

Duck Creek Wastewater Planning Study

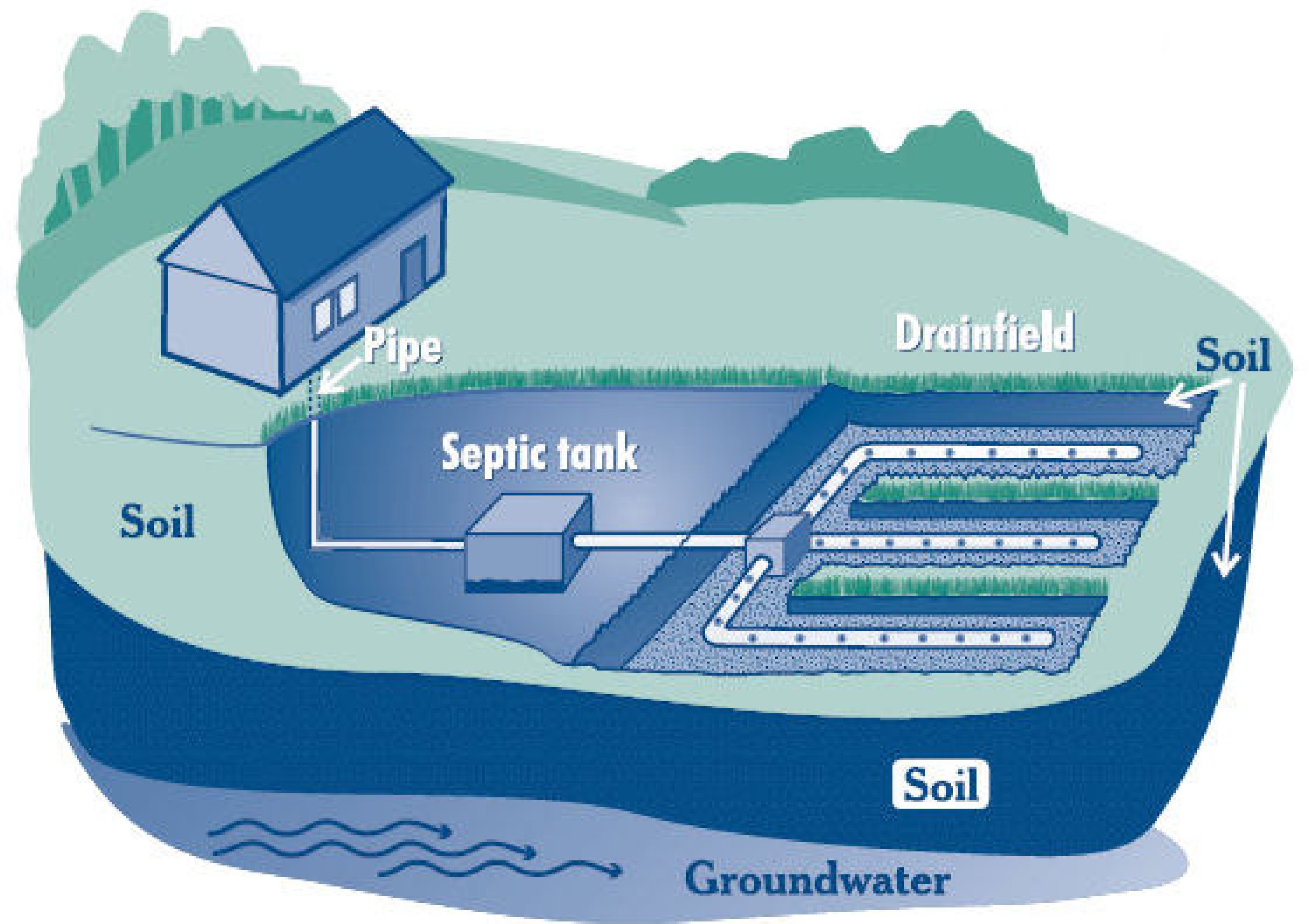
Background Information

Current Requirements

The Southwest Utah Public Health Department currently requires that absorption systems should not be located on a direct slope above wells, springs, and other water supplies. They also require that there must be a minimum of 48 inches of existing suitable soil between bedrock formations or impervious strata and the bottom of the absorption trench, bed, or pit. They then define unsuitable soil or bedrock formations in part as:

- Soil or bedrock formations with open joints, fractures, or channels which permit such rapid flow that effluent is not treated. This includes coarse particles such as gravels, cobbles, rocks, boulders, or fragments wherein insufficient soils are present to fill the voids.
- Solid or fractured bedrock such as shale, limestone, sandstone, basalt, or granite are unacceptable for conventional absorption systems.

The EPA recommends that you should have a typical septic system inspected at least every 3 years by a professional and your tank pumped as recommended by the inspector (generally every 3 to 5 years).



Septic Tank Usage

The first subdivisions to the Duck Creek area came in the 1970's. Growth has continued since then, amounting to an estimated 1,800 homes in 2005. It is expected that 3,100 homes will eventually be built in the area. These homes have largely been used for recreational purposes, although there is an increasing number being used as year-round residences.

The EPA estimates that septic tanks serve 25% of the U.S. population and that between 10% and 20% of all onsite systems are not adequately treating wastewater. Septic systems are the second greatest threat to groundwater quality, as viewed by State water quality agencies. Groundwater and surface water from the Duck Creek area influence three different river basins.

The EPA has also reported that system densities in some areas around Duck Creek exceed the capacity of even suitable soils to assimilate wastewater flows and retain and transform their contaminants. In addition, many systems are located too close to groundwater or surface waters and others, particularly in areas with newly installed public water lines, are not designed to handle increasing wastewater flows.

"Septic systems that are properly planned, designed, sited, installed, operated and maintained can provide excellent wastewater treatment. However, systems that are sited in densities that exceed the treatment capacity of regional soils and systems that are poorly designed, installed, operated or maintained can cause problems." (EPA, 2005) It is thought by local and State agencies that the poor soil conditions coupled with the high density of septic tanks poses a health risk to both animal and human populations who make use of the water from the Duck Creek area.

Existing Studies

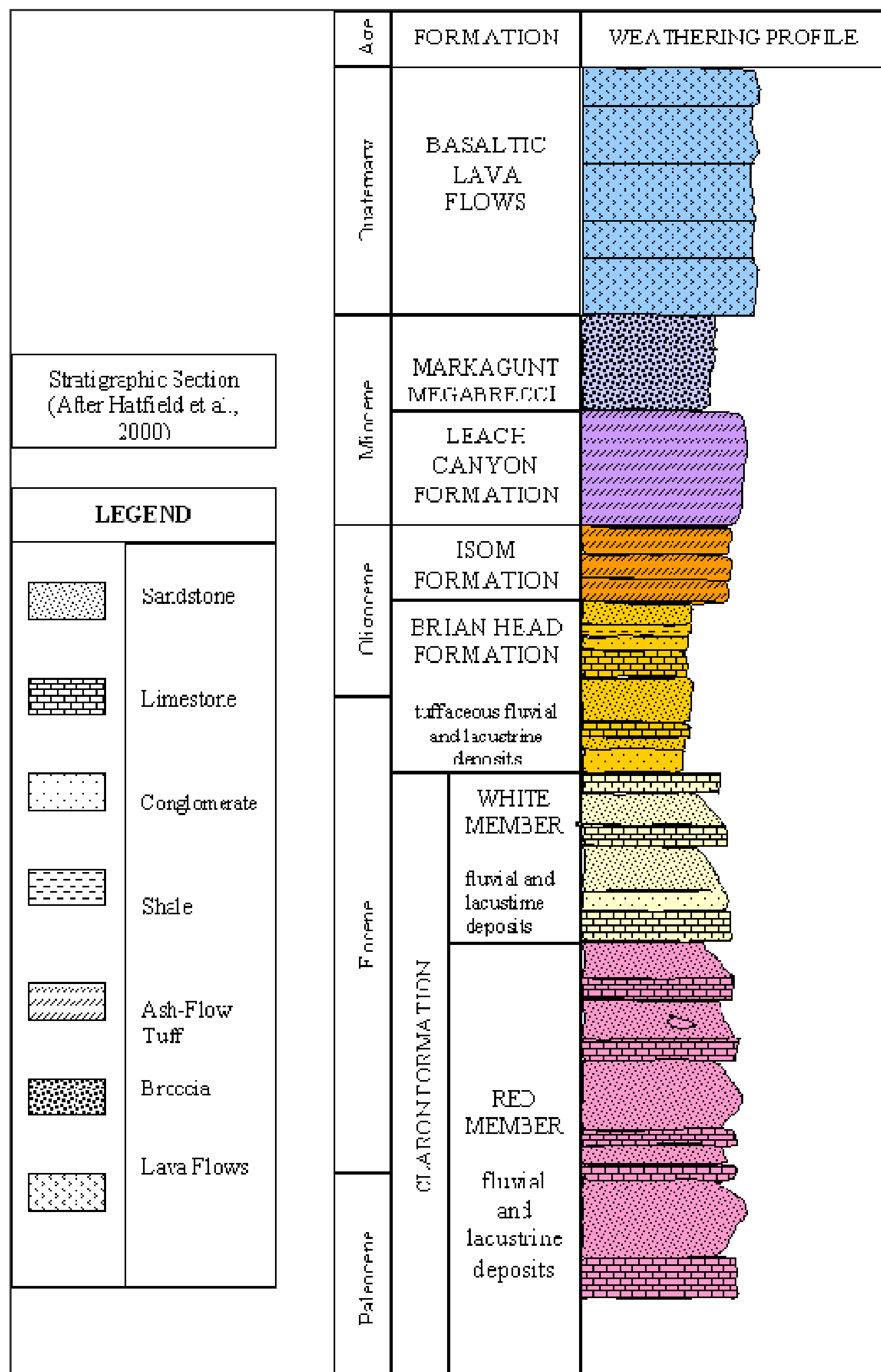
In 1974, two new developments were built in the Duck Creek area. A letter to the Bureau of Environmental Health, dated July 15, 1974, with regards to the suitability of soils in the Movie Ranch subdivision, stated that, "soils conditions for subsurface wastewater disposal are marginal to totally unsuitable." It also stated the following:

"In over one-half the excavations, rock was observed to be a serious problem as evidenced by the shallow depth at which the holes were able to be excavated with a back-hoe. Over one-half the excavations were observed to be within the 5 ft to 7 ft depth range and were indicative of very difficult excavating. Where rock did not appear to be a serious problem, heavy clay was predominant."

In 1974, the Utah Geological and Mineral Survey performed a geologic reconnaissance of the Movie Ranch and Timber Trails subdivisions. The report states that (referring to the Movie Ranch subdivision), "Generally speaking the earth materials distributed over the area of this subdivision are impermeable and bedrock is shallow to very shallow in depth." In reference to the Timber Trails development, the report states, "The terrain here is essentially like that immediately to the north at Movie Ranch Estates. Here, too, bedrock is quite shallow, normally from 1 ft to 2 ft in depth."

The Upper Sevier River TMDL, published in 2004 by the Utah Division of Water Quality, states that, "As development continues to increase, impacts to surface and groundwater from poorly designed, located and installed septic systems may be a potential problem particularly since the claron-limestone and volcanic substrates present from Duck Creek to Panguitch Lake are not suitable and conducive to septic system use."

A soil suitability study performed in the Duck Creek area by the NRCS in 2004 reports, "The septic system hazard associated with a slow percolation rate is that effluent will not leave the site fast enough through the ground." This increases the likelihood that wastewater can resurface and possibly pond on the surface. Additionally, the shallow bedrock layer prevalent throughout the study area increases the likelihood that the wastewater can flow along the top of the bedrock. This is particularly dangerous if the bedrock has fractures present, which may allow the wastewater to travel quickly into the groundwater. Also, if the site slopes, wastewater can resurface farther down the hill without having been sufficiently cleaned. Once the wastewater comes to the surface, it could come into direct contact with humans or contaminate surface water. It could also contaminate the groundwater if the groundwater table is shallow.



Stratigraphic Section for the Cedar Mountain Area.