

WATER MANAGEMENT

GENERAL

Soil interpretations are developed for use in evaluating the potential of the soil in the application of various water management practices. Ratings are for the soils in their present condition and do not consider present land use. Soil limitation ratings and associated restrictive features are given for ponds and reservoir areas; embankments, dikes, and levees; and excavated ponds. If a soil is rated as having moderate or severe limitations for these uses, changes need to be made to the original design to overcome the restricting soil properties or a more suitable site should be selected. Soils that have slight limitations are favorable for the rated use. Only restrictive features are given for drainage, irrigation, terraces and diversions, and grassed waterways because these uses are not rated. Any restrictions in use will ultimately affect design, layout, construction, management, and performance.

POND RESERVOIR AREA

A pond reservoir area is an area that holds water behind a dam or embankment. The soils best suited to this use have a low seepage potential, which is determined by permeability and depth to fractured or permeable bedrock, to a cemented pan, or to other permeable material.

EMBANKMENTS, DIKES, AND LEVEES

Embankments, dikes, and levees are raised structures of soil material that are constructed to impound

water or protect land against overflow. They are generally less than 20 feet high, are constructed of "homogeneous" soil material, and are compacted to medium density. Embankments, dikes, and levees require soil material that is resistant to seepage, piping, and erosion and that has favorable compaction characteristics. Organic soils are not suitable because of high compression, low strength, and unpredictable permeability.

EXCAVATED PONDS (Aquifer-fed)

An excavated pond is a body of water created by excavating a pit or dugout into a ground-water aquifer. The soil properties and qualities that affect excavated ponds are depth to a permanent water table, and permeability of the aquifer. Large stones are also considered because of their effect on the ease of excavation.

DRAINAGE

Drainage is the process of removing excess surface and subsurface water from agricultural land. How easily and effectively a soil is drained depends on the depth to the water table, ponding, soil permeability, depth to bedrock or to a cemented pan, flooding, subsidence of organic layers, potential frost action, and slope. The properties and qualities that affect grading, excavation, and stabilization of trench sides or ditch banks are depth to bedrock or to a cemented pan, large stones, slope percent and complexity, and stability against caving.

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IRRIGATION

Irrigation is the controlled application of water to supplement rainfall for the support of plant growth. The soil properties and qualities important in the design and management of most irrigation systems are wetness or ponding, a need for drainage, flooding, available water capacity, intake rate, permeability, susceptibility to wind or water erosion, and slope. The soil properties and qualities that influence construction are large stones and depth to bedrock or to a restrictive soil layer.

TERRACES AND DIVERSIONS

Terraces and diversions are embankments or a combination of an embankment and a channel constructed across a slope. They control erosion by diverting or storing surface runoff instead of permitting it to flow uninterrupted down the slope. The soil properties and qualities that influence construction are slope, large stones, depth to bedrock or to a restrictive soil layer, and wetness.

GRASSED WATERWAYS

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 non-erosive velocity. The soil properties and qualities that affect the construction and maintenance of grassed waterways are large stones, wetness, slope, and depth to bedrock or to a restrictive soil layer.

REFERENCES

- (1) Soil Survey Manual
<http://soils.usda.gov/technical/manual/contents/chapter6c.html#29>
- (2) Soil Data Mart
<http://soildatamart.nrcs.usda.gov/Survey.aspx?State=WV>
- (3) Web Soil Survey
<http://websoilsurvey.nrcs.usda.gov/app/>