

**COUNTY OF SANTA CRUZ HEALTH SERVICES AGENCY
ENVIRONMENTAL HEALTH SERVICE
701 Ocean Street, Room 312, Santa Cruz, CA 95060 - (831) 454-2022**

SOILS EVALUATION AND TESTING PROCEDURES

Percolation, groundwater and soils tests may be performed by the following persons, who must be licensed within California: a registered civil engineer; a registered Environmental Health Specialist; a C-42 contractor who has the contract to install the sewage disposal system (a copy of the contract must be submitted with the test data); a general engineering contractor; soils scientist; or an Engineering Geologist.

SOIL TESTS

1. Sites proposed for sewage system installation must be evaluated for soil conditions by one or more soil excavations.
2. Excavations must be made by backhoe whenever possible. Auger is allowed only upon a case-by-case determination (a)when a site is inaccessible by backhoe, (b)when necessary only to verify conditions expected on the basis of prior soils investigations, or (c)when done in connection with geologic investigations.
3. Excavations must extend at least 10 feet below the bottom of the proposed leaching trench.
4. Observations in the excavation are to be made for soil structure, the potential presence of seasonal groundwater, and the presence of impervious formations. Soils or formations containing continuous channels, cracks, or fractures are to be noted. Gleying, soils mottling, and soil moisture are also to be noted.

Submission of Data

1. Results of all testing is to be submitted to Environmental Health Service on the form provided by the County or on an equivalent form.
2. A site plan showing location of tests (appropriately numbered or designated to correspond to the test data) is to accompany the data.

PERCOLATION TEST PROCEDURE

General Requirements

1. The number of percolation tests to be performed shall be determined by Environmental Health Service, but in no case shall fewer than 3 tests be performed at each site. The tests must encompass the area proposed for the sewage system installation and the future expansion area. Slopes greater than 30% are not allowed for sewage disposal and should not be tested.
2. When soils to be used for sewage leaching vary, a percolation test is required in each soil stratum. Tests are also required in the soil beneath the leaching system if a change in soil type is observed.
3. When required by Environmental Health Service, soils expected to have a percolation rate slower than 60 minutes/inch (1 inch/hour) or having a high shrink- swell potential due to clay content must be tested during the time period for winter water table observation.
4. Percolation rates in the soils proposed for leaching shall be no slower than 60 minutes/inch nor faster than 1 minute/inch. Soils beneath the leaching system must have a percolation rate no slower than 120 minutes/inch.

Preparation of Percolation Test Holes

1. Percolation holes shall be prepared by hand auger whenever possible. A power auger may be acceptable on sites approved by Environmental Health Service.

2. Holes are to be 4 to 6 inches in diameter and minimum 12 inches deep.
3. Remove any smeared soil surfaces from the sides of the hole by scraping with a sharp instrument.
4. Remove loose soils from the bottom of the hole and add 1 to 2 inches of coarse sand or fine gravel.
5. If soils tend to collapse, insert a perforated pipe in the hole and carefully pack washed gravel around the outside of the pipe.
6. Holes must be thoroughly presoaked prior to testing to compensate for any possible soil swelling. Either of the following presoak methods are acceptable:
 - a. Completely refill each test hole with clear water 4 times on the day prior to the test.
 - b. A continuous soaking of the hole with clear water for four hours on the day of the test.

Use only clear water and gently pour into the hole to prevent scouring of the sides and bottom.

Performing the Percolation Test

1. Adjust the water depth so that it is 6 inches over the gravel in the bottom of the hole.
2. From a fixed reference point, measure the height of the water surface every 30 minutes for a period of four(4) hours. Refill the test hole to 6 inches over the gravel after every 30 minute reading until a total of 8 percolation rate determinations have been made. The final reading is used to calculate the percolation rate, **except when there is a pattern of a significant declining percolation rate towards the end of the testing period, then additional testing might be required (e.g. extended testing, soil texture analyses, etc.)**. Based on this measure, calculate the percolation rate in minutes per inch.
3. When percolation rates are rapid (faster than 5 minutes/inch), test measurements are to be made every 10 minutes. Refill the test hole to 6" after each reading until a total of 8 percolation rate determinations have been made. If the rate drops to slower than 5 minutes per inch before 8 readings have been recorded, then 30 minute readings are required. The final reading is used to calculate the percolation rate.
4. If the percolation rate is slower than 60 minutes/inch or faster than 1 minute/inch, the soil is unsuitable for a conventional sewage disposal system. Additional testing for an alternative sewage disposal system may be conducted, but can only be conducted for existing lots of record.

Groundwater and Seasonal Water Table Determinations

When required by the Health Officer, observation for seasonal high water table in the area of the proposed sewage disposal system must be made during the period of observation approved by the Health Officer. Observation periods commence when cumulative rainfall during the rainy season (usually January-March) reaches the total specified by the Health Officer. Once an observation period has commenced, the period may continue as long as 6" of rainfall has occurred within a 30 day period.

The vertical separation between the bottom of a leaching trench and ground water (including seasonal water tables) is required to be:

<u>Percolation Rate in minutes/inch (mpi)</u>	<u>Vertical Separation In feet</u>
less than 1 mpi	50
1-4.9 mpi	20
5-29.9 mpi	8
Greater than 30 mpi	5

Refer to section 7.38.150(b)7 of the Sewage Ordinance for further requirements relative to groundwater separation.