



Soils and Building Sites

When you're buying or building a home, planning a room addition or a major landscaping project, it's a good idea to know your soil. Everyone remembers to check out what's above ground, but we rarely think to check below it.

The soils in our region are not all alike. In fact, they may even vary from your front yard to your back yard. What is put above or below the soil should be guided by your soil's unique characteristics. Here's a soil checklist for homeowners:

- ◆ Is the soil stable or likely to shift or slip downhill?
- ◆ Are there steep slopes which may erode?
- ◆ Will it be necessary to provide a drainage system or take other measures to remove excess water?
- ◆ Is the property subject to flooding?
- ◆ Is there a seasonal high water table that could cause problems such as basement flooding?
- ◆ Is the soil suitable for a standard septic system or other types of on-site wastewater treatment systems?
- ◆ How does surface water drain onto and off of your site?
- ◆ Is the soil shallow to bedrock?
- ◆ Are there hydric soils on-site, which can indicate wetlands?

You can discover the answers to these questions by carefully **Some Common Problems:**

inspecting the site, then checking for additional information in the soil survey published for your county.

The survey includes aerial maps showing the extent and location of each soil type.

After finding your area of interest on the soil map, you can read the survey's soil description and learn about the soil's suitability for your project. Soil surveys are available from your local soil and water conservation district. Copies are also on file at your local Extension Service, at most public libraries, and sometimes at land developer's offices. For assistance in using the soil survey, contact your local Soil and Water Conservation District personnel who are trained to interpret it.

Additional maps which can be useful include: floodplain maps, wetland inventory maps, and U.S. Geological Survey topographic maps.

Getting Started

Before buying, building, or starting a major home project involving soil, you will save time and money by

- ⇒ visually inspecting your site's soil and slope,
- ⇒ consulting your county's soil survey, and
- ⇒ testing (agronomic or engineering) the soil if additional detailed information is needed.

	Selected Land Use			
	Soil Property	Septic Tank Absorption Fields	Buildings	Local Roads and Streets
Wetness	*	*	*	*
Permeability	*			
Depth to Rock	*	*	*	*
Slope	*	*	*	*
Shrink-Swell			*	*
Soil Texture			*	*
Flooding	*	*	*	*
Soil Stability	*	*	*	*

*indicates that a particular land use could be affected by a specific soil property

In Ohio, most problems with soils are related to water or slope.

Flooding

If your home site is in the floodplain of a nearby stream it may be flooded if the stream overflows during heavy rainfall or rapid snowmelt. Often, community-wide measures are necessary to provide adequate property protection. If you are selecting a new homesite, check to make sure the area is not floodprone. Soil surveys and federal floodplain maps are available for viewing at local Soil and Water Conservation Districts. Flood insurance may be a requirement for building in certain areas.

Even in upland areas, flooding can occur if your home is located in natural drainageways or on a site that is lower than the surrounding area. Measures to remedy this potential hazard may require the cooperation of several homeowners.

Soil Moisture

The level to which the soil is saturated with water may fluctuate by several feet annually depending on soil, topography, and weather conditions. Many soils of our region have a seasonal high water table within just a few feet of the ground surface.

Where a seasonal high water table could create difficulties in or near your home, possible remedies include installing drains around your foundation. Special care should be taken in lowering the water table under the basement floor because unequal settlement of some soils, especially slow-draining silts and clays, may cause the walls to crack.

A high water table can prevent the proper functioning of on-lot septic systems. As a minimum, this can result in pollution and public health problems.

Drainage

Improving drainage becomes essential when excess soil moisture affects your house, or impairs use of an on-site septic system.

Subsurface drainage can address this problem, but only where there is an adequate outlet for the water.

The topography of your site and the surrounding area will determine the drainage of surface water. Can you locate a house, driveway, and other structures in a manner that will allow you to manage surface runoff?

Shrink-Swell Potential

Certain soils may cause structural damage to standard design houses due to their high shrink-swell potential. These soils create differential stresses as they go through wet and dry cycles, and can actually buckle basement walls or crack foundations. Reinforcement, proper backfilling, and other precautions can be taken. The builder needs to be aware that corrective measures may be required.

Soil and Slope Stability

Ravines and streamside locations are attractive building sites to many for their scenic value. It should be understood that these are often sites of active erosion, and unstable soils. The impacts of building can accelerate soil movement downslope, and cause serious damage to structures. Such sites can require expensive building techniques, and are best avoided.

In addition, even level sites that are underlain by organic soils and some silts are not stable construction sites.

Hydric Soils/Wetlands

These are soils which formed under saturated conditions and are

often indicative of wetlands. The hydrology responsible for these soils may still be present today, and represents a serious limitation for development. Drainage improvements are required in support of buildings, roads, and other facilities. Hydric soils are often organic (peat or muck) and not suitable construction material.

If the area qualifies as a wetland, then it is subject to federal regulation, and any disturbance would require a permit from appropriate agencies, such as the Army Corps of Engineers.

Underground Utilities

While not a soil problem specifically, prospective owners should be made aware of any pipelines, cables, or easements on the property. These may preclude building on certain areas of the lot. Any soil investigations or excavations greater than about one foot should be preceded by a call to Ohio Utility Protection Service (1-800-362-2764) and Ohio Oil and Gas Association (1-614-587-0444).

