

## Engineering Interpretations

### **Water Management**

Interpretations of soils for water management are given as limitations for pond reservoir areas; embankments, dikes, and levees; excavated pond (aquifer-fed); and as restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

**POND RESERVOIR AREA** is the area that holds water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by the permeability and depth to fractured or permeable bedrock, or other permeable material.

**EMBANKMENTS, DIKES, AND LEVEES** are raised structures of soil material constructed to impound water or protect land against overflow. They generally are less than 20 feet high and are constructed of "homogeneous" soil material (without a core zone) and compacted to medium density.

**EXCAVATED PONDS (AQUIFER-FED)** are bodies of water created by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds which are fed by surface runoff or that have embankments that impound water 3 feet or more above the original surface.

**DRAINAGE** is the process of removing excess surface and subsurface water from agricultural land. Soil features are listed that affect grading, excavation, and stability of trench sides or ditch banks. Features are also listed which might affect productivity after drainage is installed. The availability of drainage outlets must also be considered.

**IRRIGATION** is the controlled application of water to supplement rainfall for supporting plant growth. Soil features are listed that affect design, layout, construction, management, or performance of an irrigation system.

**TERRACES AND DIVERSIONS** are embankments or a combination of an embankment and a channel constructed across a slope to control erosion by diverting or storing surface runoff instead of permitting it to flow uninterrupted down the slope. Soil features are listed that affect the construction of terraces and diversions and that may cause problems after construction.

**GRASSED WATERWAYS** are natural or constructed channels that generally are broad and shallow and are covered with erosion-resistant grasses. They are used to conduct surface water to outlets at a nonerosive velocity. Soil features are listed that affect the construction and maintenance of the waterway, and also that affect the growth of grass after construction.

*This subsection includes:*

- **(a) Water Management**

Johnson County, Missouri: Detailed Soil Map Legend

07/09/2002

PAGE - 1 OF 8

Water Management

(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	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaB: Barco-----	Limited ~depth to bedrock (limited)	0.74	Moderately limited ~slope (moderately limited)	0.40	Moderately limited ~slope (moderately limited)	0.40	Very limited ~depth to bedrock (very limited)	1.00	Limited ~depth to bedrock (limited)	0.74
	~seepage (moderately limited)	0.50	~depth to bedrock (slightly limited)	0.06	~depth to bedrock (slightly limited)	0.06	~slope (slightly limited)	0.10	~slope (slightly limited)	0.10
	~slope (slightly limited)	0.10								
BaC: Barco-----	Limited ~depth to bedrock (limited)	0.74	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~depth to bedrock (very limited)	1.00	Limited ~depth to bedrock (limited)	0.74
	~seepage (moderately limited)	0.50	~depth to bedrock (slightly limited)	0.06	~depth to bedrock (slightly limited)	0.06	~slope (moderately limited)	0.45	~slope (moderately limited)	0.45
	~slope (moderately limited)	0.45								
Bk: Blackoar-----	Moderately limited ~seepage (moderately limited)	0.50	Moderately limited ~flooding (moderately limited)	0.60	Moderately limited ~flooding (moderately limited)	0.60	Very limited ~wetness (very limited)	1.00	Very limited ~wetness (very limited)	1.00
BoC2: Bolivar-----	Limited ~depth to bedrock (limited)	0.86	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~depth to bedrock (very limited)	1.00	Limited ~depth to bedrock (limited)	0.86
	~seepage (moderately limited)	0.50	~depth to bedrock (moderately limited)	0.35	~depth to bedrock (moderately limited)	0.35	~slope (moderately limited)	0.45	~slope (moderately limited)	0.45
	~slope (moderately limited)	0.45								
BoD2: Bolivar-----	Limited ~slope (limited)	0.99	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~depth to bedrock (very limited)	1.00	Limited ~slope (limited)	0.99
	~depth to bedrock (limited)	0.86	~depth to bedrock (moderately limited)	0.35	~depth to bedrock (moderately limited)	0.35	~slope (limited)	0.99	~depth to bedrock (limited)	0.86

Johnson County, Missouri: Detailed Soil Map Legend

07/09/2002

PAGE - 2 OF 8

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	~seepage (moderately limited)	0.50								
Br: Bremer-----	Not limited		Moderately limited ~percs slowly (moderately limited)	0.39	Moderately limited ~slow intake (moderately limited) ~percs slowly (moderately limited)	0.60 0.39	Moderately limited ~wetness (moderately limited)	0.60	Moderately limited ~wetness (moderately limited)	0.60
DpB: Deepwater-----	Moderately limited ~seepage (moderately limited) ~slope (slightly limited)	0.50 0.10	Moderately limited ~slope (moderately limited)	0.40	Moderately limited ~slope (moderately limited)	0.40	Slightly limited ~slope (slightly limited)	0.10	Slightly limited ~slope (slightly limited)	0.10
DpC2: Deepwater-----	Moderately limited ~seepage (moderately limited) ~slope (moderately limited)	0.50 0.45	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Moderately limited ~slope (moderately limited)	0.45	Moderately limited ~slope (moderately limited)	0.45
Dt: Dockery-----	Moderately limited ~seepage (moderately limited)	0.32	Limited ~flooding (limited)	0.90	Limited ~flooding (limited) ~slow intake (moderately limited)	0.90 0.30	Moderately limited ~wetness (moderately limited)	0.44	Moderately limited ~wetness (moderately limited)	0.44
Fs: Freeburg-----	Moderately limited ~seepage (moderately limited)	0.32	Not limited		Not limited		Moderately limited ~wetness (moderately limited)	0.53	Moderately limited ~wetness (moderately limited)	0.53
GoC2: Gorin-----	Moderately limited ~slope (moderately limited)	0.45	Very limited ~slope (very limited) ~percs slowly (moderately limited)	1.00 0.39	Very limited ~slope (very limited) ~percs slowly (moderately limited)	1.00 0.39	Moderately limited ~slope (moderately limited) ~wetness (moderately limited)	0.45 0.44	Moderately limited ~slope (moderately limited) ~wetness (moderately limited)	0.45 0.44

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Hg: Haig-----	Not limited		Moderately limited ~percs slowly (moderately limited)	0.39	Moderately limited ~percs slowly (moderately limited)	0.39	Moderately limited ~wetness (moderately limited)	0.60	Moderately limited ~wetness (moderately limited)	0.60
Hp: Haplaquents---	Very limited ~seepage (very limited)	1.00	Very limited ~percs slowly (very limited)	1.00	Very limited ~percs slowly (very limited) ~erodes easily (moderately limited)	1.00 0.60	Moderately limited ~erodes easily (moderately limited)	0.60	Moderately limited ~erodes easily (moderately limited)	0.60
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
HtA: Hartwell-----	Not limited		Moderately limited ~percs slowly (moderately limited)	0.39	Moderately limited ~percs slowly (moderately limited)	0.39	Limited ~wetness (limited)	0.99	Limited ~wetness (limited)	0.99
HtB2: Hartwell-----	Slightly limited ~slope (slightly limited)	0.10	Moderately limited ~slope (moderately limited) ~percs slowly (moderately limited)	0.40 0.39	Moderately limited ~slope (moderately limited) ~percs slowly (moderately limited)	0.40 0.39	Limited ~wetness (limited) ~slope (slightly limited)	0.99 0.10	Limited ~wetness (limited) ~slope (slightly limited)	0.99 0.10
HxC: Higginsville---	Moderately limited ~seepage (moderately limited) ~slope (moderately limited)	0.50 0.30	Limited ~slope (limited)	0.98	Limited ~slope (limited)	0.98	Moderately limited ~wetness (moderately limited) ~slope (moderately limited)	0.36 0.30	Moderately limited ~wetness (moderately limited) ~slope (moderately limited)	0.36 0.30
Ka: Kanima-----	Very limited ~slope (very limited) ~seepage (very limited)	1.00 1.00	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited) ~slow intake (moderately limited) ~droughty (moderately limited)	1.00 0.60 0.57	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited) ~droughty (moderately limited)	1.00 0.57

Johnson County, Missouri: Detailed Soil Map Legend

07/09/2002

PAGE - 4 OF 8

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Lg: Lightning silt loam-----	Not limited		Very limited ~percs slowly (very limited) ~flooding (moderately limited)	1.00 0.60	Very limited ~percs slowly (very limited) ~flooding (moderately limited)	1.00 0.60	Limited ~wetness (limited)	0.99	Limited ~wetness (limited)	0.99
M-W: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
MaB: Macksburg-----	Not limited		Slightly limited ~percs slowly (slightly limited) ~slope (slightly limited)	0.13 0.10	Slightly limited ~percs slowly (slightly limited) ~slope (slightly limited)	0.13 0.10	Not limited		Not limited	
MdB: Mandeville-----	Limited ~depth to bedrock (limited) ~seepage (moderately limited) ~slope (slightly limited)	0.86 0.50 0.10	Moderately limited ~slope (moderately limited) ~depth to bedrock (moderately limited)	0.40 0.35	Moderately limited ~slope (moderately limited) ~depth to bedrock (moderately limited)	0.40 0.35	Very limited ~depth to bedrock (very limited) ~wetness (slightly limited) ~slope (slightly limited)	1.00 0.28 0.10	Limited ~depth to bedrock (limited) ~wetness (slightly limited) ~slope (slightly limited)	0.86 0.28 0.10
MdC: Mandeville-----	Limited ~depth to bedrock (limited) ~seepage (moderately limited) ~slope (moderately limited)	0.86 0.50 0.45	Very limited ~slope (very limited) ~depth to bedrock (moderately limited)	1.00 0.35	Very limited ~slope (very limited) ~depth to bedrock (moderately limited)	1.00 0.35	Very limited ~depth to bedrock (very limited) ~slope (moderately limited) ~wetness (slightly limited)	1.00 0.45 0.28	Limited ~depth to bedrock (limited) ~slope (moderately limited) ~wetness (slightly limited)	0.86 0.45 0.28
Nd: Nodaway-----	Moderately limited		Moderately limited		Moderately limited		Not limited		Not limited	

Johnson County, Missouri: Detailed Soil Map Legend

07/09/2002

PAGE - 5 OF 8

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	~seepage (moderately limited)	0.50	~flooding (moderately limited)	0.60	~flooding (moderately limited)	0.60				
NoD: Norris-----	Very limited ~bedrock <20 in. (very limited)	1.00	Very limited ~shallow to bedrock (very limited)	1.00	Very limited ~shallow to bedrock (very limited)	1.00	Very limited ~depth to bedrock (very limited)	1.00	Very limited ~bedrock <20 in. (very limited)	1.00
	~slope (limited)	0.80	~slope (very limited)	1.00	~slope (very limited)	1.00	~slope (limited)	0.80	~droughty (limited)	0.98
			~large stones (slightly limited)	0.18	~droughty (limited)	0.98	~large stones (slightly limited)	0.07	~slope (limited)	0.80
NoF: Norris-----	Very limited ~bedrock <20 in. (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~shallow to bedrock (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~bedrock <20 in. (very limited)	1.00
	~slope (very limited)	1.00	~shallow to bedrock (very limited)	1.00	~slope (very limited)	1.00	~depth to bedrock (very limited)	1.00	~slope (very limited)	1.00
			~large stones (slightly limited)	0.18	~droughty (very limited)	1.00	~large stones (slightly limited)	0.01	~droughty (very limited)	1.00
Pd: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
PoB: Polo-----	Moderately limited ~seepage (moderately limited)	0.50	Moderately limited ~slope (moderately limited)	0.40	Moderately limited ~slope (moderately limited)	0.40	Slightly limited ~slope (slightly limited)	0.10	Slightly limited ~slope (slightly limited)	0.10
	~slope (slightly limited)	0.10								
PoC2: Polo-----	Moderately limited ~seepage (moderately limited)	0.50	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Moderately limited ~slope (moderately limited)	0.45	Moderately limited ~slope (moderately limited)	0.45
	~slope (moderately limited)	0.45								
SaB: Sampsel-----	Slightly limited ~slope (slightly limited)	0.10	Moderately limited ~slope (moderately limited)	0.40	Moderately limited ~slow intake (moderately limited)	0.60	Very limited ~wetness (very limited)	1.00	Very limited ~wetness (very limited)	1.00

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
			~percs slowly (moderately limited)	0.39	~slope (moderately limited) ~percs slowly (moderately limited)	0.40 0.39	~slope (slightly limited)	0.10	~slope (slightly limited)	0.10
SaC: Sampsel-----	Moderately limited ~slope (moderately limited)	0.45	Very limited ~slope (very limited) ~percs slowly (moderately limited)	1.00 0.39	Very limited ~slope (very limited) ~slow intake (moderately limited) ~percs slowly (moderately limited)	1.00 0.60 0.39	Very limited ~wetness (very limited) ~slope (moderately limited)	1.00 0.45	Very limited ~wetness (very limited) ~slope (moderately limited)	1.00 0.45
SaC3: Sampsel-----	Moderately limited ~slope (moderately limited)	0.45	Very limited ~slope (very limited) ~percs slowly (moderately limited)	1.00 0.39	Very limited ~slope (very limited) ~slow intake (moderately limited) ~percs slowly (moderately limited)	1.00 0.60 0.39	Very limited ~wetness (very limited) ~slope (moderately limited)	1.00 0.45	Very limited ~wetness (very limited) ~slope (moderately limited)	1.00 0.45
ShB: Sharpsburg----	Slightly limited ~slope (slightly limited)	0.10	Moderately limited ~slope (moderately limited) ~percs slowly (slightly limited)	0.40 0.13	Moderately limited ~slope (moderately limited) ~percs slowly (slightly limited)	0.40 0.13	Slightly limited ~slope (slightly limited)	0.10	Slightly limited ~slope (slightly limited)	0.10
SnD2: Snead-----	Limited ~slope (limited) ~depth to bedrock (limited)	0.99 0.94	Very limited ~slope (very limited) ~depth to bedrock (limited) ~percs slowly (moderately limited)	1.00 0.66 0.39	Very limited ~slope (very limited) ~depth to bedrock (limited) ~slow intake (moderately limited)	1.00 0.66 0.60	Very limited ~depth to bedrock (very limited) ~slope (limited) ~wetness (slightly limited)	1.00 0.99 0.28	Limited ~slope (limited) ~depth to bedrock (limited) ~droughty (moderately limited)	0.99 0.94 0.59
SoD: Snead-----	Limited ~depth to bedrock (limited)	0.94	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~depth to bedrock (very limited)	1.00	Limited ~depth to bedrock (limited)	0.94

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	~slope (limited)	0.80	~depth to bedrock (limited)	0.66	~depth to bedrock (limited)	0.66	~slope (limited)	0.80	~slope (limited)	0.80
			~percs slowly (moderately limited)	0.39	~slow intake (moderately limited)	0.60	~wetness (slightly limited)	0.28	~wetness (slightly limited)	0.28
Rock outcrop---	Not rated		Not rated		Not rated		Not rated		Not rated	
SoF: Snead-----	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00	Very limited ~slope (very limited)	1.00
	~depth to bedrock (limited)	0.94	~depth to bedrock (limited)	0.66	~depth to bedrock (limited)	0.66	~depth to bedrock (very limited)	1.00	~depth to bedrock (limited)	0.94
			~percs slowly (moderately limited)	0.39	~slow intake (moderately limited)	0.60	~wetness (slightly limited)	0.28	~droughty (moderately limited)	0.45
Rock outcrop---	Not rated		Not rated		Not rated		Not rated		Not rated	
W: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
Wa: Wabash-----	Not limited		Very limited ~percs slowly (very limited)	1.00	Very limited ~percs slowly (very limited)	1.00	Very limited ~wetness (very limited)	1.00	Very limited ~wetness (very limited)	1.00
			~flooding (limited)	0.90	~flooding (limited)	0.90				
					~slow intake (limited)	0.66				
WdB: Weller-----	Slightly limited ~slope (slightly limited)	0.10	Moderately limited ~slope (moderately limited)	0.40	Moderately limited ~slope (moderately limited)	0.40	Slightly limited ~slope (slightly limited)	0.10	Slightly limited ~slope (slightly limited)	0.10

Johnson County, Missouri: Detailed Soil Map Legend

07/09/2002

PAGE - 8 OF 8

Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WfB: Winfield-----	Moderately limited ~seepage (moderately limited) ~slope (slightly limited)	0.50  0.10	~percs slowly (moderately limited)  Moderately limited ~slope (moderately limited)	0.39  0.40	~percs slowly (moderately limited)  Moderately limited ~slope (moderately limited)	0.39  0.40	Slightly limited ~wetness (slightly limited) ~slope (slightly limited)	0.13  0.10	Slightly limited ~wetness (slightly limited) ~slope (slightly limited)	0.13  0.10
WfC: Winfield-----	Moderately limited ~seepage (moderately limited) ~slope (moderately limited)	0.50  0.30	Limited ~slope (limited)	0.98	Limited ~slope (limited)	0.98	Moderately limited ~slope (moderately limited) ~wetness (slightly limited)	0.30  0.13	Moderately limited ~slope (moderately limited) ~wetness (slightly limited)	0.30  0.13
WfC3: Winfield-----	Moderately limited ~seepage (moderately limited) ~slope (moderately limited)	0.50  0.30	Limited ~slope (limited)	0.98	Limited ~slope (limited)	0.98	Moderately limited ~slope (moderately limited) ~wetness (slightly limited)	0.30  0.13	Moderately limited ~slope (moderately limited) ~wetness (slightly limited)	0.30  0.13
Zk: Zook-----	Not limited		Limited ~flooding (limited) ~percs slowly (moderately limited)	0.90  0.39	Limited ~flooding (limited) ~slow intake (moderately limited) ~percs slowly (moderately limited)	0.90  0.60 0.39	Very limited ~wetness (very limited)	1.00	Very limited ~wetness (very limited)	1.00