	High	Moderate
Dillhut-----	---	---	---	---	Low	Low	Moderate
Solvay-----	---	---	---	---	Low	High	Moderate
1553:							
Darlow-----	---	---	---	---	Low	High	Low
Elmer-----	---	---	---	---	Low	High	Low
1554:							
Dillhut-----	---	---	---	---	Low	Low	Moderate
1556:							
Dillhut-----	---	---	---	---	Low	Low	Moderate
Solvay-----	---	---	---	---	Low	High	Moderate
2391:							
Kaskan-----	---	---	---	---	Low	High	Moderate
2395:							
Kisiwa-----	---	---	---	---	Low	High	Low
2556:							
Langdon-----	---	---	---	---	Low	Low	Low
2812:							
Mahone-----	---	---	---	---	Low	Low	Low
2957:							
Nickerson-----	---	---	---	---	Low	Moderate	Low
Punkin-----	---	---	---	---	Low	High	Low
3181:							
Pratt-----	---	---	---	---	Low	Low	Moderate
Turon-----	---	---	---	---	Low	Low	Moderate
3190:							
Punkin-----	---	---	---	---	Low	High	Low
3191:							
Punkin-----	---	---	---	---	Low	High	Low
Taver-----	---	---	---	---	Low	High	Low
3511:							
Saltcreek-----	---	---	---	---	Low	Moderate	Low
Naron, sandy substratum-----	---	---	---	---	Low	Low	Low
3540:							
Solvay-----	---	---	---	---	Low	High	Moderate
3639:							
Taver-----	---	---	---	---	Low	High	Low
3641:							
Tivin-----	---	---	---	---	Low	Low	Low
Dillhut-----	---	---	---	---	Low	Low	Moderate
3900:							
Warnut-----	---	---	---	---	Low	High	Moderate
3966:							
Willowbrook-----	---	---	---	---	Low	Moderate	Moderate
Ad:							
Fluvents-----	---	---	---	---	Low	Low	Low
Ba:							
Clime-----	20-40	Bedrock (paralithic)	---	---	Low	High	Low
Hobbs-----	---	---	---	---	Low	Low	Low
BOP:							
Borrow Pits-----	---	---	---	---	---	---	---

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Ca: Carwile-----	---	In	In	---	Low	High	Moderate
Cc: Clark-----	---	---	---	---	Low	Moderate	Low
Cd: Cline-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Low	High	Low
Ce: Cline-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Low	High	Low
Cf: Cline-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Low	High	Low
Cm: Cline-----	20-40	Bedrock (paralithic)	---	Moderately cemented	Low	High	Low
Cr: Crete-----	---	---	---	---	Low	Moderate	Low
Ct: Crete-----	---	---	---	---	Moderate	Moderate	Low
De: Detroit-----	---	---	---	---	Low	High	Low
Dp: Dillwyn-----	---	---	---	---	Low	Low	Low
Dt: Dillwyn-----	---	---	---	---	Low	High	Low
Dt: Tivoli-----	---	---	---	---	Low	Low	Low
Du: Drummond-----	---	---	---	---	Low	High	High
Fa: Farnum-----	---	---	---	---	Low	Moderate	Low
Fc: Farnum-----	---	---	---	---	Low	Moderate	Low
Fd: Farnum-----	---	---	---	---	Low	Moderate	Low
Fe: Farnum-----	---	---	---	---	Low	Moderate	Low
Fs: Farnum-----	---	---	---	---	Low	Moderate	Low
Fs: Drummond-----	---	---	---	---	Low	High	High
Gc: Geary-----	---	---	---	---	Low	Low	Low
Gd: Geary-----	---	---	---	---	Low	Low	Low
Ge: Geary-----	---	---	---	---	Low	Low	Low
Go: Goessel-----	---	---	---	---	Low	High	Low
GRP: Gravel Pits-----	---	---	---	---	Low	---	---
Gs: Goessel-----	---	---	---	---	Low	High	Low
Ho: Hobbs-----	---	---	---	---	Low	Low	Low
INT: Intermittent Lakes-----	---	---	---	---	Low	---	---
Ir: Irwin-----	---	---	---	---	Low	High	Low
Is: Irwin-----	---	---	---	---	Low	High	Low
It: Irwin-----	---	---	---	---	Low	High	Low
Ka: Kaski-----	---	---	---	---	Low	Low	Low
La: Ladysmith-----	---	---	---	---	Low	High	Low
Lb: Ladysmith-----	---	---	---	---	Low	High	Low
Ld: Lela-----	---	---	---	---	Low	High	Low
Le: Drummond-----	---	---	---	---	Low	High	High
Le: Lesho-----	---	---	---	---	Low	High	Low
Na: Naron-----	---	---	---	---	Low	Low	Low
Nb: Naron-----	---	---	---	---	Low	Low	Low
Pa: Pratt-----	---	---	---	---	Low	Low	Moderate
Pc: Pratt-----	---	---	---	---	Low	Low	Moderate
Pc: Carwile-----	---	---	---	---	Low	High	Moderate
Pt: Pratt-----	---	---	---	---	Low	Low	Moderate
Pt: Tivoli-----	---	---	---	---	Low	Low	Low

Map symbol and soil name	Restrictive layer				Potential for Frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated Steel	Concrete
Ro: Rosehill-----	20-40	In Bedrock (paralithic)	---	---	Low	High	Low
Rs: Rosehill-----	20-40	Bedrock (paralithic)	---	---	Low	High	Low
Sm: Smolan-----	---	---	---	---	Low	Moderate	Low
Tv: Tivoli-----	---	---	---	---	Low	Low	Low
W: Water-----	---	---	---	---	Low	---	---

WATER MANAGEMENT
Harvey 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
Harvey 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
015VE: Verdigris-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
113CB: Cass-----	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
113TO: Tobin-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
115CM: Clime-----	Limitation: deep to water	Limitation: percs slowly thin layer	Limitation: area reclaim erodes easily percs slowly	Limitation: area reclaim erodes easily percs slowly
115CP: Clime-----	Limitation: deep to water	Limitation: percs slowly slope thin layer	Limitation: area reclaim erodes easily percs slowly	Limitation: area reclaim erodes easily percs slowly
115WB: Wells-----	Limitation: deep to water	Favorable	Favorable	Favorable
115WC: Wells-----	Limitation: deep to water	Limitation: slope	Favorable	Favorable
173EA: Elandco-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
173EB: Elandco-----	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
173EC: Elandco-----	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
173TB: Tabler-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly
Drummond-----	Limitation: excess sodium percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium droughty
173VB: Vanoss-----	Limitation: deep to water	Limitation: erodes easily	Limitation: erodes easily	Limitation: erodes easily
1191: Blazefork-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
1324: Carway-----	Limitation: percs slowly	Limitation: wetness soil blowing	Limitation: erodes easily wetness soil blowing	Limitation: erodes easily percs slowly wetness
Carbika-----	Limitation: percs slowly ponding	Limitation: percs slowly soil blowing ponding	Limitation: erodes easily soil blowing ponding	Limitation: erodes easily percs slowly wetness
1357: Carway-----	Limitation: wetness percs slowly	Limitation: wetness soil blowing	Limitation: erodes easily wetness soil blowing	Limitation: erodes easily percs slowly wetness
Dillhut-----	Limitation: cutbanks cave	Limitation: wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: droughty
Solvay-----	Favorable	Limitation: wetness soil blowing	Limitation: wetness soil blowing	Favorable
1553: Darlow-----	Limitation: deep to water	Limitation: excess sodium excess salt percs slowly	Limitation: percs slowly	Limitation: excess sodium percs slowly
Elmer-----	Limitation: deep to water	Limitation: excess sodium soil blowing	Limitation: erodes easily soil blowing	Limitation: erodes easily excess sodium

WATER MANAGEMENT--Continued
Harvey 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
1554: Dillhut-----	Limitation: cutbanks cave	Limitation: wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: droughty
1556: Dillhut-----	Favorable	Limitation: wetness droughty	Limitation: wetness soil blowing	Limitation: droughty
Solvay-----	Favorable	Limitation: wetness soil blowing	Limitation: wetness soil blowing	Favorable
2391: Kaskan-----	Limitation: deep to water	Limitation: erodes easily flooding	Limitation: erodes easily	Limitation: erodes easily
2395: Kisiwa-----	Limitation: excess sodium percs slowly ponding	Limitation: excess sodium percs slowly ponding	Limitation: erodes easily percs slowly ponding	Limitation: erodes easily excess sodium wetness
2556: Langdon-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty
2812: Mahone-----	Limitation: deep to water	Limitation: fast intake soil blowing	Limitation: soil blowing	Favorable
2957: Nickerson-----	Limitation: cutbanks cave	Limitation: fast intake wetness soil blowing	Limitation: too sandy wetness soil blowing	Favorable
Punkin-----	Limitation: deep to water	Limitation: excess sodium percs slowly soil blowing	Limitation: percs slowly soil blowing	Limitation: excess sodium percs slowly
3181: Pratt-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty
Turon-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty
3190: Punkin-----	Limitation: deep to water	Limitation: excess sodium percs slowly	Favorable	Limitation: excess sodium percs slowly
3191: Punkin-----	Limitation: deep to water	Limitation: excess sodium percs slowly	Favorable	Limitation: excess sodium percs slowly
Taver-----	Limitation: deep to water	Limitation: percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
3511: Saltcreek-----	Limitation: deep to water	Limitation: soil blowing	Limitation: erodes easily percs slowly soil blowing	Limitation: erodes easily percs slowly
Naron, sandy substratum-----	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
3540: Solvay-----	Favorable	Limitation: wetness soil blowing	Limitation: wetness soil blowing	Favorable
3639: Taver-----	Limitation: deep to water	Limitation: percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
3641: Tivin-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Dillhut-----	Favorable	Limitation: wetness droughty	Limitation: wetness soil blowing	Limitation: droughty

WATER MANAGEMENT--Continued
Harvey 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
3900: Walnut-----	Limitation: ponding cutbanks cave	Limitation: soil blowing ponding	Limitation: too sandy soil blowing ponding	Limitation: wetness
3966: Willowbrook----	Limitation: flooding cutbanks cave	Limitation: flooding wetness soil blowing	Limitation: too sandy wetness soil blowing	Favorable
Ad: Fluents-----	Limitation: deep to water	Limitation: erodes easily flooding slope	Limitation: erodes easily slope	Limitation: erodes easily slope
Ba: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope depth to rock
Hobbs-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
BOP: Borrow Pits-----	---	---	---	---
Ca: Carwile-----	Limitation: percs slowly	Limitation: percs slowly wetness soil blowing	Limitation: erodes easily wetness soil blowing	Limitation: erodes easily percs slowly rooting depth
Cc: Clark-----	Limitation: deep to water	Favorable	Favorable	Favorable
Cd: Clime-----	Limitation: deep to water	Limitation: percs slowly slow intake depth to rock	Limitation: percs slowly depth to rock	Limitation: percs slowly depth to rock
Ce: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly depth to rock	Limitation: percs slowly depth to rock
Cf: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly depth to rock	Limitation: percs slowly depth to rock
Cm: Clime-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly slope depth to rock	Limitation: percs slowly slope depth to rock
Cr: Crete-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily	Limitation: erodes easily percs slowly
Ct: Crete-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily	Limitation: erodes easily percs slowly
De: Detroit-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
Dp: Dillwyn-----	Limitation: cutbanks cave	Limitation: fast intake wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: wetness droughty
Plevna-----	Limitation: flooding	Limitation: flooding wetness soil blowing	Limitation: wetness soil blowing	Limitation: wetness
Dt: Dillwyn-----	Limitation: cutbanks cave	Limitation: fast intake wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: wetness droughty
Tivoli-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty

WATER MANAGEMENT--Continued
Harvey 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
Du: Drummond-----	Limitation: excess sodium excess salt percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium excess salt
Fa: Farnum-----	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
Fc: Farnum-----	Limitation: deep to water	Favorable	Favorable	Favorable
Fd: Farnum-----	Limitation: deep to water	Favorable	Favorable	Favorable
Fe: Farnum-----	Limitation: deep to water	Limitation: slope	Favorable	Favorable
Fs: Farnum-----	Limitation: deep to water	Favorable	Favorable	Favorable
Drummond-----	Limitation: excess sodium percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium droughty
Gc: Geary-----	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
Gd: Geary-----	Limitation: deep to water	Favorable	Limitation: erodes easily	Limitation: erodes easily
Ge: Geary-----	Limitation: deep to water	Limitation: slope	Limitation: erodes easily	Limitation: erodes easily
Go: Goessel-----	Limitation: percs slowly	Limitation: percs slowly slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly
GRP: Gravel Pits-----	---	---	---	---
Gs: Goessel-----	Limitation: percs slowly	Limitation: percs slowly slow intake wetness	Limitation: percs slowly wetness	Limitation: percs slowly
Ho: Hobbs-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
INT: Intermittent Lakes-----	---	---	---	---
Ir: Irwin-----	Limitation: deep to water	Limitation: percs slowly	Limitation: percs slowly	Limitation: percs slowly
Is: Irwin-----	Limitation: deep to water	Limitation: percs slowly slope	Limitation: percs slowly	Limitation: percs slowly
It: Irwin-----	Limitation: deep to water	Limitation: percs slowly slope	Limitation: percs slowly	Limitation: percs slowly
Ka: Kaski-----	Limitation: deep to water	Limitation: flooding	Favorable	Favorable
La: Ladysmith-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Lb: Ladysmith-----	Limitation: percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
Ld: Lela-----	Limitation: deep to water	Limitation: erodes easily flooding percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
Drummond-----	Limitation: excess sodium percs slowly	Limitation: percs slowly wetness droughty	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily excess sodium droughty

WATER MANAGEMENT--Continued
Harvey 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
Le: Lesho-----	Limitation: flooding cutbanks cave	Limitation: flooding wetness	Limitation: too sandy wetness	Favorable
Na: Naron-----	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
Nb: Naron-----	Limitation: deep to water	Limitation: soil blowing	Limitation: soil blowing	Favorable
Pa: Pratt-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: too sandy soil blowing	Limitation: droughty
Pc: Pratt-----	Limitation: cutbanks cave	Limitation: fast intake wetness droughty	Limitation: too sandy wetness soil blowing	Limitation: wetness droughty
Carwile-----	Limitation: percs slowly	Limitation: percs slowly wetness soil blowing	Limitation: erodes easily wetness soil blowing	Limitation: erodes easily percs slowly rooting depth
Pt: Pratt-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Tivoli-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
Ro: Rosehill-----	Limitation: deep to water	Limitation: percs slowly slow intake depth to rock	Limitation: percs slowly depth to rock	Limitation: percs slowly depth to rock
Rs: Rosehill-----	Limitation: deep to water	Limitation: percs slowly slope slow intake	Limitation: percs slowly depth to rock	Limitation: percs slowly depth to rock
Sm: Smolan-----	Limitation: deep to water	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly	Limitation: erodes easily percs slowly
Tv: Tivoli-----	Limitation: deep to water	Limitation: fast intake slope droughty	Limitation: slope too sandy soil blowing	Limitation: slope droughty
W: Water-----	---	---	---	---

WATER MANAGEMENT--Continued
Harvey 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
015VE: Verdigris-----	85	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.41	Very limited Deep to water	1.00
113CB: Cass-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.70	Very limited Deep to water	1.00
113TO: Tobin-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.60	Very limited Deep to water	1.00
115CM: Clime-----	90	Somewhat limited Depth to bedrock	0.11	Somewhat limited Thin layer Hard to pack	0.86 0.50	Very limited Deep to water	1.00
115CP: Clime-----	90	Somewhat limited Depth to bedrock	0.11	Somewhat limited Thin layer Hard to pack	0.86 0.50	Very limited Deep to water	1.00
115WB: Wells-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping Seepage	0.97 0.06	Very limited Deep to water	1.00
115WC: Wells-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping Seepage	0.97 0.06	Very limited Deep to water	1.00
173EA: Elandco-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.82	Very limited Deep to water	1.00
173EB: Elandco-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.82	Very limited Deep to water	1.00
173EC: Elandco-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.82	Very limited Deep to water	1.00
173TB: Tabler-----	60	Not limited		Somewhat limited Hard to pack	0.16	Very limited Deep to water	1.00
Drummond-----	40	Not limited		Somewhat limited Piping	0.02	Somewhat limited Deep to water Cutbanks cave Salty water	0.81 0.10 0.01
173VB: Vanoss-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.43	Very limited Deep to water	1.00
1191: Blazefork-----	90	Somewhat limited Seepage	0.05	Not limited		Somewhat limited Slow refill Deep to water Cutbanks cave	0.95 0.81 0.10
1324: Carway-----	50	Somewhat limited Seepage	0.70	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Deep to water	1.00
Carbika-----	30	Somewhat limited Seepage	0.70	Very limited Ponding Depth to saturated zone Piping	1.00 1.00 0.40	Very limited Deep to water	1.00
1357: Carway-----	40	Somewhat limited Seepage	0.70	Very limited Ponding	1.00	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Harvey 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
Dillhut-----	30	Very limited Seepage	1.00	Depth to saturated zone Very limited Depth to saturated zone Seepage Piping	1.00 1.00 0.53	Very limited Deep to water	1.00
Solvay-----	30	Very limited Seepage	1.00	Somewhat limited Seepage Depth to saturated zone	0.56 0.43	Very limited Cutbanks cave Deep to water	1.00 0.25
1553: Darlow-----	70	Somewhat limited Seepage	0.70	Very limited Piping Salinity Seepage	1.00 0.12 0.12	Very limited Deep to water	1.00
Elmer-----	20	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.10	Very limited Deep to water	1.00
1554: Dillhut-----	70	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage Piping	1.00 1.00 0.53	Very limited Deep to water	1.00
1556: Dillhut-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Deep to water	1.00
Solvay-----	30	Very limited Seepage	1.00	Somewhat limited Seepage Depth to saturated zone	0.56 0.43	Very limited Cutbanks cave Deep to water	1.00 0.25
2391: Kaskan-----	75	Very limited Seepage	1.00	Somewhat limited Seepage	0.43	Very limited Deep to water	1.00
2395: Kisiwa-----	90	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage Piping	1.00 1.00 1.00 1.00	Very limited Deep to water	1.00
2556: Langdon-----	50	Very limited Seepage	1.00	Somewhat limited Seepage	0.50	Very limited Deep to water	1.00
2812: Mahone-----	95	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.93	Very limited Deep to water	1.00
2957: Nickerson-----	50	Very limited Seepage	1.00	Very limited Piping Seepage Depth to saturated zone	1.00 0.76 0.43	Very limited Cutbanks cave Deep to water	1.00 0.25
Punkin-----	50	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Deep to water	1.00
3181: Pratt-----	45	Very limited Seepage	1.00	Somewhat limited Seepage	0.86	Very limited Deep to water	1.00
Turon-----	30	Very limited Seepage	1.00	Somewhat limited Piping Seepage	0.87 0.77	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Harvey 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
3190: Punkin-----	90	Not limited		Very limited Hard to pack Seepage	1.00 0.02	Very limited Deep to water	1.00
3191: Punkin-----	70	Not limited		Very limited Hard to pack Seepage	1.00 0.02	Very limited Deep to water	1.00
Taver-----	20	Somewhat limited Seepage	0.70	Somewhat limited Seepage	0.00	Very limited Deep to water	1.00
3511: Saltcreek-----	70	Somewhat limited Seepage	0.70	Not limited		Very limited Deep to water	1.00
Naron, sandy substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.90	Very limited Deep to water	1.00
3540: Solvay-----	90	Very limited Seepage	1.00	Somewhat limited Seepage Depth to saturated zone	0.44 0.43	Very limited Cutbanks cave Deep to water	1.00 0.25
3639: Taver-----	90	Somewhat limited Seepage	0.70	Somewhat limited Seepage	0.00	Very limited Deep to water	1.00
3641: Tivin-----	45	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Deep to water	1.00
Dillhut-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Deep to water	1.00
3900: Warnut-----	75	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage	1.00 1.00 0.89	Very limited Cutbanks cave	1.00
3966: Willowbrook-----	90	Very limited Seepage	1.00	Very limited Seepage Depth to saturated zone	1.00 0.43	Very limited Cutbanks cave Deep to water	1.00 0.25
Ad: Fluents-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.88	Very limited Deep to water	1.00
Ba: Clime-----	70	Somewhat limited Depth to bedrock Slope	0.11 0.00	Somewhat limited Thin layer Hard to pack	0.85 0.50	Very limited Deep to water	1.00
Hobbs-----	30	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.65	Very limited Deep to water	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Somewhat limited Seepage	0.57	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
Cc: Clark-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.12	Very limited Deep to water	1.00
Cd: Clime-----	100	Somewhat limited		Somewhat limited		Very limited	

WATER MANAGEMENT--Continued
Harvey 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
		Depth to bedrock	0.11	Thin layer Hard to pack	0.86 0.50	Deep to water	1.00
Ce: Clime-----	100	Somewhat limited Depth to bedrock	0.19	Somewhat limited Thin layer Hard to pack	0.93 0.50	Very limited Deep to water	1.00
Cf: Clime-----	100	Somewhat limited Depth to bedrock	0.11	Somewhat limited Thin layer Hard to pack	0.86 0.50	Very limited Deep to water	1.00
Cm: Clime-----	100	Somewhat limited Depth to bedrock	0.19	Somewhat limited Thin layer Hard to pack	0.93 0.50	Very limited Deep to water	1.00
Cr: Crete-----	100	Somewhat limited Seepage	0.57	Not limited		Very limited Deep to water	1.00
Ct: Crete-----	100	Somewhat limited Seepage	0.57	Not limited		Very limited Deep to water	1.00
De: Detroit-----	100	Somewhat limited Seepage	0.05	Not limited		Very limited Deep to water	1.00
Dp: Dillwyn-----	65	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.18	Very limited Cutbanks cave Deep to water	1.00 0.00
Plevna-----	35	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Cutbanks cave	1.00
Dt: Dillwyn-----	55	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.18	Very limited Cutbanks cave Deep to water	1.00 0.00
Tivoli-----	45	Very limited Seepage	1.00	Somewhat limited Seepage	0.99	Very limited Deep to water	1.00
Du: Drummond-----	75	Not limited		Somewhat limited Depth to saturated zone Salinity	0.43 0.12	Very limited Slow refill Salty water Deep to water Cutbanks cave	1.00 0.50 0.25 0.10
Fa: Farnum-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping Seepage	0.18 0.08	Very limited Deep to water	1.00
Fc: Farnum-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.08	Very limited Deep to water	1.00
Fd: Farnum-----	100	Somewhat limited Seepage	0.70	Somewhat limited Seepage Piping	0.08 0.06	Very limited Deep to water	1.00
Fe: Farnum-----	100	Somewhat limited Seepage	0.70	Somewhat limited Seepage Piping	0.08 0.05	Very limited Deep to water	1.00
Fs: Farnum-----	65	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.11	Very limited Deep to water	1.00

WATER MANAGEMENT--Continued
Harvey 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
Drummond-----	35	Not limited		Seepage Not limited	0.08	Very limited Slow refill Deep to water Cutbanks cave Salty water	1.00 0.81 0.10 0.01
Gc: Geary-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.06	Very limited Deep to water	1.00
Gd: Geary-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.08	Very limited Deep to water	1.00
Ge: Geary-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.06	Very limited Deep to water	1.00
Go: Goessel-----	100	Not limited		Somewhat limited Hard to pack Depth to saturated zone	0.98 0.86	Very limited Deep to water	1.00
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Not limited		Somewhat limited Hard to pack Depth to saturated zone	0.98 0.86	Very limited Deep to water	1.00
Ho: Hobbs-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.65	Very limited Deep to water	1.00
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Not limited		Somewhat limited Hard to pack	0.21	Very limited Deep to water	1.00
Is: Irwin-----	100	Not limited		Somewhat limited Hard to pack	0.21	Very limited Deep to water	1.00
It: Irwin-----	100	Not limited		Somewhat limited Hard to pack	0.23	Very limited Deep to water	1.00
Ka: Kaski-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.76	Very limited Deep to water	1.00
La: Ladysmith-----	100	Somewhat limited Seepage	0.01	Somewhat limited Hard to pack	0.99	Very limited Deep to water	1.00
Lb: Ladysmith-----	100	Somewhat limited Seepage	0.01	Somewhat limited Hard to pack	0.99	Very limited Deep to water	1.00
Ld: Lela-----	60	Not limited		Somewhat limited Hard to pack	0.39	Very limited Deep to water	1.00
Drummond-----	40	Not limited		Not limited		Very limited Slow refill Deep to water Cutbanks cave Salty water	1.00 0.81 0.10 0.01

WATER MANAGEMENT--Continued
Harvey 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
Le: Lesho-----	100	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.43 0.21	Very limited Cutbanks cave Deep to water	1.00 0.25
Na: Naron-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Deep to water	1.00
Nb: Naron-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Deep to water	1.00
Pa: Pratt-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.57	Very limited Deep to water	1.00
Pc: Pratt-----	60	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.57	Very limited Cutbanks cave	1.00
Carwile-----	40	Somewhat limited Seepage	0.57	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
Pt: Pratt-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.57	Very limited Deep to water	1.00
Tivoli-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.99	Very limited Deep to water	1.00
Ro: Rosehill-----	100	Somewhat limited Depth to bedrock	0.05	Very limited Hard to pack Thin layer	1.00 0.74	Very limited Deep to water	1.00
Rs: Rosehill-----	100	Somewhat limited Depth to bedrock	0.05	Very limited Hard to pack Thin layer	1.00 0.74	Very limited Deep to water	1.00
Sm: Smolan-----	90	Somewhat limited Seepage	0.05	Somewhat limited Hard to pack	0.42	Very limited Deep to water	1.00
Tv: Tivoli-----	100	Very limited Seepage Slope	1.00 0.12	Somewhat limited Seepage	0.99	Very limited Deep to water	1.00
W: Water-----	100	Not rated		Not rated		Not rated	

SANITARY FACILITIES
Harvey 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
Harvey 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
Harvey 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
015VE: Verdigris-----	85	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage Slope	1.00 0.50 0.00
113CB: Cass-----	100	Very limited Filtering capacity Flooding	1.00 0.40	Very limited Seepage Flooding	1.00 0.40
113TO: Tobin-----	100	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
115CM: Clime-----	90	Very limited Restricted permeability Depth to bedrock	1.00 1.00	Very limited Depth to soft bedrock Slope	1.00 0.00
115CP: Clime-----	90	Very limited Restricted permeability Depth to bedrock	1.00 1.00	Very limited Depth to soft bedrock Slope	1.00 0.67
115WB: Wells-----	90	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage Slope	0.50 0.00
115WC: Wells-----	90	Somewhat limited Restricted permeability	0.50	Somewhat limited Slope Seepage	0.67 0.50
173EA: Elandco-----	100	Somewhat limited Restricted permeability Flooding	0.50 0.40	Somewhat limited Seepage Flooding	0.50 0.40
173EB: Elandco-----	100	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
173EC: Elandco-----	100	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
173TB: Tabler-----	60	Very limited Restricted permeability	1.00	Not limited	
Drummond-----	40	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone	0.71
173VB: Vanoss-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage Slope	0.50 0.00
1191: Blazefork-----	90	Very limited Restricted permeability Depth to saturated zone Flooding	1.00 1.00 0.40	Somewhat limited Depth to saturated zone Flooding	0.71 0.40
1324: Carway-----	50	Very limited Restricted permeability Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Seepage	1.00 0.50
Carbika-----	30	Very limited		Very limited	

SANITARY FACILITIES--Continued
Harvey 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
1357: Carway-----	40	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Restricted permeability	0.50		
		Very limited Restricted permeability	1.00	Very limited Ponding	1.00
Dillhut-----	30	Ponding	1.00	Seepage	0.50
		Depth to saturated zone	1.00		
		Very limited Restricted permeability	1.00	Very limited Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.00
Solvay-----	30	Filtering capacity	1.00		
		Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
		Restricted permeability	0.68	Depth to saturated zone	1.00
1553: Darlow-----	70	Very limited Restricted permeability	1.00	Not limited	
Elmer-----	20	Very limited Restricted permeability	1.00	Very limited Seepage	1.00
1554: Dillhut-----	70	Very limited Restricted permeability	1.00	Very limited Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.00
		Filtering capacity	1.00	Slope	0.00
1556: Dillhut-----	30	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Restricted permeability	0.50	Slope	0.00
Solvay-----	30	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
		Restricted permeability	0.68	Depth to saturated zone	1.00
2391: Kaskan-----	75	Very limited Flooding Filtering capacity	1.00	Very limited Flooding Seepage	1.00
		Depth to saturated zone	0.43		1.00
2395: Kisiwa-----	90	Very limited Restricted permeability	1.00	Very limited Ponding	1.00
		Ponding	1.00	Seepage	1.00
		Depth to saturated zone	1.00		
		Filtering capacity	1.00		
2556: Langdon-----	50	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Slope	0.00	Slope	1.00
2812: Mahone-----	95	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Restricted permeability	0.50	Flooding	0.40
		Depth to saturated zone	0.43		
		Flooding	0.40		

SANITARY FACILITIES--Continued
Harvey 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
2957: Nickerson-----	50	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
Punkin-----	50	Filtering capacity	1.00	Depth to saturated zone	1.00
		Very limited Restricted permeability	1.00	Very limited Seepage	1.00
		Filtering capacity	1.00		
3181: Pratt-----	45	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
Turon-----	30	Very limited Restricted permeability	1.00	Slope	0.09
		Filtering capacity	1.00	Very limited Seepage	1.00
				Slope	0.09
3190: Punkin-----	90	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.50
3191: Punkin-----	70	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.50
Taver-----	20	Very limited Restricted permeability	1.00	Not limited	
3511: Saltcreek-----	70	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.50
Naron, sandy substratum-----	30	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Restricted permeability	0.50		
3540: Solvay-----	90	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
		Restricted permeability	0.68	Depth to saturated zone	1.00
3639: Taver-----	90	Very limited Restricted permeability	1.00	Not limited	
3641: Tivin-----	45	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Slope	0.16	Slope	1.00
Dillhut-----	40	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Restricted permeability	0.50	Slope	0.09
3900: Warnut-----	75	Very limited Ponding	1.00	Very limited Ponding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
3966: Willowbrook-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ad: Fluents-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00

SANITARY FACILITIES--Continued
Harvey 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
Ba: Clime-----	70	Restricted permeability	0.50	Slope	1.00
		Slope	0.16	Seepage	0.50
Hobbs-----	30	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
BOP: Borrow Pits-----	100	Slope	0.37		
		Very limited Flooding	1.00	Very limited Flooding	1.00
Ca: Carwile-----	100	Restricted permeability	0.50	Seepage	0.50
		Depth to saturated zone	1.00		
Cc: Clark-----	100	Not rated		Not rated	
		Very limited Restricted permeability	1.00	Very limited Depth to saturated zone	1.00
Cd: Clime-----	100	Depth to saturated zone	1.00	Seepage	0.32
		Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Ce: Clime-----	100	Slope		Slope	0.00
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
Cf: Clime-----	100	Depth to bedrock	1.00	Slope	0.00
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
Cm: Clime-----	100	Depth to bedrock	1.00	Slope	0.67
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
Cr: Crete-----	100	Depth to bedrock	1.00	Slope	0.33
		Slope	0.04	Very limited Depth to soft bedrock	1.00
Ct: Crete-----	100	Very limited Restricted permeability	1.00	Slope	1.00
		Somewhat limited Seepage	0.32		
De: Detroit-----	100	Very limited Restricted permeability	1.00	Somewhat limited Seepage	0.32
		Flooding	0.40	Somewhat limited Flooding	0.40
Dp: Dillwyn-----	65	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
Dt: Dillwyn-----	55	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00

SANITARY FACILITIES--Continued
Harvey 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
Tivoli-----	45	Very limited Filtering capacity Slope	1.00 0.16	Very limited Seepage Slope	1.00 1.00
Du: Drummond-----	75	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
Fa: Farnum-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Fc: Farnum-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Fd: Farnum-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage Slope	0.50 0.00
Fe: Farnum-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Slope Seepage	0.67 0.50
Fs: Farnum-----	65	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Drummond-----	35	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone	0.71
Gc: Geary-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage	0.50
Gd: Geary-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Seepage Slope	0.50 0.00
Ge: Geary-----	100	Somewhat limited Restricted permeability	0.50	Somewhat limited Slope Seepage	0.67 0.50
Go: Goessel-----	100	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone	0.81
GRP: Gravel Pits-----	100	Not rated		Not rated	
Gs: Goessel-----	100	Very limited Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited Depth to saturated zone Slope	0.81 0.00
Ho: Hobbs-----	100	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
INT: Intermittent Lakes--	100	Not rated		Not rated	
Ir: Irwin-----	100	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
Is: Irwin-----	100	Very limited		Somewhat limited	

SANITARY FACILITIES--Continued
Harvey 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
It: Irwin-----	100	Restricted permeability	1.00	Slope	0.67
		Very limited Restricted permeability	1.00	Somewhat limited Slope	0.33
Ka: Kaski-----	100	Very limited Flooding Restricted permeability	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
		Very limited Restricted permeability	1.00	Not limited	
Lb: Ladysmith-----	100	Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
		Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding	1.00
Ld: Lela-----	60	Very limited Restricted permeability	1.00	Somewhat limited Depth to saturated zone	0.71
		Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding	1.00
Le: Lesho-----	100	Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
		Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
Na: Naron-----	100	Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
		Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
Nb: Naron-----	100	Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
		Very limited Flooding Restricted permeability	1.00 1.00	Very limited Flooding Seepage	1.00 1.00
Pa: Pratt-----	100	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Very limited Filtering capacity	1.00	Very limited Seepage	1.00
Pc: Pratt-----	60	Very limited Depth to saturated zone Filtering capacity	1.00 1.00	Very limited Seepage	1.00
		Very limited Depth to saturated zone Filtering capacity	1.00 1.00	Very limited Seepage	1.00
Carwile-----	40	Very limited Restricted permeability	1.00	Very limited Depth to saturated zone	1.00
		Very limited Restricted permeability	1.00	Very limited Depth to saturated zone	1.00
Pt: Pratt-----	60	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Very limited Filtering capacity	1.00	Very limited Seepage	1.00
Tivoli-----	40	Very limited Filtering capacity	1.00	Very limited Seepage	1.00
		Very limited Filtering capacity	1.00	Very limited Seepage	1.00
Ro: Rosehill-----	100	Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
		Very limited Restricted permeability	1.00	Very limited Depth to soft bedrock	1.00
Rs: Rosehill-----	100	Very limited		Very limited	

SANITARY FACILITIES--Continued
Harvey 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
Sm: Smolan-----	90	Restricted permeability	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.50
		Very limited Restricted permeability	1.00	Somewhat limited Slope	0.00
Tv: Tivoli-----	100	Very limited Slope	1.00	Very limited Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
W: Water-----	100	Not rated		Not rated	

SANITARY FACILITIES--Continued
Harvey 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
015VE: Verdigris-----	85	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
113CB: Cass-----	100	Very limited Seepage Flooding	1.00 0.40	Very limited Seepage Flooding	1.00 0.40	Somewhat limited Seepage	0.50
113TO: Tobin-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
115CM: Clime-----	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 Hard to compact Too clayey	1.00 1.00 0.50
115CP: Clime-----	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 Hard to compact Too clayey	1.00 1.00 0.50
115WB: Wells-----	90	Not limited		Not limited		Not limited	
115WC: Wells-----	90	Not limited		Not limited		Not limited	
173EA: Elandco-----	100	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.40	Not limited	
173EB: Elandco-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
173EC: Elandco-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Not limited	
173TB: Tabler-----	60	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Drummond-----	40	Very limited Depth to saturated zone Too clayey Seepage	1.00 1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Too clayey Hard to compact	1.00 1.00
173VB: Vanoss-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
1191: Blazefork-----	90	Very limited Depth to saturated zone Too clayey Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Somewhat limited Too clayey	0.50
1324: Carway-----	50	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Hard to compact Too clayey	1.00 1.00 1.00 0.50
Carbika-----	30	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Too clayey	1.00 1.00 0.50
1357: Carway-----	40	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Ponding Depth to saturated zone Hard to compact Too clayey	1.00 1.00 1.00 0.50
Dillhut-----	30	Very limited Depth to saturated zone Too Sandy	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00	Very limited Too Sandy Seepage Depth to saturated zone	1.00 1.00 1.00
Solvay-----	30	Very limited		Very limited		Somewhat limited	

SANITARY FACILITIES--Continued
Harvey 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
1553: Darlow----- Elmer-----	70	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
		Very limited Sodium content	1.00	Not limited		Very limited Sodium content	1.00
		Very limited Sodium content Seepage	1.00 1.00	Not limited		Very limited Sodium content Seepage	1.00 0.16
1554: Dillhut-----	70	Very limited Depth to saturated zone	1.00	Very limited Seepage	1.00	Very limited Too Sandy	1.00
		Too Sandy	1.00	Depth to saturated zone	1.00	Seepage	1.00
						Depth to saturated zone	1.00
1556: Dillhut----- Solvay-----	30	Very limited Seepage	1.00	Very limited Seepage	1.00	Not limited	
		Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Seepage	0.50
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
2391: Kaskan-----	75	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Too Sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Too Sandy	1.00	Seepage	1.00		
		Seepage	1.00				
2395: Kisiwa-----	90	Very limited Depth to saturated zone	1.00	Very limited Ponding	1.00	Very limited Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Sodium content	1.00			Seepage	1.00
		Seepage	1.00			Sodium content	1.00
2556: Langdon-----	50	Too clayey	1.00			Too clayey	1.00
		Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Too Sandy	1.00
		Too Sandy	1.00	Slope	0.00	Seepage	1.00
		Slope	0.00			Slope	0.00
2812: Mahone-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Seepage	0.50
		Seepage	1.00	Seepage	1.00		
		Flooding	0.40	Flooding	0.40		
2957: Nickerson-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Too Sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	1.00			Depth to saturated zone	0.09
Punkin-----	50	Very limited Seepage	1.00	Not limited		Very limited Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
		Sodium content	1.00			Sodium content	1.00
3181: Pratt-----	45	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
		Very limited Too Sandy	1.00	Very limited Seepage	1.00	Very limited Seepage	1.00
						Too Sandy	0.50
3190: Punkin-----	90	Very limited Sodium content	1.00	Not limited		Very limited Sodium content	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
3191: Punkin-----	70	Very limited Sodium content	1.00	Not limited		Very limited Sodium content	1.00
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
Taver-----	20	Somewhat limited		Not limited		Very limited	

SANITARY FACILITIES--Continued
Harvey 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
		Too clayey	0.50			Hard to compact Too clayey	1.00 0.50
3511: Saltcreek-----	70	Very limited Too clayey	1.00	Not limited		Very limited Too clayey	1.00
Naron, sandy substratum-----	30	Very limited		Very limited		Hard to compact Somewhat limited	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
3540: Solvay-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Seepage	0.50
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
3639: Taver-----	90	Somewhat limited Too clayey	0.50	Not limited		Very limited Hard to compact Too clayey	1.00 0.50
3641: Tivin-----	45	Very limited Seepage Too Sandy Slope	1.00 1.00 0.16	Very limited Seepage Slope	1.00 0.16	Very limited Too Sandy Seepage Slope	1.00 1.00 0.16
Dillhut-----	40	Very limited Seepage	1.00	Very limited Seepage	1.00	Not limited	
3900: Warnut-----	75	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding	1.00	Very limited Ponding	1.00
		Too Sandy Seepage	1.00 1.00	Depth to saturated zone Seepage	1.00	Depth to saturated zone Seepage Too Sandy	1.00 1.00 0.50
3966: Willowbrook-----	90	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited Too Sandy Seepage	1.00 1.00
		Too Sandy	1.00			Depth to saturated zone	0.09
Ad: Fluvents-----	100	Very limited Flooding Too clayey Slope	1.00 0.50 0.16	Very limited Flooding Slope	1.00 0.16	Somewhat limited Too clayey Slope	0.50 0.16
Ba: Clime-----	70	Very limited Depth to bedrock Too clayey Seepage Slope	1.00 1.00 1.00 0.37	Very limited Depth to bedrock Slope	1.00 0.37	Very limited Depth to bedrock Too clayey Hard to compact Slope	1.00 1.00 1.00 0.37
Hobbs-----	30	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Hard to compact	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	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
Cc: Clark-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Cd: Clime-----	100	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	1.00 1.00 1.00
Ce: Clime-----	100	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	1.00 1.00 1.00
Cf: Clime-----	100	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	1.00 1.00 1.00

SANITARY FACILITIES--Continued
Harvey 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
Cm: Cline-----	100	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
Cr: Crete-----	100	Somewhat limited Too clayey	0.50	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Ct: Crete-----	100	Not limited		Not limited		Very limited Too clayey Hard to compact	1.00 1.00
De: Detroit-----	100	Very limited Too clayey Flooding	1.00 0.40	Somewhat limited Flooding	0.40	Very limited Too clayey Hard to compact	1.00 1.00
Dp: Dillwyn-----	65	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Seepage	1.00
Plevna-----	35	Too Sandy	1.00			Depth to saturated zone	0.86
		Very limited Flooding	1.00	Very limited Flooding	1.00	Too Sandy	0.50
		Depth to saturated zone Seepage	1.00 1.00	Depth to saturated zone Seepage	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 0.50
Dt: Dillwyn-----	55	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Seepage	1.00
Tivoli-----	45	Too Sandy	1.00			Depth to saturated zone	0.86
		Very limited Seepage	1.00	Very limited Seepage	1.00	Too Sandy	0.50
		Too Sandy Slope	1.00 0.16	Slope	0.16	Very limited Too Sandy Seepage Slope	1.00 1.00 0.16
Du: Drummond-----	75	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Hard to compact	1.00
Fa: Farnum-----	100	Somewhat limited Too clayey	0.50	Not limited		Too clayey Depth to saturated zone	0.50 0.09
Fc: Farnum-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Fd: Farnum-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Fe: Farnum-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Fs: Farnum-----	65	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Drummond-----	35	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Hard to compact	1.00
						Too clayey	0.50
Gc: Geary-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Gd: Geary-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Ge: Geary-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Go: Goessel-----	100	Very limited Too clayey	1.00	Somewhat limited Depth to saturated zone	0.19	Very limited Too clayey	1.00

SANITARY FACILITIES--Continued
Harvey 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
		Depth to saturated zone	0.86			Hard to compact	1.00
						Depth to saturated zone	0.47
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Very limited Too clayey	1.00	Somewhat limited Depth to saturated zone	0.19	Very limited Too clayey	1.00
		Depth to saturated zone	0.86			Hard to compact	1.00
						Depth to saturated zone	0.47
Ho: Hobbs-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Hard to compact	1.00
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Is: Irwin-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
It: Irwin-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Ka: Kaski-----	100	Very limited Flooding Too clayey	1.00 0.50	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
La: Ladysmith-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Lb: Ladysmith-----	100	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Ld: Lela-----	60	Very limited Flooding Too clayey	1.00 1.00	Very limited Flooding	1.00	Very limited Too clayey Hard to compact	1.00 1.00
Drummond-----	40	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Hard to compact Too clayey	1.00 0.50
Le: Lesho-----	100	Very limited Flooding Depth to saturated zone Too Sandy	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited Seepage Too Sandy Depth to saturated zone	1.00 0.50 0.09
Na: Naron-----	100	Seepage	1.00				
Nb: Naron-----	100	Very limited Seepage	1.00	Not limited		Not limited	
Pa: Pratt-----	100	Very limited Seepage	1.00	Not limited		Not limited	
Pc: Pratt-----	100	Very limited Seepage Too Sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Seepage Too Sandy	1.00 0.50
	60	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Seepage Depth to saturated zone Too Sandy	1.00 1.00 0.50
Carwile-----	40	Too Sandy Very limited Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact	1.00 1.00

SANITARY FACILITIES--Continued
Harvey 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
Pt: Pratt-----	60	Very limited Seepage Too Sandy Slope	1.00 1.00 0.16	Very limited Seepage Slope	1.00 0.16	Too clayey	0.50
Tivoli-----	40	Very limited Seepage Too Sandy Slope	1.00 1.00 0.16	Very limited Seepage Slope	1.00 0.16	Very limited Too Sandy Seepage Slope	1.00 1.00 0.16
Ro: Rosehill-----	100	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	1.00 1.00 1.00
Rs: Rosehill-----	100	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	1.00 1.00 1.00
Sm: Smolan-----	90	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Tv: Tivoli-----	100	Very limited Seepage Too Sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too Sandy Seepage Slope	1.00 1.00 1.00
W: Water-----	100	Not rated		Not rated		Not rated	

AGRICULTURAL WASTE MANAGEMENT Harvey 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.

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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.

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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
015VE: Verdigris-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
113CB: Cass-----	100	Very limited Filtering capacity	1.00	Very limited Filtering capacity Flooding	1.00 0.40	Very limited Filtering capacity	1.00
113TO: Tobin-----	100	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
115CM: Clime-----	90	Very limited Restricted permeability Depth to bedrock Droughty	1.00 0.46 0.12	Very limited Restricted permeability Depth to bedrock Droughty	1.00 0.46 0.12	Very limited Restricted permeability Depth to bedrock Droughty	1.00 0.46 0.12
115CP: Clime-----	90	Very limited Restricted permeability Depth to bedrock Droughty	1.00 0.46 0.12	Very limited Restricted permeability Depth to bedrock Droughty	1.00 0.46 0.12	Very limited Restricted permeability Depth to bedrock Too steep for surface application Droughty	1.00 0.46 0.31 0.12
115WB: Wells-----	90	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too acid	0.14
115WC: Wells-----	90	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too steep for surface application Too acid	0.31 0.14
173EA: Elandco-----	100	Not limited		Somewhat limited Flooding	0.40	Not limited	
173EB: Elandco-----	100	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
173EC: Elandco-----	100	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
173TB: Tabler-----	60	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Drummond-----	40	Very limited Restricted permeability Runoff limitation Salinity	1.00 0.40 0.01	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
173VB: Vanoss-----	100	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too acid	0.07
1191: Blazefork-----	90	Very limited Restricted permeability Too acid Runoff limitation	1.00 0.50 0.40	Very limited Restricted permeability Too acid Flooding	1.00 1.00 0.40	Very limited Restricted permeability Too acid	1.00 1.00
1324: Carway-----	50	Very limited Restricted permeability Ponding Depth to saturated zone Runoff limitation Too acid	1.00 1.00 1.00 0.40 0.03	Very limited Restricted permeability Ponding Depth to saturated zone Too acid Filtering capacity	1.00 1.00 1.00 0.14 0.00	Very limited Restricted permeability Ponding Depth to saturated zone Too acid Filtering capacity	1.00 1.00 1.00 0.14 0.00
Carbika-----	30	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

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(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
1357: Carway-----	40	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Runoff limitation	0.40	Too acid	0.14	Too acid	0.14
		Too acid	0.03				
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
Dillhut-----	30	Runoff limitation	0.40	Too acid	0.14	Too acid	0.14
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Too acid	0.00	Too acid	0.01	Too acid	0.01
		Very limited		Somewhat limited		Somewhat limited	
		Depth to dense layer	1.00	Depth to	0.43	Depth to	0.43
Solvay-----	30	Depth to	0.43	saturated zone	0.03	saturated zone	0.03
		saturated zone		Too acid		Too acid	
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
		Too acid	0.01				
		Filtering capacity	0.00				
		Very limited		Very limited		Very limited	
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Too acid	0.62	Too acid	1.00	Too acid	1.00
Elmer-----	20	Salinity	0.01				
		Very limited		Very limited		Very limited	
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Depth to dense layer	1.00	Too acid	1.00	Too acid	1.00
		Too acid	0.68				
		Sodium content	0.32	Sodium content	0.32	Sodium content	0.32
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
1553: Darlow-----	70	Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability	1.00	permeability	1.00	permeability	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Too acid	0.62	Too acid	1.00	Too acid	1.00
		Salinity	0.01				
		Very limited		Very limited		Very limited	
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Depth to dense layer	1.00	Too acid	1.00	Too acid	1.00
		Too acid	0.68				
1554: Dillhut-----	70	Sodium content	0.32	Sodium content	0.32	Sodium content	0.32
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Restricted	1.00	Restricted	1.00	Restricted	1.00
		permeability		permeability		permeability	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Too acid	0.00	Too acid	0.01	Too acid	0.01
		Very limited		Very limited		Very limited	
1556: Dillhut-----	30	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.00	Too acid	0.01	Too acid	0.01
		Very limited		Somewhat limited		Somewhat limited	
		Depth to dense layer	1.00	Depth to	0.43	Depth to	0.43
		Depth to	0.43	saturated zone	0.03	saturated zone	0.03
		saturated zone		Too acid		Too acid	
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
		Too acid	0.01				
		Filtering capacity	0.00				
		Very limited		Very limited		Very limited	
2391: Kaskan-----	75	Flooding	1.00	Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00

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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
2395: Kisiwa-----	90	Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
2556: Langdon-----	50	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Very limited		Very limited		Very limited	
2812: Mahone-----	95	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.43	Too acid	0.99	Too acid	0.99
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
2957: Nickerson-----	50	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
Punkin-----	50	Runoff limitation	0.40	Runoff limitation	0.40	Runoff limitation	0.40
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
3181: Pratt-----	45	Leaching limitation	0.45	Leaching limitation	0.42	Leaching limitation	0.42
		Too acid	0.11	Too acid	0.42	Too acid	0.42
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
Turon-----	30	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
3190: Punkin-----	90	Runoff limitation	0.40	Runoff limitation	0.40	Runoff limitation	0.40
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
3191: Punkin-----	70	Runoff limitation	0.40	Runoff limitation	0.40	Runoff limitation	0.40
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
Taver-----	20	Very limited		Very limited		Very limited	

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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
3511: Saltcreek-----	70	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Runoff limitation	0.40				
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Naron, sandy substratum-----	30	Too acid	0.73	Too acid	1.00	Too acid	1.00
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
		Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.00	Filtering capacity	0.00	Filtering capacity	0.00
3540: Solvay-----	90	Very limited		Somewhat limited		Somewhat limited	
		Depth to dense layer	1.00	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Too acid	0.03	Too acid	0.03
		Runoff limitation	0.40	Filtering capacity	0.00	Filtering capacity	0.00
3639: Taver-----	90	Too acid	0.01				
		Filtering capacity	0.00				
		Very limited		Very limited		Very limited	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
3641: Tivin-----	45	Runoff limitation	0.40				
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.64	Droughty	0.64	Too steep for surface application	1.00
Dillhut-----	40	Leaching limitation	0.45	Slope	0.16	Droughty	0.64
		Slope	0.16	Too acid	0.01	Too steep for sprinkler application	0.39
		Too acid	0.00			Too acid	0.01
		Very limited		Very limited		Very limited	
3900: Walnut-----	75	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.00	Too acid	0.01	Too acid	0.01
						Too steep for surface application	0.00
		Very limited		Very limited		Very limited	
3966: Willowbrook-----	90	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
		Runoff limitation	0.40	Too acid	0.67	Too acid	0.67
		Too acid	0.18	Filtering capacity	0.00	Filtering capacity	0.00
3966: Willowbrook-----	90	Filtering capacity	0.00				
		Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Depth to dense layer	1.00	Flooding	1.00	Flooding	0.60
Ad: Fluvents-----	100	Flooding	0.60	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Too acid	0.43	Too acid	0.03	Too acid	0.03
		Depth to saturated zone	0.01				
		Very limited		Very limited		Very limited	
Ad: Fluvents-----	100	Flooding	1.00	Flooding	1.00	Flooding	1.00
		Slope	0.16	Slope	0.16	Too steep for surface application	1.00

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Harvey 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
Ba: Clime-----	70	Very limited Restricted permeability Droughty	1.00 0.80	Very limited Restricted permeability Droughty	1.00 0.80	Too steep for sprinkler application	0.39
						Very limited	1.00
						Restricted permeability	1.00
						Too steep for surface application	1.00
Hobbs-----	30	Depth to bedrock Slope	0.42 0.37	Depth to bedrock Slope	0.42 0.37	Droughty	0.80
						Too steep for sprinkler application	0.59
						Depth to bedrock	0.42
						Very limited Flooding	1.00
BOP: Borrow Pits-----	100	Not rated		Not rated		Not rated	
Ca: Carwile-----	100	Very limited Depth to saturated zone Restricted permeability Runoff limitation Too acid	1.00 1.00 0.40 0.02	Very limited Depth to saturated zone Restricted permeability Too acid	1.00 1.00 0.07	Very limited	1.00
						Depth to saturated zone	1.00
						Restricted permeability	1.00
						Too acid	0.07
Cc: Clark-----	100	Not limited		Not limited		Not limited	
Cd: Clime-----	100	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.58 0.46	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.58 0.46	Very limited	1.00
						Restricted permeability	0.58
						Droughty	0.46
Ce: Clime-----	100	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.80 0.71	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.80 0.71	Very limited	1.00
						Restricted permeability	0.80
						Droughty	0.71
						Depth to bedrock	0.31
Cf: Clime-----	100	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.54 0.46	Very limited Restricted permeability Droughty Depth to bedrock	1.00 0.54 0.46	Too steep for surface application	
						Very limited	1.00
						Restricted permeability	0.54
						Droughty	0.46
Cm: Clime-----	100	Very limited Restricted permeability Droughty	1.00 0.80	Very limited Restricted permeability Droughty	1.00 0.80	Depth to bedrock	0.08
						Too steep for surface application	
						Very limited	1.00
						Restricted permeability	1.00
Cr: Crete-----	100	Depth to bedrock Slope	0.71 0.04	Depth to bedrock Slope	0.71 0.04	Too steep for sprinkler application	0.80
						Droughty	0.71
						Depth to bedrock	0.22
						Too steep for surface application	
Ct: Crete-----	100	Very limited Restricted permeability Too acid	1.00 0.11	Very limited Restricted permeability Too acid	1.00 0.42	Very limited	1.00
						Restricted permeability	0.42
						Too acid	
Ct: Crete-----	100	Very limited Restricted permeability Too acid	1.00 0.11	Very limited Restricted permeability Too acid	1.00 0.42	Very limited	1.00
						Restricted permeability	0.42
						Too acid	

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Harvey 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
De: Detroit-----	100	Very limited Restricted permeability	1.00	Very limited Restricted permeability Flooding	1.00 0.40	Very limited Restricted permeability	1.00
Dp: Dillwyn-----	65	Very limited Filtering capacity Depth to saturated zone Leaching limitation Droughty	1.00 1.00 0.45 0.21	Very limited Filtering capacity Depth to saturated zone Droughty	1.00 1.00 0.21	Very limited Filtering capacity Depth to saturated zone Droughty	1.00 1.00 0.21
Plevna-----	35	Very limited Flooding Depth to saturated zone Runoff limitation Filtering capacity	1.00 1.00 0.40 0.00	Very limited Flooding Depth to saturated zone Filtering capacity	1.00 1.00 0.00	Very limited Flooding Depth to saturated zone Filtering capacity	1.00 1.00 0.00
Dt: Dillwyn-----	55	Very limited Filtering capacity Depth to saturated zone Leaching limitation Droughty	1.00 1.00 0.45 0.21	Very limited Filtering capacity Depth to saturated zone Droughty	1.00 1.00 0.21	Very limited Filtering capacity Depth to saturated zone Droughty	1.00 1.00 0.21
Tivoli-----	45	Very limited Filtering capacity Droughty Leaching limitation Slope	1.00 1.00 0.45 0.16	Very limited Filtering capacity Droughty Slope	1.00 1.00 0.16	Very limited Too steep for surface application Filtering capacity Droughty Too steep for sprinkler application	1.00 1.00 1.00 0.39
Du: Drummond-----	75	Very limited Restricted permeability Salinity Depth to saturated zone Runoff limitation Droughty	1.00 0.50 0.43 0.40 0.04	Very limited Restricted permeability Salinity Depth to saturated zone Droughty	1.00 1.00 0.43 0.04	Very limited Restricted permeability Salinity Depth to saturated zone Droughty	1.00 1.00 0.43 0.04
Fa: Farnum-----	100	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity	0.00
Fc: Farnum-----	100	Not limited		Not limited		Not limited	
Fd: Farnum-----	100	Not limited		Not limited		Not limited	
Fe: Farnum-----	100	Not limited		Not limited		Somewhat limited Too steep for surface application	0.31
Fs: Farnum-----	65	Not limited		Not limited		Not limited	
Drummond-----	35	Very limited Restricted permeability Runoff limitation Salinity	1.00 0.40 0.01	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Gc: Geary-----	100	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too acid	0.14
Gd: Geary-----	100	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too acid	0.14

AGRICULTURAL WASTE MANAGEMENT--Continued
Harvey 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
Ge: Geary-----	100	Somewhat limited Too acid	0.03	Somewhat limited Too acid	0.14	Somewhat limited Too steep for surface application Too acid	0.31 0.14
Go: Goessel-----	100	Very limited Restricted permeability Depth to saturated zone Runoff limitation	1.00 0.86 0.40	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone	1.00 0.86
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Goessel-----	100	Very limited Restricted permeability Depth to saturated zone Runoff limitation	1.00 0.86 0.40	Very limited Restricted permeability Depth to saturated zone	1.00 0.86	Very limited Restricted permeability Depth to saturated zone	1.00 0.86
Ho: Hobbs-----	100	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
INT: Intermittent Lakes--	100	Not rated		Not rated		Not rated	
Ir: Irwin-----	100	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Is: Irwin-----	100	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability Too steep for surface application	1.00 0.31
It: Irwin-----	100	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability Too steep for surface application	1.00 0.08
Ka: Kaski-----	100	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
La: Ladysmith-----	100	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Lb: Ladysmith-----	100	Very limited Restricted permeability Runoff limitation	1.00 0.40	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Ld: Lela-----	60	Very limited Restricted permeability Flooding Runoff limitation	1.00 0.60 0.40	Very limited Restricted permeability Flooding	1.00 1.00	Very limited Restricted permeability Flooding	1.00 0.60
Drummond-----	40	Very limited Restricted permeability Runoff limitation Salinity	1.00 0.40 0.01	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
Le: Lesho-----	100	Somewhat limited		Very limited		Somewhat limited	

AGRICULTURAL WASTE MANAGEMENT--Continued
Harvey 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
Na: Naron-----	100	Flooding	0.60	Flooding	1.00	Flooding	0.60
		Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
		Restricted permeability	0.30	Restricted permeability	0.22	Restricted permeability	0.22
Nb: Naron-----	100	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity	0.00
Pa: Pratt-----	100	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity	0.00	Somewhat limited Filtering capacity Too steep for surface application	0.00
		Very limited Filtering capacity Leaching limitation	1.00	Very limited Filtering capacity	1.00	Very limited Filtering capacity Too steep for surface application	1.00
			0.45				0.00
Pc: Pratt-----	60	Very limited Depth to saturated zone Filtering capacity Leaching limitation	1.00	Very limited Depth to saturated zone Filtering capacity	1.00	Very limited Depth to saturated zone Filtering capacity Too steep for surface application	1.00
Carwile-----	40	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching limitation	0.45			Too steep for surface application	0.00
Pt: Pratt-----	60	Very limited Depth to saturated zone Restricted permeability Runoff limitation Too acid	1.00	Very limited Depth to saturated zone Restricted permeability Too acid	1.00	Very limited Depth to saturated zone Restricted permeability Too acid	1.00
			1.00		1.00		1.00
			0.40		0.07		0.07
Tivoli-----	40	Very limited Filtering capacity	1.00	Very limited Filtering capacity	1.00	Very limited Filtering capacity Too steep for sprinkler application	1.00
		Droughty	0.98	Droughty	0.98	Too steep for surface application	1.00
		Leaching limitation Slope	0.45	Slope	0.16	Filtering capacity Too steep for sprinkler application	0.98
Ro: Rosehill-----	100	Slope	0.16			Too steep for sprinkler application	0.39
Rs: Rosehill-----	100	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00	Very limited Restricted permeability	1.00
		Droughty	0.67	Droughty	0.67	Droughty	0.67
		Runoff limitation Depth to bedrock	0.40	Depth to bedrock	0.16	Depth to bedrock	0.16
Sm: Smolan-----	90	Very limited		Very limited		Very limited	

AGRICULTURAL WASTE MANAGEMENT--Continued
Harvey 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
Tv: Tivoli-----	100	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
		Very limited Slope	1.00	Very limited Slope	1.00	Very limited Too steep for surface application	1.00
		Filtering capacity	1.00	Filtering capacity	1.00	Too steep for sprinkler application	1.00
		Droughty	1.00	Droughty	1.00	Filtering capacity	1.00
		Leaching limitation	0.45			Droughty	1.00
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

Harvey County, Kansas: KS079

							SPISP II Ratings		
MUSYM/SEQ#	COMPONENT/TEXTURE/MU%	HYD	KFACT	SURFACE DEPTH	% OM	Leaching (SLP)	Solution Adsorbed		
							Runoff (SSRP)	Runoff (SARP)	
015VE 1	VERDIGRIS SIL 85%	B	0.32	8"	3.0%	I	I	I	
113CB 1	CASS FSL 100%	B	0.20	7"	1.5%	H	I	I	
113TO 1	TOBIN SIL 100%	B	0.32	20"	2.5%	L	I	I	
115CM 1	CLIME SICL 90%	C	0.37	10"	3.0%	L	H	H	
115CP 1	CLIME SICL 90%	C	0.37	10"	3.0%	L	H	H	
115WB 1	WELLS L 90%	B	0.28	15"	2.5%	I	I	I	
115WC 1	WELLS L 90%	B	0.28	15"	2.5%	I	I	I	
1191 1	BLAZEFORK SICL 90%	D	0.37	3"	3.0%	V	H	H	
1324 1	CARWAY FSL 50%	D	0.20	7"	0.8%	V	H	H	
1324 2	CARBIKA SIL 30%	D	0.24	11"	1.5%	V	H	H	
1357 1	CARWAY LFS 40%	D	0.17	7"	0.8%	V	H	H	
1357 2	DILLHUT FS 30%	B	0.15	10"	0.5%	H (w)	I	I	
1357 3	SOLVAY LFS 30%	D	0.17	5"	1.3%	H (w)	H	H	
1553 1	DARLOW L 70%	C	0.43	5"	2.0%	L	H	H	
1553 2	ELMER FSL 20%	C	0.32	6"	1.5%	L	H	H	
1554 1	DILLHUT FS 70%	B	0.15	10"	0.5%	H (w)	I	I	
1556 1	DILLHUT FS 30%	B	0.15	4"	0.5%	H	I	I	
1556 2	SOLVAY FSL 30%	D	0.20	5"	1.3%	H (w)	H	H	
173EA 1	ELANDCO SIL 100%	B	0.43	40"	2.0%	L	I	I	
173EB 1	ELANDCO SIL 100%	B	0.43	40"	2.0%	L	I	I	
173EC 1	ELANDCO SIL 100%	B	0.43	40"	2.0%	L	I	I	
173TB 1	TABLER SIL 60%	D	0.49	9"	2.0%	V	H	H	
173TB 2	DRUMMOND SIL 40%	D	0.49	8"	0.8%	H (w)	H	H	
173VB 1	VANOSS SIL 100%	B	0.37	13"	2.0%	I	I	I	
2391 1	KASKAN SICL 75%	B	0.37	9"	3.0%	I	I	I	
2395 1	KISIWA L 90%	D	0.43	4"	2.5%	H (w)	H	H	
2556 1	LANGDON FS 50%	A	0.15	8"	0.5%	H	L	L	
2812 1	MAHONE LFS 95%	C	0.17	8"	0.4%	I	H	I	

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Harvey County, Kansas: KS079

2957 1	NICKERSON FSL 50%	B	0.17	6"	0.4% H (w)	I	I
2957 2	PUNKIN FSL 50%	D	0.32	6"	2.0% V	H	H
3181 1	PRATT FS 45%	A	0.15	8"	0.8% H	L	L
3181 2	TURON FS 30%	A	0.15	8"	0.5% H	L	L
3190 1	PUNKIN SIL 90%	D	0.43	4"	2.0% V	H	H
3191 1	PUNKIN SIL 70%	D	0.43	4"	2.0% V	H	H
3191 2	TAVER L 20%	D	0.28	7"	2.0% V	H	H
3511 1	SALTCREEK FSL 70%	C	0.20	5"	1.5% I	H	I
3511 2	NARON FSL 30%	B	0.20	7"	2.0% H	I	I
3540 1	SOLVAY LFS 90%	D	0.17	5"	0.8% H (w)	H	H
3639 1	TAVER L 90%	D	0.28	7"	2.0% V	H	H
3641 1	TIVIN FS 45%	A	0.15	7"	0.5% H	L	L
3641 2	DILLHUT FS 40%	B	0.15	4"	0.5% H	I	I
3900 1	WARNUT FSL 75%	D	0.20	2"	0.8% H (w)	H	H
3966 1	WILLOWBROOK FSL 90%	B	0.20	4"	1.5% H (w)	I	I
Ad 1	ALLUVIAL LAND SIL 100%	B	0.37	6"	1.3% H	I	H (s)
Ba 1	BREAKS SIC 70%	C	0.28	9"	2.5% L	H	H (s)
Ba 2	ALLUVIAL LAND SIL 30%	B	0.32	26"	3.0% L	I	I
BOP 1	BORROW PITS 100%		0.00	0"	0.0% ?	?	?
Ca 1	CARWILE FSL 100%	D	0.24	18"	2.0% H (w)	H	H
Cc 1	CLARK CL 100%	B	0.28	10"	1.5% I	I	I
Cd 1	CLIME SIC 100%	C	0.28	9"	2.5% L	H	H
Ce 1	CLIME SIC 100%	C	0.28	9"	2.5% L	H	H
Cf 1	CLIME SIC 100%	C	0.28	6"	2.5% L	H	H
Cm 1	CLIME SIC 100%	C	0.28	9"	2.5% L	H	H
Cr 1	CRETE SIL 100%	C	0.37	5"	3.0% L	H	H
Ct 1	CRETE SIL 100%	C	0.37	5"	3.0% L	H	H
De 1	DETROIT SICL 100%	C	0.37	11"	3.0% L	H	H
Dp 1	DILLWYN LFS 65%	A	0.17	8"	1.0% H (w)	L	L
Dp 2	PLEVNA FSL 35%	D	0.20	18"	1.5% H (w)	H	H

WIN-PST SPISP II
SOIL SENSITIVITY TO PESTICIDE LOSS RATING REPORT

Soils Data Table: SOIL_KS Sort Order: MUSYM

Harvey County, Kansas: KS079

Dt 1	DILLWYN LFS 55%	A	0.17	8"	1.0% H (w)	L	L
Dt 2	TIVOLI FS 45%	A	0.17	7"	0.5% H	L	L
Du 1	DRUMMOND L 100%	D	0.49	9"	0.8% H (w)	H	H
Fa 1	FARNUM FSL 100%	B	0.20	14"	1.5% I	I	I
Fc 1	FARNUM L 100%	B	0.28	14"	2.0% I	I	I
Fd 1	FARNUM L 100%	B	0.28	12"	2.0% I	I	I
Fe 1	FARNUM L 100%	B	0.28	11"	2.0% I	I	I
Fs 1	FARNUM L 65%	B	0.28	14"	2.0% I	I	I
Fs 2	SLICKSPOTS L 35%	D	0.49	8"	0.8% H (w)	H	H
Gc 1	GEARY SIL 100%	B	0.32	9"	2.5% I	I	I
Gd 1	GEARY SIL 100%	B	0.32	7"	2.5% I	I	I
Ge 1	GEARY SIL 100%	B	0.32	9"	2.5% I	I	I
Go 1	GOESSEL SIC 100%	D	0.28	15"	2.5% H (w)	H	H
GRP 1	GRAVEL PITS 100%		0.00	0"	0.0% ?	?	?
Gs 1	GOESSEL SIC 100%	D	0.28	15"	2.5% H (w)	H	H
Ho 1	HOBBS SIL 100%	B	0.32	26"	3.0% L	I	I
INT 1	INTERMITTENT LAKES 100%		0.00	0"	0.0% ?	?	?
Ir 1	IRWIN SICL 100%	D	0.32	13"	3.0% V	H	H
Is 1	IRWIN SICL 100%	D	0.32	11"	3.0% V	H	H
It 1	IRWIN SICL 100%	D	0.32	6"	3.0% V	H	H
Ka 1	KASKI L 100%	B	0.28	24"	2.0% L	I	I
La 1	LADYSMITH SICL 100%	D	0.37	10"	3.0% V	H	H
Lb 1	LADYSMITH SICL 100%	D	0.37	10"	3.0% V	H	H
Ld 1	LADYSMITH SICL 60%	D	0.43	11"	2.0% V	H	H
Ld 2	SLICKSPOTS SICL 40%	D	0.43	8"	0.8% H (w)	H	H
Le 1	LESHO L 100%	C	0.28	17"	2.0% H (w)	H	H
Na 1	NARON FSL 100%	B	0.20	12"	2.0% I	I	I
Nb 1	NARON FSL 100%	B	0.20	10"	2.0% I	I	I
Pa 1	PRATT LFS 100%	A	0.17	12"	0.8% H	L	L
Pc 1	PRATT LFS 60%	A	0.17	12"	0.8% H (w)	L	L

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Harvey County, Kansas: KS079

Pc 2	CARWILE FSL 40%	D	0.24	18"	2.0% H (w)	H	H
Pt 1	PRATT LFS 60%	A	0.17	12"	0.8% H	L	L
Pt 2	TIVOLI LFS 40%	A	0.17	7"	0.5% H	L	L
Ro 1	ROSEHILL SIC 100%	D	0.28	9"	2.0% V	H	H
Rs 1	ROSEHILL SIC 100%	D	0.28	9"	2.0% V	H	H
Sm 1	SMOLAN SICL 90%	C	0.37	8"	3.0% L	H	H
Tv 1	TIVOLI FS 100%	A	0.17	7"	0.5% H	L	I (s)
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
Harvey County, Kansas

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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
015VE: VERDIGRIS SOILS, FREQUENTLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	TULLY	No	hillside	---	---	---	---
113CB: CASS FINE SANDY LOAM, RARELY FLOODED	CASS	No	flood plain	---	---	---	---
	BRIDGEPORT CARWILE	No Yes	--- depression, paleoterrace	--- 2A	--- YES	--- NO	--- NO
113TO: TOBIN SILT LOAM, OCCASIONALLY FLOODED	TOBIN	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL	Yes	flood plain, marsh	2B3	YES	NO	NO
	UNNAMED HYDRIC SOILS	Yes	depression, flood plain	3	NO	NO	YES
	Unamed wet soils	Yes	depression	2A, 3, 2B3, 4	YES	YES	YES
115CM: CLIME SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
115CP: CLIME SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
115WB: WELLS LOAM, 1 TO 3 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	CLIME IRWIN	No No	hillside hillside	--- ---	--- ---	--- ---	--- ---
115WC: WELLS LOAM, 3 TO 7 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	CLIME IRWIN	No No	hillslope hillslope	--- ---	--- ---	--- ---	--- ---
173EA: ELANDCO SILT LOAM, RARELY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	drainageway	3, 2A	YES	NO	YES
	Unamed wet soils	Yes	drainageway	2B3, 4, 2A	YES	YES	NO
173EB: ELANDCO SILT LOAM, OCCASIONALLY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	Unamed wet soils	Yes	drainageway	2B3, 2A, 4, 3	YES	YES	YES
173EC: ELANDCO SILT LOAM, FREQUENTLY FLOODED	ELANDCO	No	flood plain	---	---	---	---
	Unamed wet soils	Yes	drainageway	2A, 3, 2B3, 4	YES	YES	YES
173TB: TABLER-DRUMMOND COMPLEX, 0 TO 1 PERCENT SLOPE	TABLER	No	paleoterrace	---	---	---	---
	DRUMMOND CARWILE	No Yes	terrace depression, paleoterrace	--- 2A	--- YES	--- NO	--- NO
	Unamed wet soils	Yes	depression	3, 2B3, 4	YES	YES	YES
173VB: VANOSS SILT LOAM, 1 TO 3 PERCENT SLOPES	VANOSS	No	paleoterrace	---	---	---	---
1191: BLAZEFORK SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPE, RARELY FLOODED	BLAZEFORK	No	flood plain	---	---	---	---
	TOBIN Unamed Wet Soils	No Yes	flood plain drainageway	--- 2A, 3, 4	--- YES	--- YES	--- YES
1324: CARWAY AND CARBIKA SOILS, 0 TO 1 PERCENT SLOPE	CARWAY	Yes	depression, interdune, paleoterrace	3, 2B3	YES	NO	YES
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3, 3	YES	NO	YES
	SOLVAY	No	interdune, paleoterrace	---	---	---	---

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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
1357: CARWAY-DILLHUT-SOLVAY COMPLEX, 0 TO 2 PERCENT SLOPES	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	DILLHUT	No	dune, paleoterrace	---	---	---	---
	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
1553: DARLOW-ELMER COMPLEX, 0 TO 2 PERCENT SLOPES	DARLOW	No	terrace	---	---	---	---
	ELMER	No	terrace	---	---	---	---
	PUNKIN	No	paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
1554: DILLHUT FINE SAND, 1 TO 3 PERCENT SLOPES	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	DILLHUT	No	dune, paleoterrace	---	---	---	---
	DILLWYN	No	interdune, dune, paleoterrace	---	---	---	---
1556: DILLHUT-SOLVAY COMPLEX, 0 TO 3 PERCENT SLOPES	DILLHUT	No	dune, paleoterrace	---	---	---	---
	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	DILLWYN	No	interdune, dune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
2391: KASKAN SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPE, FREQUENTLY FLOODED, CHANNELED	KASKAN	No	flood plain	---	---	---	---
	TOBIN Unnamed Wet Soils	No Yes	flood plain depression, drainage way	--- 2B1,2B2,2B3,4	--- YES	--- YES	--- NO
2395: KISIWA LOAM, 0 TO 1 PERCENT SLOPES	KISIWA	Yes	terrace, flood plain	3,2B3	YES	NO	YES
	PUNKIN	No	paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
2556: LANGDON FINE SAND, 0 TO 15 PERCENT SLOPES	LANGDON	No	dune, paleoterrace	---	---	---	---
	TIVIN	No	dune, paleoterrace	---	---	---	---
	TURON	No	dune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	WARNUT	Yes	interdune, depression, paleoterrace	2B3,3	YES	NO	YES
2812: MAHONE LOAMY FINE SAND, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	MAHONE	No	flood plain	---	---	---	---
	YAGGY	No	flood plain	---	---	---	---

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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
2957: NICKERSON-PUNKIN FINE SANDY LOAMS, 0 TO 2 PERCENT SLOPES	NICKERSON	No	terrace	---	---	---	---
	PUNKIN CARBIKA	No Yes	paleoterrace depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
3181: PRATT-TURON FINE SANDS, 1 TO 5 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	TURON	No	dune, paleoterrace	---	---	---	---
	HAYES	No	dune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
	WARNUT	Yes	interdune, depression, paleoterrace	2B3,3	YES	NO	YES
3190: PUNKIN SILT LOAM, 0 TO 1 PERCENT SLOPE	PUNKIN	No	paleoterrace	---	---	---	---
	DARLOW CARBIKA	No Yes	terrace depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	KISIWA	Yes	terrace, flood plain	3,2B3	YES	NO	YES
3191: PUNKIN-TAVER COMPLEX, 0 TO 1 PERCENT SLOPE	PUNKIN	No	paleoterrace	---	---	---	---
	TAVER	No	paleoterrace	---	---	---	---
	DARLOW CARBIKA	No Yes	terrace depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	KISIWA	Yes	terrace, flood plain	3,2B3	YES	NO	YES
3511: SALTCREEK AND NARON FINE SANDY LOAMS, 0 TO 1 PERCENT SLOPE	SALTCREEK	No	dune, paleoterrace	---	---	---	---
	NARON	No	dune, paleoterrace	---	---	---	---
3540: SOLVAY LOAMY FINE SAND, 0 TO 2 PERCENT SLOPES	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	HAYES	No	dune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES
3639: TAVER LOAM, 0 TO 1 PERCENT SLOPE	TAVER	No	paleoterrace	---	---	---	---
	SALTCREEK	No	dune, paleoterrace	---	---	---	---
	CARBIKA	Yes	depression, interdune, paleoterrace	2B3,3	YES	NO	YES

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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
3641: TIVIN-DILLHUT FINE SANDS, 0 TO 15 PERCENT SLOPES	TIVIN	No	dune, paleoterrace	---	---	---	---
	DILLHUT	No	dune, paleoterrace	---	---	---	---
	SOLVAY	No	interdune, paleoterrace	---	---	---	---
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
	WARNUT	Yes	interdune, depression, paleoterrace	2B3,3	YES	NO	YES
	PLEV	Yes	depression, interdune, paleoterrace	2B2	YES	NO	NO
3900: WARNUT FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	WARNUT	Yes	interdune, depression, paleoterrace	2B3,3	YES	NO	YES
	CARWAY	Yes	depression, interdune, paleoterrace	3,2B3	YES	NO	YES
3966: WILLOWBROOK FINE SANDY LOAM, 0 TO 1 PERCENT SLOPE, OCCASIONALLY FLOODED	WILLOWBROOK	No	flood plain	---	---	---	---
	NICKERSON	No	terrace	---	---	---	---
	KANZA	Yes	flood plain	2B3	YES	NO	NO
Ad: FLUVENTS, FREQUENTLY FLOODED	NINNESCAH	Yes	flood plain	2B3	YES	NO	NO
	FLUVENTS	No	flood plain	---	---	---	---
Ba: CLIME-HOBBS COMPLEX, 0 TO 20 PERCENT SLOPES	Unnamed wet soils	Yes	drainageway	3,2B3,4	YES	YES	YES
	CLIME	No	hillslope	---	---	---	---
	HOBBS	No	flood plain	---	---	---	---
BOP: BORROW PITS	Unnamed wet soils	Yes	drainageway	2A,2B3,4	YES	YES	NO
	BORROW PITS	Unranked	---	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
Ca: CARWILE FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
	CLARK	No	paleoterrace	---	---	---	---
Cc: CLARK CLAY LOAM, 1 TO 3 PERCENT SLOPES	CLARK	No	paleoterrace	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
Cd: CLIME SILTY CLAY, 1 TO 3 PERCENT SLOPES	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
	CLIME	No	hillslope	---	---	---	---
Ce: CLIME SILTY CLAY, 3 TO 6 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	drainageway	2A,3	YES	NO	YES
	Unnamed wet soils	Yes	depression	2B3,2A,3	YES	NO	YES
Cf: CLIME SILTY CLAY, 2 TO 6 PERCENT SLOPES, ERODED	CLIME	No	hillslope	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
Cm: CLIME COMPLEX, 6 TO 12 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	HOBBS	No	flood plain	---	---	---	---
	ROSEHILL	No	hillslope	---	---	---	---
Cr: CRETE SILT LOAM, 0 TO 1 PERCENT SLOPES	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
	CRETE	No	depression	3,2A,4,2B3	YES	YES	YES
		No	---	---	---	---	---

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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
Ct: CRETE SILT LOAM, 1 TO 3 PERCENT SLOPES	CRETE	No	hillslope	---	---	---	---
	Unnamed Wet Soils	Yes	depression	2A,3,2B3	YES	NO	YES
De: DETROIT SILTY CLAY LOAM, RARELY FLOODED	DETROIT	No	flood plain	---	---	---	---
Dp: DILLWYN-PLEVNA COMPLEX, 0 TO 2 PERCENT SLOPES	DILLWYN	No	interdune, dune, paleoterrace	---	---	---	---
	PLEVNA	Yes	flood plain	2B3,4	YES	YES	NO
	Unnamed wet soils	Yes	depression	2A,2B3,3	YES	NO	YES
Dt: DILLWYN-TIVOLI COMPLEX, 0 TO 15 PERCENT SLOPES	DILLWYN	No	interdune, dune, paleoterrace	---	---	---	---
	TIVOLI	No	dune, paleoterrace	---	---	---	---
	PLEVNA	Yes	flood plain	2B3,3	YES	NO	YES
	Unnamed wet soils	Yes	depression	2A,2B3,2B2,3	YES	NO	YES
Du: DRUMMOND LOAM, 0 TO 1 PERCENT SLOPES	DRUMMOND	No	terrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	UNNAMED HYDRIC SOILS	Yes	drainageway	3,2B3,2A	YES	NO	YES
Fa: FARNUM FINE SANDY LOAM, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
Fc: FARNUM LOAM, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,2B3,3,4	YES	YES	YES
Fd: FARNUM LOAM, 1 TO 3 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3,4	YES	YES	YES
Fe: FARNUM LOAM, 3 TO 6 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
Fs: FARNUM-DRUMMOND COMPLEX, 0 TO 1 PERCENT SLOPES	FARNUM	No	paleoterrace	---	---	---	---
	DRUMMOND	No	terrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A,3,2B3,4	YES	YES	YES
Gc: GEARY SILT LOAM, 0 TO 1 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
Gd: GEARY SILT LOAM, 1 TO 3 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
Ge: GEARY SILT LOAM, 3 TO 6 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
Go: GOESSEL SILTY CLAY, 0 TO 1 PERCENT SLOPES	GOESSEL	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2B3,2A,3	YES	NO	YES
GRP: GRAVEL PITS	GRAVEL PITS	Unranked	---	---	---	---	---
Gs: GOESSEL SILTY CLAY, 1 TO 2 PERCENT SLOPES	GOESSEL	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3,3	YES	NO	YES

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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
Ho: HOBBS SILT LOAM, OCCASIONALLY FLOODED	HOBBS	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,3,2B3,4	YES	YES	YES
INT: AQUOLLS	INTERMITTENT LAKES	Unranked	---	---	---	---	---
Ir: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	IRWIN	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3,4	YES	YES	NO
Is: IRWIN SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	IRWIN	No	paleoterrace	---	---	---	---
It: IRWIN SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	IRWIN	No	paleoterrace	---	---	---	---
Ka: KASKI LOAM, OCCASIONALLY FLOODED	KASKI	No	flood plain	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
La: LADYSMITH SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPE	LADYSMITH	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A,3,4,2B3	YES	YES	YES
Lb: LADYSMITH SILTY CLAY LOAM, 1 TO 2 PERCENT SLOPES	LADYSMITH	No	paleoterrace	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	drainageway	2A,3,2B3	YES	NO	YES
Ld: LELA-DRUMMOND COMPLEX, OCCASIONALLY FLOODED	LELA	No	paleoterrace	---	---	---	---
	DRUMMOND Unnamed wet soils	No Yes	terrace depression	--- 3,2B3	--- YES	--- NO	--- YES
Le: LESHO LOAM, OCCASIONALLY FLOODED	LESHO	No	flood plain	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A,3	YES	NO	YES
Na: NARON FINE SANDY LOAM, 0 TO 1 PERCENT SLOPE	Unnamed wet soils	Yes	drainageway	2A,2B3	YES	NO	NO
	NARON	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
Nb: NARON FINE SANDY LOAM, 1 TO 4 PERCENT SLOPES	Unnamed wet soils	Yes	depression	2A,3,2B3	YES	NO	YES
	NARON	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
Pa: PRATT LOAMY FINE SAND, 1 TO 5 PERCENT SLOPES	Unnamed wet soils	Yes	depression	3,2B3,2A	YES	NO	YES
	PRATT	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
Pc: PRATT-CARWILE COMPLEX, 0 TO 5 PERCENT SLOPES	Unnamed wet soils	Yes	depression	2A,2B3,3	YES	NO	YES
	PRATT	No	dune, paleoterrace	2A,3	YES	NO	YES
	CARWILE	Yes	depression, paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	depression	2A,2B3,3	YES	NO	YES

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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
Pt: PRATT-TIVOLI LOAMY FINE SANDS, 5 TO 15 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	TIVOLI	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A,3	YES	NO	YES
	Unnamed wet soils	Yes	depression	2A,2B3,2B2,3	YES	NO	YES
Ro: ROSEHILL SILTY CLAY, 1 TO 3 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3,2A	YES	NO	NO
Rs: ROSEHILL SILTY CLAY, 3 TO 6 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	IRWIN	No	paleoterrace	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2B3,4,2A	YES	YES	NO
Sm: SMOLAN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	SMOLAN	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	NORGE	No	hillslope	---	---	---	---
Tv: TIVOLI FINE SAND, 15 TO 25 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---
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.