

Well and Septic
System Care
in
Hunterdon County



A Homeowner's Guide

Hunterdon County Department of Health
Route 12 County Complex, Bldg., # 1, Room 200
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Flemington, NJ 08822-2900

Water: One of the Wonders of the World

One of the greatest wonders of our world today is clean, plentiful, potable (drinkable) water. Stop and consider how often you use water during a 24-hour period. Consider the importance of clean water coming out of your tap. Could you manage your household if your water system became polluted?

This booklet is specifically for Hunterdon County homeowners, and it stresses the importance of properly maintaining individual well and septic systems. This booklet is also designed to help homeowners understand how these systems operate, and how to keep them operating smoothly. This information should help provide long-term protection for one of our most precious resources.

*Could you
manage your
household
without a
clean, safe
water supply?*

As you read through this booklet consider this: *Materials put down the drain today may very well come out of the faucet in the months ahead.*

Despite the proximity of the Delaware River, the South Branch of the Raritan River, and New Jersey's two largest reservoirs, Hunterdon County residents rely primarily on ground water for household water supplies. More importantly, most residents use private wells as a water source and on-site septic systems for sewage disposal.

Our most valuable resource....
A clean, available water supply

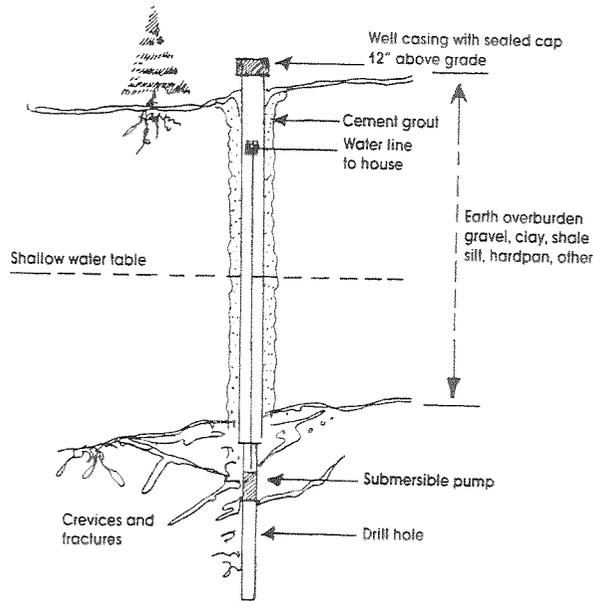


Figure #1

New Jersey well codes require that all drilled wells be cased with a minimum of 50 feet of steel pipe and be constructed with a minimum of 20 feet of casing set into bedrock. The casing is installed in sections, with each joint carefully sealed. The installation of the well, as shown in Figure #1, along with final grouting (cementing of void) prevents surface seepage and contamination. Hunterdon County wells drilled after 1978 must have a wellhead that extends 12 inches above ground level to reduce the chances of surface water carrying pollutants into the well. Wells that were drilled before to 1978 may have the top of the well below the surface of the ground. Current codes require that the well be brought above the surface of the ground when a well is repaired. This retrofitting of the well reduces the likelihood of surface water intrusion.

Shallow wells and springs are extremely vulnerable to pollution and should be tested frequently.

Well Water

Hunterdon County has a very complex geology, with a wide variety of soil types. Most of the aquifers (underground water bearing rock) consist of fractured rock formations. There is a great range of well depths throughout the county, ranging from a minimum of 50 feet to more than one thousand feet, depending on the geographic area.

As Figure # 2 indicates, private wells carry a certain vulnerability. This risk comes from how the land surface is being used – or abused. The closer a well is to a source of groundwater contamination, the higher the risk of contaminated water. While public water companies are required by law to test customers' water regularly, owners of private wells are 'on their own'.

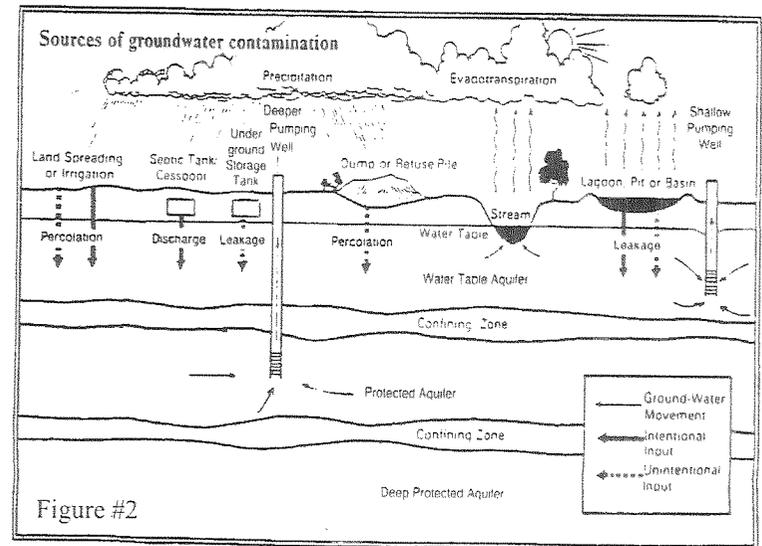


Figure #2

Water Flow from the Aquifer

When a resident turns on the tap, the well pump is activated and water is drawn out of the fractured rocks and into the well. As water is drawn from the aquifer, it will be replaced by normal rainfall or, indirectly, from underground movement of water out of nearby streams and reservoirs. Ground water moves very slowly, only a few inches per year in many areas. It is easy to see that once its contaminated, an aquifer is slow to cleanse itself. In fact, it is almost impossible to cleanse, even when using available technology.

Clean Water Has Its Own Problems

Naturally, occurring elements in the Geology of Hunterdon County cause some variation in the natural chemistry of our drinking water. Most water in the Hunterdon County is quite 'hard', which produces calcium deposits. The 'lime' deposits (actually calcium carbonate) can be removed by soaking your kettle, humidifier, etc. overnight with white vinegar (rinse it well before re-using).

Iron and manganese are naturally occurring elements common in Hunterdon County drinking water that are not harmful to our health, but at higher concentrations can cause staining of plumbing fixtures, dishes and laundry.

Other natural elements can be of a health concern in our water supply include arsenic, sulfur, barium and radon gas – each of these is associated with specific geological formations.

Natural elements in your water can be removed with water treatment equipment suited to the particular problem.

Radon gas has also been found dissolved in well water in Hunterdon County – sometimes at levels high enough to cause special concern. Very high levels must be present in water to cause elevated air levels in the home. The primary source of unsafe radon levels is gas migration into homes through basement entry points. Control efforts, therefore, should focus on these areas rather than on well water as a source. (For more information about radon gas, contact the NJDEP www.njradon.org)

One complaint about Hunterdon County water is acidity. Water that measures below 6.5 pH is considered excessively acidic, the optimum range is 6.5-8.5. Acidic water is common and neutralizing equipment is often necessary to prevent the corrosion of plumbing. When acid is present and corrosion occurs, it is easily identified by blue-green staining where copper plumbing exists. *Acid-produced corrosion can also leach dangerous heavy metals, such as lead, from soldered joints.*

The Hunterdon County Department of Health and New Jersey's Department of Environmental Protection recommends that residents using private wells have them tested once a year to ensure the well is free from harmful bacteria. Additional testing of nitrate, arsenic and volatile organic compounds are recommended every five years. In addition, the New Jersey Private Well Testing Act may affect the resale and rental of properties (please see the NJDEP website for more information: <http://www.state.nj.us/dep/pwta/>).

Water measuring below 6.5 on the pH scale should be treated with neutralizing equipment to prevent corrosion of pipes and leaching of lead from soldered joints.

Treatment systems should be installed and maintained by a professional. The table below will give you a general idea of the types of treatment systems needed.

TREATMENT	EFFECTIVE FOR:
Activated Carbon Filtration	Some organic compounds, taste, trihalomethanes, some pesticides, odor
Air Stripping	Some volatile organics compounds, hydrogen sulfide, radon gas
Chlorination	Coliform Bacteria
Ion exchange	Hard water, calcium, manganese, iron, some heavy metals, nitrate and gross alpha
Reverse Osmosis	Nitrates, dissolved solids, certain inorganic compounds
Ultraviolet Radiation	Coliform Bacteria
Distillation	Inorganic compounds (such as nitrates, sodium chloride), some organic compounds
Granular Adsorption Media	Some inorganic compounds (such as arsenic)

Basic water analysis for new homes includes all the parameters under the NJ Private Well Testing Act

The Private Septic System

The majority of Hunterdon County homeowners rely exclusively on private septic systems to properly treat and dispose of domestic waste.

Lack of federal funding for sewer plant construction, as well as the economic impact of attempting to sewer large, sprawling rural townships, will make the use of individual septic systems the primary source of waste water disposal for a long time to come.

Properly designed, installed and maintained septic systems impose little adverse effect on the environment

In addition, septic systems treat effluent adequately and return it to the aquifers to be used and reused.

How Does A Septic System Work?

As shown in Figure 4, a septic system has two key components:

The Septic Tank: A container usually prefabricated from concrete. It receives wastewater from your bathroom, kitchen and laundry room. Heavy particles settle at the bottom as sludge and light materials float to the surface of the tank forming a scum layer. Bacteria in the system help to break down and liquefy the organic matter, which is carried to the disposal field as effluent.

A septic tank should be sized to allow enough time for settling of heavy particles and floatation scum. The partially treated effluent then flows from the septic tank to the sub-surface disposal area.

The Disposal Field (Figure 3): This consists of a distribution box and perforated distribution lines (laterals) installed below the ground in gravel beds or trenches where further treatment filtering action takes place. Seepage pits can also be used in some places.

Septic systems must be designed and installed to meet standards established by state law, and in some instances, local ordinances.

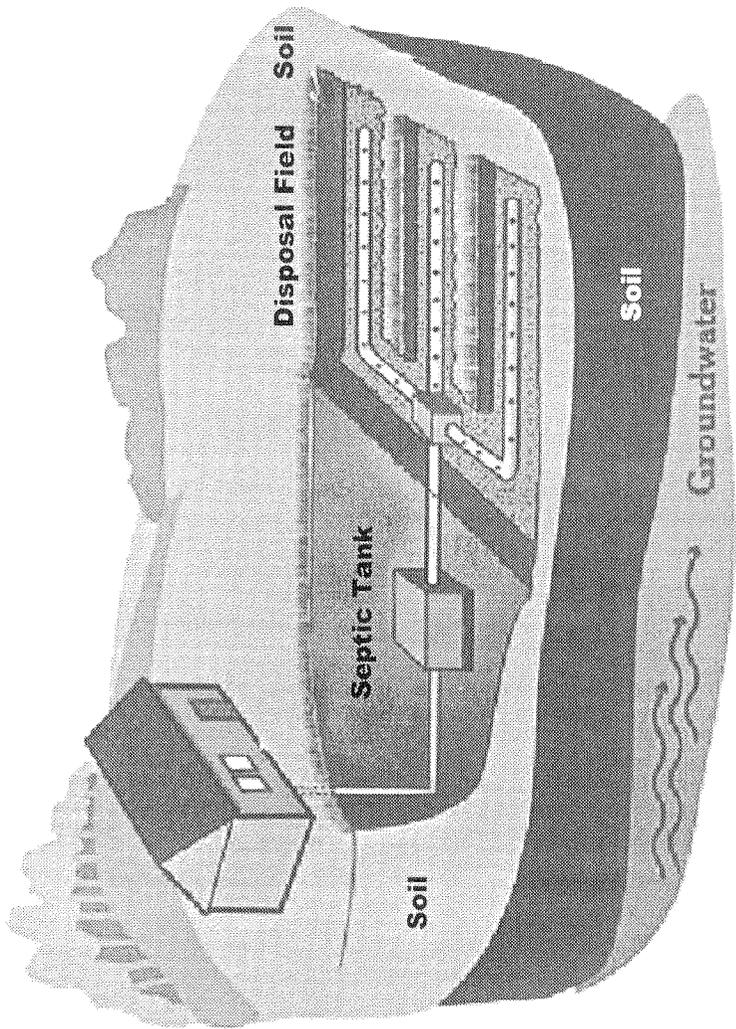


Figure #3

Septic systems must be designed and installed to meet standards established by state law, and in some instances, local ordinances.

Septic System Design

Septic Systems are designed and installed in accordance to NJDEP regulations and, in some instances, local ordinances. These regulations require testing of the soil to determine its permeability. Various tests can be conducted, including tube permeameter, percolation test, basin flooding, pit-bailing or soil permeability class rating.

When designing a system, an engineer checks the level of the water table to ensure that it is at the required distance below the bottom of the disposal area. The size of the disposal area is based on the number of bedrooms in the home. Any home improvements, including pools, sheds and remodeling with in the home will require a Construction Referral Permit and review by the Hunterdon County Department of Health. Caution: Gases generated within the septic tank can accumulate to toxic concentrations, which have been fatal to humans.

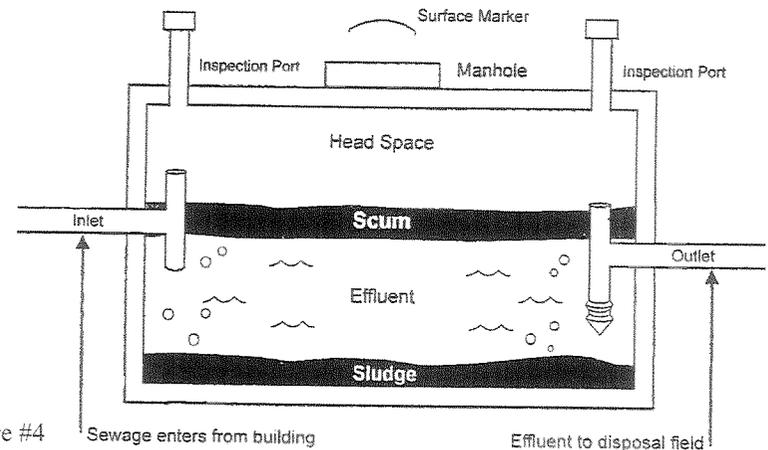


Figure #4

No person should ever enter a septic tank or even just peer into the tank through a manhole cover without exercise extreme caution.

Caution: Gases generated within the septic tank can accumulate to toxic concentrations which have been fatal to humans. No person should ever enter a septic tank or even just peer into the tank through a manhole cover without exercise extreme caution.

Preventing Septic System Problems From *Inside* Your Home

REMEMBER:
Proper care
and
maintenance
of your septic
system helps
ensure its
proper
functioning
and longevity

- 1 Cut back on household usage – fix leaky faucets and toilets, and do not flush the toilet unnecessarily. Install low-flow fixtures for shower-heads, toilets, etc.
- 2 Limit the amount of cleaning agents that you use. They can be harmful to a septic system if used in excess.
- 3 Space your showers, laundry and dishwasher loads, allowing your system to 'rest' between high-volume uses.
- 4 Never allow toxic and hazardous chemicals to be disposed of through your septic system. This includes paint thinner, surplus paint, oil, gasoline or grease. These items should be saved and disposed of at the Hazardous Waste Days

sponsored by the Hunterdon County Solid Waste Department (see last page).

- 5 Limit paper products to the absolute minimum and use white toilet paper to avoid product dyes. Do not put coffee grounds, disposable diapers, sanitary napkins, tampons and cat litter through your septic system.
- 6 **Use of garbage disposals is illegal unless your system was designed for a garbage disposal.**
- 7 Avoid using septic system cleaner additives. They are not necessary, and some can interfere with the natural bacterial action of your system.
- 8 Have your septic system pumped at least every three years to clean out the accumulated sludge. Pumping extends the life and efficiency of your system. All solids should be removed as part of this pumping procedure. Pumping frequency should be increase for older homes with septic tanks less than 1,000 gallons.
- 9 Before any septic system modifications (including repairs, alterations or new installations), a permit is required by the County Department of Health.

Preventing Septic System Problems From *Outside* Your Home

1. Know exactly where your septic system is located – before you have trouble. If you cannot locate it, ask a neighbor, the previous owner or your builder to help you find it. You can also check the records at the Department of Health. If no design records are available, the Department will refer you to other professional resources.
2. There should be no visible effluent, septic odor, or backup into the house. *These warning signs indicate a problem may exist.*
3. Direct roof drains and sump pump discharges away from your disposal field. Septic systems do not work well if you overload the drainage field.
4. Do not physically abuse your septic tank or disposal field by parking vehicles or placing permanent structures (such as above ground pools, decks, or driveways) over the area. Check with the Hunterdon County Department of Health for proper setback distances.
5. Keep trees/shrubs from growing on or close to the disposal area. This will prevent roots from clogging the distribution laterals.
6. When you have your system pumped, the Hunterdon County Department of Health Department recommends you install a concrete riser, with locking lid, that is level with the ground. This will make checking and pumping the system much easier in the future.

REMEMBER:
Be sure to have
the your septic
tank pumped
out by a
licensed
pumper at
least every
three years

Useful Community Resources

Your tax dollars are at work providing you with many resources for assistance with well and septic problems.

Hunterdon County Department of Health 908-788-1351
Route 12 County Complex, Bldg., # 1, Flemington
E-Mail: health@co.hunterdon.nj.us
Visit the county website at www.co.hunterdon.nj.us/depts

Hunterdon County Solid Waste and Recycling 908-788-1110
PO Box 2900
Flemington NJ 08822-2900
<http://www.co.hunterdon.nj.us/depts/swr/hcua.htm>

NJ Department of Environmental Protection 877-926-6337

South Branch Watershed Association 908-782-0422
A non-profit environmental organization
which sponsors well-testing programs for
private homeowners.
Echo Hill Park, Clinton Township
<http://www.sbwa.org/>

Hunterdon County Soil Conservation District 908-788-1397
Provides information on county soil types, erosion
control, storm water management

Hunterdon County Extension Service 908-788-1338
Provides useful information for home, yard
and farm care
<http://www.co.hunterdon.nj.us/depts/rutgers/rutgers.htm>

Water Testing

See 'Laboratories – Testing' or 'Water Analysis' in Yellow Pages

Waste Oil Disposal

Gas and service stations displaying the recycling logo are required to accept waste oil. Also, waste oil can be outletted through the Hazardous Waste Clean-Up programs.

“Hazardous Waste Clean-Up Day”

Waste such as those listed below should never be disposed of in a septic system, but rather safely set aside and brought to the next Hunterdon County Hazardous Waste Clean-Up Day.

- * Paint thinner
- * Solvent-based paints
- * Spot remover
- * Pesticides
- * Film development chemicals
- * Weed killers
- * Oven cleaner
- * Ammonia
- * Waste oil

Watch the local papers for the next date, or call Hunterdon County Solid Waste and Recycling at 908-788-1110.

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A clean, available water supply