Cryptosporidium (cryp·to·spo·rid·i·um): Cryptosporidium is a protozoan microbe that causes diarrhea in humans. It is extremely resistant to chlorination. Because of its small size (3 to 7 microns in diameter) it is also very difficult to remove with sand filters that are typically used at water treatment plants. Cryptosporidium was responsible for the largest U.S. outbreak of waterborne disease ever, affecting almost ½ a million people in Milwaukee, WI in 1993. The source of the outbreak was the water treatment plant whose raw water supply was apparently contaminated with the microbe. The water treatment plant responsible for the outbreak was complying with standards set using indicator bacteria and yet the Cryptosporidium outbreak occurred. Currently there is no medical treatment available to cure the disease caused by Cryptosporidium. Therefore, people who do not have strong immune systems, such as small babies and people infected with HIV may suffer for long periods of time with the illness.

Diffusion (dif·fu·sion): the process whereby particles of liquids, gases, or solids intermingle as the result of their spontaneous movement caused by thermal agitation and in dissolved substances move from a region of higher to one of lower concentration.

Dilution (di·lu·tion): to make thinner or more liquid; to diminish the strength, flavor, or brilliance of a mixture.

Disinfection: A process by which disease causing microbes are at least partially inactivated or removed.

E. Coli: straight rod-shaped gram-negative bacterium (Escherichia coli of the family Enterobacteriaceae) occurring in various strains that are used in medical and genetic research, live as harmless inhabitants of the human lower intestine, are used in public health as indicators of fecal pollution (as of water or food), or produce a toxin causing intestinal illness

Indicator Microbe: A microorganism used to indicate the presence of disease-causing microbes.

Protozoan (pro·to·zo·an): Protozoans differ from bacteria in that they possess a nucleus surrounded by a membrane. They are typically larger than bacteria. There are several protozoans that can be transmitted through water and cause disease in humans. These protozoans include Giardia, Cryptosporidium, Cyclospora, Entaemeoba, and Isospora. One distinguishing characteristic of the protozoans is that when they are released from the human body through feces they are present in an encysted or dormant form. The cysts have a protective layer that surrounds them that keeps chemicals from penetrating them. Therefore, chlorine disinfection does not kill the protozoan cysts.

Septic Tank System: A system located underground that is designed to partially treat and disposed sanitary sewage from a household or building. The septic tank system consists of a water tight septic tank that holds water for a period of about 24 hours thereby allowing for the settleable particles and floating grease to be removed. Water from the septic tank then flows into a drainfield which consists of a series of perforated pipes embedded in a trench of gravel. Water flows through the perforated pipes through the gravel and ultimately to the soil located below the septic tank.
**Virus**: Viruses differ from bacteria in that they contain no cell membrane or organelles. Viruses are simply a strand of DNA or RNA surrounded by a protein coat. They are smaller than bacteria and are very difficult to filter out. There are concerns about their ability to be transported through soils, such as the case when sanitary sewage is disposed via a septic tank.