

CONSTRUCTION MATERIALS
Harper County, Kansas

Construction Materials

These 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 the first table, 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
Harper 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
007AE: Albion-----	55	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.29 0.91
Shellabarger-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
007AS: Clairemont-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
007FU: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
007KA: Kanza-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.57 0.65
095AD: Albion-----	100	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.09 0.91
095DA: Dillwyn-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.18 0.18
Plevna-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.09
095LA: Lincoln-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.22 0.39
095NB: Nashville-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Quinlan-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
095SA: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
095SC: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
095SD: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
095ZA: Zenda-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191EA: Elandco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
191EC: Elandco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191LS: Lincoln-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.22 0.39
191OP: Wellsford-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Elandco-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191PD: Pond Creek-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191RA: Renfrow-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Grainola-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191TA: Tabler-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
191US: Ustifluvents-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
1439: Crisfield-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.78
An: Kaski-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.09
At: Attica-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.07 0.09
Be: Bethany-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Bh: Bethany-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Bm: Lincoln-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.22 0.39
Bo: Gerlane-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.22

CONSTRUCTION MATERIALS--Continued
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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Bp: Woodward-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Port-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Br: Broken Alluvial Land	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ca: Carwile-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.07
Cc: Case-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Clark-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ce: Corbin-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cf: Corbin-----	100	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	Poor Bottom layer Thickest layer	0.00 0.00
Fm: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Fn: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Fu: Farnum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ge: Gerlane-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.09
Gn: Grant-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Gr: Grant-----	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	

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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Gs: Grant-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
INT: Aquolls-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ka: Kanza-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.57 0.65
Kk: Kaski-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.09
Km: Kirkland-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Kr: Kirkland-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Renfrow-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Kw: Kirkland-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Renfrow-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mc: Minco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mn: Minco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mo: Minco-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Na: Nashville-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ne: Nashville-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Nh: Nashville-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Nn: Nashville-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
No: Norge-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pc: Pond Creek-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pd: Pond Creek-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pe: Pond Creek-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pg: Pond Creek-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ph: Dale-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pk: Port-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pm: Pratt-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.44
Pn: Pratt-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.18
Po: Pratt-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.44
Carwile-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.02
Pt: Pratt-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.18
Tivoli-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.57 0.99
Qa: Quinlan-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Qn: Quinlan-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Qu: Quinlan-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Rc: Renfrow-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Vernon-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Re: Ruella-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rh: Ruella-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ru: Ruella-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sa: Lesho-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.93
Sb: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
Se: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
Sf: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
Sg: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
Sh: Zellmont-----	100	Poor			
SHH: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
Sk: Zellmont-----	100	Poor			
Sm: Zellmont, eroded----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sn: Shellabarger-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09
So: Shellabarger-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.05 0.09

CONSTRUCTION MATERIALS--Continued
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Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Albion-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.09 0.49
Sp: Drummond-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ta: Tabler-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Th: Tivoli-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.99 0.99
Vr: Vernon-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Renfrow-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
W: Water-----	100	Not rated		Not rated	
Wa: Kingman-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Wd: Quinlan-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Woodward-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
We: Quinlan-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Woodward-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Ww: Quinlan-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Woodward-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Za: Canadian-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.07 0.67
Zf: Zenda-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.08

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
007AE: Albion-----	55	Poor Too sandy Low content of organic matter Too acid	0.00 0.00 0.95	Good		Poor Too sandy Rock fragments Hard to reclaim Slope	0.00 0.00 0.68 0.84
Shellabarger-----	45	Poor Low content of organic matter Too acid	0.00 0.84	Good		Fair Slope	0.84
007AS: Clairemont-----	100	Poor Low content of organic matter Salinity Water erosion	0.00 0.88 0.90	Good		Poor Salinity	0.00
007FU: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.87	Good	
007KA: Kanza-----	100	Poor Wind erosion Low content of organic matter Too sandy Droughty Too acid	0.00 0.00 0.00 0.52 0.95	Fair Depth to saturated zone	0.14	Poor Too sandy Depth to saturated zone	0.00 0.14
095AD: Albion-----	100	Poor Too sandy Low content of organic matter Too acid	0.00 0.00 0.95	Good		Poor Too sandy Rock fragments Slope Hard to reclaim	0.00 0.00 0.63 0.68
095DA: Dillwyn-----	60	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-----	40	Poor Low content of organic matter	0.00	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone	0.00
095LA: Lincoln-----	100	Poor Wind erosion Droughty Low content of organic matter Too sandy	0.00 0.04 0.08 0.22	Good		Fair Too sandy	0.22
095NB: Nashville-----	60	Fair Depth to bedrock	0.35	Poor Depth to bedrock	0.00	Fair Depth to bedrock Slope	0.35 0.96
Quinlan-----	40	Poor Depth to bedrock Droughty Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope	0.00 0.84

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
095SA: Shellabarger-----	100	Poor Wind erosion Low content of organic matter Too acid	0.00 0.00 0.84	Good		Good	
095SC: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
095SD: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
095ZA: Zenda-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.87	Good	
191EA: Elandco-----	100	Fair Too clayey No water erosion limitation	0.98 0.99	Fair Shrink-swell	0.87	Fair Too Clayey	0.93
191EC: Elandco-----	100	Fair Water erosion	0.90	Fair Shrink-swell	0.87	Good	
191LS: Lincoln-----	100	Poor Wind erosion Low content of organic matter Droughty Too sandy	0.00 0.00 0.05 0.22	Good		Fair Too sandy	0.22
191OP: Wellsford-----	65	Poor Droughty Low content of organic matter Depth to bedrock Too clayey	0.00 0.00 0.00 0.00	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Depth to bedrock Too Clayey Slope	0.00 0.00 0.04
Elandco-----	35	Fair Water erosion	0.90	Fair Shrink-swell	0.87	Good	
191PD: Pond Creek-----	100	Poor Low content of organic matter Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.89	Good	
191RA: Renfrow-----	70	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.16	Poor Too Clayey	0.00
Grainola-----	30	Poor Low content of organic matter Too clayey Water erosion Depth to bedrock Droughty	0.00 0.00 0.90 0.93 0.95	Poor Depth to bedrock Shrink-swell	0.00 0.12	Poor Too Clayey Rock fragments Depth to bedrock	0.00 0.88 0.93

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
191TA: Tabler-----	100	Poor Too clayey Low content of organic matter Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
191US: Ustifluvents-----	100	Poor Low content of organic matter	0.00	Poor Low strength	0.00	Poor Slope	0.00
1439: Crisfield-----	100	Poor Too sandy Low content of organic matter Too acid Droughty	0.00 0.01 0.46 0.89	Good		Poor Too sandy	0.00
An: Kaski-----	100	Good		Fair Shrink-swell	0.99	Good	
At: Attica-----	100	Poor Low content of organic matter Too acid	0.00 0.95	Good		Good	
Be: Bethany-----	100	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.25	Poor Too Clayey	0.00
Bh: Bethany-----	100	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.25	Poor Too Clayey	0.00
Bm: Lincoln-----	100	Poor Wind erosion Too sandy Low content of organic matter Droughty	0.00 0.02 0.08 0.17	Good		Fair Too sandy	0.02
Bo: Gerlane-----	100	Poor Wind erosion Low content of organic matter Too sandy Droughty	0.00 0.00 0.22 0.45	Fair Shrink-swell	0.76	Fair Too sandy	0.22
Bp: Woodward-----	65	Fair Droughty Depth to bedrock No water erosion limitation	0.29 0.58 0.99	Poor Depth to bedrock	0.00	Fair Depth to bedrock Slope	0.58 0.63
Port-----	35	Poor Low content of organic matter No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.99	Good	
Br: Broken Alluvial Land	100	Poor Low content of organic matter Water erosion	0.00 0.90	Fair Shrink-swell	0.87	Poor Slope	0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
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 0.32	Poor Depth to saturated zone Too Clayey	0.00 0.00
Cc: Case-----	70	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.87	Good	
Clark-----	30	Poor Low content of organic matter Carbonate content	0.00 0.68	Fair Shrink-swell	0.87	Fair Carbonate content	0.68
Ce: Corbin-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.61	Good	
Cf: Corbin-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.61	Good	
Fa: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Fm: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Fn: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Fu: Farnum-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Ge: Gerlane-----	100	Poor Low content of organic matter	0.00	Good		Good	
Gn: Grant-----	100	Poor Low content of organic matter No water erosion limitation	0.00 0.99	Fair Depth to bedrock	0.58	Good	
Gr: Grant-----	100	Poor Low content of organic matter No water erosion limitation	0.00 0.99	Fair Depth to bedrock	0.58	Good	
GRP: Gravel Pits-----	100	Not rated		Not rated		Not rated	
Gs: Grant-----	100	Poor Low content of organic matter No water erosion limitation	0.00 0.99	Fair Depth to bedrock	0.58	Good	

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
INT: Aguolls-----	100	Poor Low content of organic matter	0.00	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone	0.00
Ka: Kanza-----	100	Poor Wind erosion	0.00	Fair Depth to saturated zone	0.14	Poor Too sandy	0.00
		Low content of organic matter	0.00			Depth to saturated zone	0.14
		Too sandy	0.00				
		Too acid	0.95				
		Droughty	0.97				
Kk: Kaski-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.99	Good	
Km: Kirkland-----	100	Poor Too clayey	0.00	Fair Shrink-swell	0.17	Poor Too Clayey	0.00
		Low content of organic matter	0.00				
		Water erosion	0.68				
Kr: Kirkland-----	70	Poor Too clayey	0.00	Fair Shrink-swell	0.15	Poor Too Clayey	0.00
		Low content of organic matter	0.00				
		Water erosion	0.90				
Renfrow-----	30	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.16	Poor Too Clayey	0.00
		Too clayey	0.00				
		Water erosion	0.90				
Kw: Kirkland-----	70	Poor Too clayey	0.00	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
		Low content of organic matter	0.00				
		Water erosion	0.90				
Renfrow-----	30	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
		Too clayey	0.00				
		Water erosion	0.90				
Mc: Minco-----	100	Fair No water erosion limitation	0.99	Good		Good	
Mn: Minco-----	100	Fair No water erosion limitation	0.99	Good		Good	
Mo: Minco-----	100	Fair No water erosion limitation	0.99	Good		Good	
Na: Nashville-----	100	Poor Low content of organic matter	0.00	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.35
		Depth to bedrock	0.35				
		Water erosion	0.90				

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ne: Nashville-----	100	Poor Low content of organic matter Depth to bedrock Water erosion	0.00 0.35 0.90	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.35
Nh: Nashville-----	100	Poor Low content of organic matter Depth to bedrock Water erosion	0.00 0.35 0.90	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.35
Nn: Nashville-----	100	Poor Low content of organic matter Depth to bedrock Water erosion	0.00 0.54 0.90	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.54
No: Norge-----	100	Poor Low content of organic matter Too acid	0.00 0.95	Fair Shrink-swell	0.87	Good	
Pc: Pond Creek-----	100	Poor Low content of organic matter Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.90	Good	
Pd: Pond Creek-----	100	Poor Low content of organic matter Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.90	Good	
Pe: Pond Creek-----	100	Poor Low content of organic matter Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.90	Good	
Pg: Pond Creek-----	100	Poor Low content of organic matter Too acid No water erosion limitation	0.00 0.97 0.99	Fair Shrink-swell	0.87	Good	
Ph: Dale-----	100	Poor Low content of organic matter No water erosion limitation	0.00 0.99	Fair Shrink-swell	0.97	Good	
Pk: Port-----	100	Fair Salinity No water erosion limitation	0.88 0.99	Fair Shrink-swell	0.97	Fair Salinity	0.88
Pm: Pratt-----	100	Poor Wind erosion Low content of organic matter Too sandy	0.00 0.00 0.00	Good		Poor Too sandy	0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Pn: Pratt-----	100	Poor Wind erosion Low content of organic matter Too sandy Droughty Depth to bedrock	0.00 0.00 0.00 0.06 0.58	Poor Depth to bedrock	0.00	Poor Too sandy Depth to bedrock	0.00 0.58
Po: Pratt-----	65	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-----	35	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 0.32	Poor Depth to saturated zone Too Clayey	0.00 0.00
Pt: Pratt-----	50	Poor Too sandy Wind erosion Low content of organic matter	0.00 0.00 0.00	Good		Poor Too sandy Slope	0.00 0.37
Tivoli-----	50	Poor Too sandy Wind erosion Low content of organic matter Droughty	0.00 0.00 0.00 0.01	Good		Poor Too sandy Slope	0.00 0.37
Qa: Quinlan-----	100	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Qn: Quinlan-----	100	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Qu: Quinlan-----	100	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Rc: Renfrow-----	65	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.16	Poor Too Clayey	0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Vernon-----	35	Poor Too clayey Droughty Sodium content Low content of organic matter Depth to bedrock Carbonate content No water erosion limitation	0.00 0.05 0.10 0.50 0.71 0.97 0.99	Poor Depth to bedrock Shrink-swell	0.00 0.45	Poor Too Clayey Hard to reclaim Sodium content Depth to bedrock	0.00 0.10 0.10 0.71
Re: Ruella-----	100	Poor Droughty Depth to bedrock	0.00 0.00	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Rh: Ruella-----	100	Poor Droughty Depth to bedrock	0.00 0.00	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Ru: Ruella-----	100	Poor Droughty Depth to bedrock	0.00 0.00	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Sa: Lesho-----	100	Poor Low content of organic matter Salinity Too clayey	0.00 0.88 0.95	Fair		Fair Too Clayey Salinity	0.84 0.88
Sb: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
Se: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
Sf: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
Sg: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
Sh: Zellmont-----	100	Fair					
SHH: Shellabarger-----	100	Poor Low content of organic matter Too acid	0.00 0.84	Good		Good	
Sk: Zellmont-----	100	Fair					
Sm: Zellmont, eroded----	100	Fair Low content of organic matter	0.00	Poor Slope Low strength	0.00 0.00	Poor Slope	0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sn: Shellabarger-----	100	Poor Wind erosion Low content of organic matter Too acid	0.00 0.00 0.84	Good		Good	
So: Shellabarger-----	70	Poor Low content of organic matter Too acid	0.00 0.84	Good		Fair Slope	0.63
Albion-----	30	Poor Low content of organic matter Too sandy Too acid	0.00 0.00 0.95	Good		Poor Rock fragments Too sandy Slope Hard to reclaim	0.00 0.00 0.63 0.68
Sp: Drummond-----	100	Poor Low content of organic matter Droughty Too clayey Water erosion Salinity	0.00 0.00 0.00 0.68 0.88	Fair		Poor Too Clayey Salinity	0.00 0.00
Ta: Tabler-----	100	Poor Too clayey Low content of organic matter Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
Th: Tivoli-----	100	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 0.37
Vr: Vernon-----	60	Poor Too clayey Droughty Sodium content Low content of organic matter No water erosion limitation	0.00 0.05 0.10 0.50 0.99	Fair Shrink-swell	0.12	Poor Too Clayey Hard to reclaim Sodium content	0.00 0.10 0.10
Renfrow-----	40	Poor Low content of organic matter Too clayey Water erosion	0.00 0.00 0.90	Fair Shrink-swell	0.12	Poor Too Clayey	0.00
W: Water-----	100	Not rated		Not rated		Not rated	
Wa: Kingman-----	100	Poor Low content of organic matter	0.00	Poor Depth to saturated zone	0.00	Poor Depth to saturated zone	0.00
Wd: Quinlan-----	50	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00

CONSTRUCTION MATERIALS--Continued
Harper County, Kansas

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Woodward-----	50	Fair Droughty Depth to bedrock No water erosion limitation	0.29 0.58 0.99	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.58
We: Quinlan-----	50	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Woodward-----	50	Fair Depth to bedrock Droughty No water erosion limitation	0.10 0.29 0.99	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.10
Ww: Quinlan-----	50	Poor Droughty Depth to bedrock Low content of organic matter No water erosion limitation	0.00 0.00 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock	0.00
Woodward-----	50	Fair Droughty Depth to bedrock No water erosion limitation	0.29 0.58 0.99	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.58
Za: Canadian-----	100	Poor Low content of organic matter	0.00	Good		Good	
Zf: Zenda-----	100	Poor Low content of organic matter	0.00	Fair Shrink-swell	0.87	Good	

