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“COMMITMENT TO LEADING THE COMMUNITY FOR A HEALTHIER AND SAFER TOMORROW”

## Private Water Supply Guidance

Updated 4/2020

### Disinfecting Water

Before using any of these disinfection methods, let suspended particles settle to the bottom, or strain the untreated water through layers of paper towels, clean cloths or paper coffee filters.



### Disinfecting Drinking Water

Contaminated water can contain microorganisms that cause diarrhea, vomiting, abdominal cramps, headaches, or other symptoms. You should always disinfect water of uncertain purity before using it for drinking, food preparation, or personal hygiene.

#### Disinfection by Boiling

*Disinfection by boiling produces the safest water*

- Bring water to a rolling boil for one - two minutes.
- Let the water cool before drinking.
- Boiled water will taste better if you put oxygen back into it by pouring it back and forth between two containers. This will also improve the taste of stored water.

#### Using Liquid Chlorine Bleach

- Disinfect water by adding eight drops of liquid chlorine bleach (4-6% available chlorine) per gallon of water (sixteen drops if the water is cloudy)
- Stir, and let stand for 30 minutes.
- If the water does not taste and smell of chlorine at that point, add another dose of bleach and let stand for another 15 minutes.

#### Using Iodine or Chlorine Tablets

- Check the expiration date for the tablets before using.
- Follow the package directions.
- Usually one tablet is enough for one quart of water.
- Double the dose if the water is cloudy.

# Well Contamination

If the area around your well gets flooded or if you suspect that your well is contaminated, you need to disinfect the water in the well before using it for washing and at the tap before using it for drinking water or for cooking. You should continue disinfection at the tap until the water is tested and found suitable for drinking. Contact your local health department for information about testing your well. Changes in the water's appearance, taste or odor may indicate possible contamination.

After disinfecting the well, the water should be tested to determine whether all bacterial contamination has been removed. You should wait several days to test the water to be sure that all the chlorine has been flushed from the water system. Contact your local health department for more information about testing your well. Until testing shows that the water is free of contamination, you should continue to use bottled or disinfected water for drinking and food preparation as described on the back of this page in the section *Disinfecting Water*.

You may wish to consider retesting the well water again after several weeks. If flooding and groundwater contamination is extensive, your well may not be a suitable source of drinking water for some time. Severe flooding that damages the well casing, deposits debris around the well or submerges electrical controls will require a qualified professional for evaluation, servicing and disinfection.

These pages are from the New York State Department of Health (NYSDOH) brochure *Don't Be Left in the Dark* (Revised March, 2014) which contains additional emergency sanitation and safety information. This 32-page brochure is available by calling 1-800-458-1158, extension 2-7530 or from the NYSDOH Website at: <https://www.health.ny.gov/publications/7064/>

## Procedure for Disinfecting a Well

1. Run water until clear, using an outdoor faucet closest to the well or pressure tank.
2. Mix two quarts household bleach containing about 5% chlorine in 10 gallons of water in a large bucket or pail in the area of the well casing.
3. Turn electrical power off to the well pump. Carefully remove the well cap and well seal if necessary. Set aside.
4. Place hose connected to outdoor faucet inside well casing. Turn electrical power back on to the well pump and turn water on to run the pump.
5. Carefully pour the water and bleach mixture from the bucket or pail down the open well casing. At the same time, continue to run the water from the hose placed inside the well casing.
6. At each indoor and outdoor faucet, run the water until a chlorine odor is present, then shut each faucet off.
7. Continue running water through the hose inside the well casing to recirculate the chlorine-treated water. Use the hose to also wash down the inside of the well casing.
8. After one hour of recirculating the water, shut all faucets off to stop the pump. Disconnect power supply to pump. Remove hose from well.
9. Mix two more quarts of bleach in 10 gallons of water and pour mixture down the well casing. Disinfect the well cap and seal by rinsing with a chlorine solution. Replace well seal and cap. Allow the well to stand idle for at least eight hours and preferably 12 to 24 hours. Avoid using the water during this time.
10. After the well has idled for the recommended period of time, turn the pump on and run the water using an outdoor faucet and garden hose in an area away from grass and shrubbery until the odor of chlorine disappears. Run all indoor and outdoor faucets until the odor and taste of chlorine disappears.



## When to Test Your Well Water

- 💧 At least once a year for bacteria (total coliform)
- 💧 If family members or guests have repeated incidents of intestinal illnesses.
- 💧 If the water has an unpleasant taste or smell.
- 💧 After any repair, modification or installation of a well.
- 💧 When the well has not been in use for an extended period of time.
- 💧 If the well is in an area of agricultural use.
- 💧 If the well is near a landfill, junkyard, factory, gas station, dry cleaning operation, salt storage site or a heavily salted road.
- 💧 If you are buying a home and wish to know about the quality, quantity (flow test) and safety of the water supply.
- 💧 If a baby is expected or if an infant under six months old consumes the water, it is important to check the water for high levels of nitrates.

The water quality should be tested by a laboratory approved by the New York State Department of Health Environmental Laboratory Approval Program (NYSDOH ELAP). Laboratories will provide customers with the appropriate sampling container and sampling procedures.



## Well Maintenance Checklist

- 💧 Have your water tested at least once a year for bacteria
- 💧 It is recommended your well be chlorinated (with bleach) twice a year especially after extended periods of wet weather.
- 💧 Inspect your pump. Are there vibrations, noises, changes in water volume or pressure that might indicate a broken or worn part?
- 💧 Check to see that your well casing extends at least 12” above the ground or above the floor of a drained well pit so that the vent in the cap is never under water.
- 💧 Make sure that abandoned wells are properly sealed and filled.

**AREA LABORATORY SERVICES AVAILABLE FOR WELL WATER ANALYSIS**  
**Updated: 4/2020**

<i>LABORATORY</i>	<i>COLIFORM</i>	<i>NITRATES</i>	<i>LEAD</i>
Certified Air Testing, LLC Air Quality Analysis • Radon • Mold 607-295-8070			
ALS Environmental (Used to be Columbia Analytical Services, Inc.) 1565 Jefferson Rd Rochester, N.Y. 14623 585-288-5380	Minimum Charge \$100.00 unless pre-arranged \$35 (\$100 for Coliform, Nitrate, Nitrite & lead)	\$20	\$30.00
Life Science Laboratories Inc. 16 N. Main Street Wayland, N.Y. 14572 585-213-4090	\$35.00	\$25.00	\$25.00
GHM Environmental 5 A Main Street P.O. Box 727 Savona, N.Y. 14879 607-583-4332	\$50.00	\$50.00	\$50.00
Lozier Environmental Consulting 2011 East Main Street Rochester, N.Y. 14609 585-654-9080	\$35.00	\$35.00	\$35.00

NOTE: Sample bottles and sampling instructions from the lab of your choice must be obtained. The above represents only a partial list of area laboratories. Please check to be sure lab is currently certified to perform the sampling. Refer to the yellow pages for additional listings.

## Sample Collection Protocol for Bacteriological Samples

A total coliform bacteria sample must be sampled using a sterile bottle supplied by a New York State approved laboratory. Complete sampling procedures must be followed for an accurate analysis.

- 💧 DO NOT RINSE SAMPLE BOTTLES. These bottles contain *thiosulfate*, required to remove chlorine in the sample. If you do not use chlorine in your system, the thiosulfate should still remain in the sample.
- 💧 Flush the system by allowing water to run for a minimum of 2 minutes. NOTE: For mixing faucets, first run the hot water for a minimum of 2 minutes. Then, run the cold water for a minimum of 2 minutes.
- 💧 A cold water tap must be used for sampling. It must be free of aerators, strainers, hose attachments, mixing faucets and/or filtration devices that may be at or up line of the tap.
- 💧 If the water is chlorinated, the chlorine residual should be measured after flushing the line.
- 💧 Do not open the bottle until you are ready to sample. Remove the sample bottle cap from the container, taking care not to contaminate the bottle. Only the bottom portion of the bottle and the outside of the cap should be touched. . Keep the cap inverted. NEVER TOUCH THE INSIDE OF THE CAP OR THE THREADED AREA.
- 💧 Fill the bottle to the shoulder of the sample bottle, which is ½” above the 100 ml. line and recap immediately. Do not overfill, or the sample cannot be mixed effectively for analysis. A minimum of 100 ml. sample is required for coliform analysis. Do not under fill containers.
- 💧 Keep the bottle open only as long as necessary to collect the sample.
- 💧 Label the bottle in accordance with laboratory’s instructions and complete the chain of custody or analysis form.
- 💧 If samples cannot be processed by the lab within one hour of collection, they should be transported on ice in a cooler and delivered to the lab within 6 – 24 hours of collection depending on the method of analysis (talk to the laboratory for accurate holding times).

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Whenever coliform bacteria are detected in a sample, follow-up testing is conducted to see if other bacteria of greater concern, such as *E. coli*, are present.

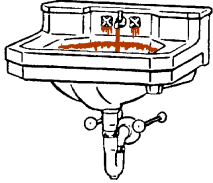
E.coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. E.coli bacteria in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some elderly, and people with severely compromised immune systems.


If you have total coliform or E.coli in you water:


**DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST.** Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water certified for sale by the New York State Department of Health. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation. Boiling kills most bacteria and other organisms in the water. Well disinfection procedures should be followed and another water sample should be analyzed.

For more information contact the Livingston County Department of Health, Center for Environmental Health at (585) 243-7280 or (585) 335-1717.

## Common materials that cause problems in water and what to test for

Symptoms	Appearance	Test for:
stained fixtures and clothes 	red and brown	iron
	reddish-brown slime	iron bacteria
	black	maganese
	green or blue	copper

an unusual taste or odor in your water 	rotten egg	hydrogen sulfide
	metallic	pH, corrosion index, iron, zinc, copper, lead
	salty	total dissolved solids, chloride
	septic, musty, earthy	total coliform bacteria, methane
	alkali	pH, total dissolved solids
	gasoline or oil	hydrocarbons
	soapy	surfactants

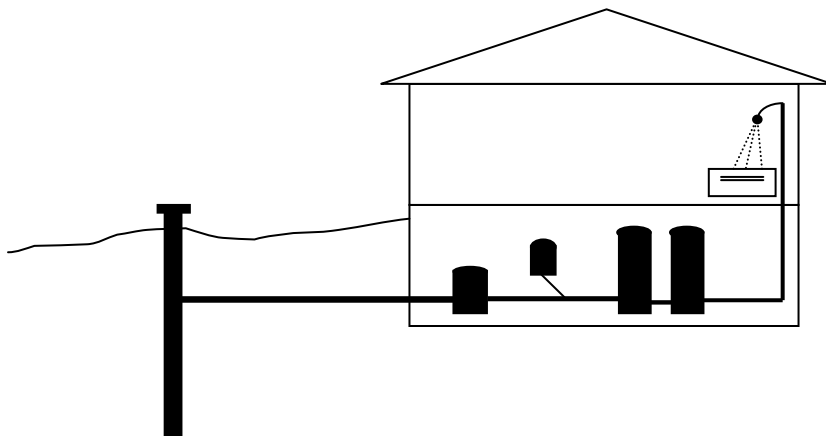
off color water 	cloudy	turbidity
	black	hydrogen sulfide, maganese
	brown or yellow	iron, tannic acid

corrosive water 	deposits, pitting	corrosion index, pH, copper
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## Water Treatment Systems

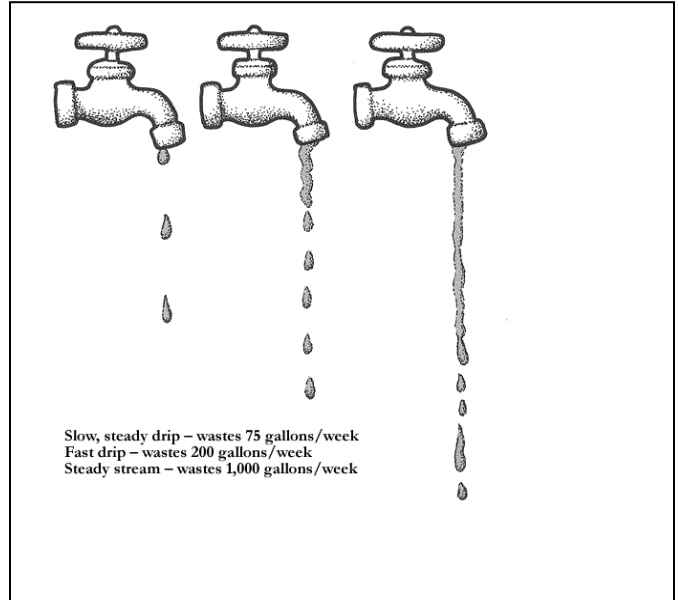
Water Problems and best methods for addressing them:

- Low Recovery Rate- (Yield) Above or below ground storage tanks with a timer.
- Bacteria - Chlorination system (feeder, retention tank & carbon filter) to kill bacteria with chlorine by holding in retention tank, then filter and remove chlorine with carbon filter, UV light with bulb changed yearly and treatment.
- Colloids- Flocculation system (feeder, retention tank & carbon filter) to remove small particles from the water (i.e. colloidal clay). The flocculation agent is injected in water forming a molecular net to catch the small particles, then filtered to remove the flock with the colloid.
- Iron - Chlorination system (feeder, retention tank & carbon filter) to change iron into rust by oxidation of the iron by the chlorine in the retention tank, then filter and remove chlorine with carbon filter. Green sand filters and air injection are alternative, but cannot be used if iron bacteria are present.
- Sulfur - Chlorination or hydrogen peroxide system (feeder, retention tank & carbon filter) to precipitate sulfur into a black precipitant by oxidation in the retention tank, then filter and remove chlorine or hydrogen peroxide with carbon filter. Green sand filter and air injection are alternatives, but cannot be used if bacteria are present.
- Hardness - Ion exchange (water softener) is used to exchange the unwanted positive ion such as calcium, magnesium etc. for sodium which will not cause deposits like the ions removed. Materials such as lead, barium, strontium etc. are also removed effectively.
- Total Dissolved Solids - Reverse osmosis is used. Reverse Osmosis is a system that pushes water through a membrane that allows only water to pass through it. The higher the concentration of TDS the higher the pressure used. These systems have been around for many years and are for drinking water even in places like cruise ships and the Middle East.



## Water Conservation Tips

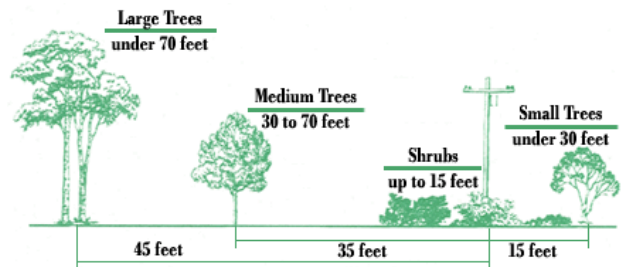
1. Avoid Watering lawns filling swimming pools and washing cars.
2. Use your automatic dishwasher only for full loads.
3. Use your automatic washing machine only for full loads.
4. If you wash your dishes by hand, do not leave the water running for rinsing.
5. Keep a bottle of drinking water in the refrigerator to keep it cool instead of running the water.
6. Check faucets and pipes for leaks. Leaks waste water 24 hours a day, seven days a week and often can be repaired with only an inexpensive washer.
7. Check your toilets for leaks. To test for leaks, add a small amount of food coloring to the toilet tank. If, without flushing, the color begins to appear in the bowl, you have a leak that should be repaired immediately.
8. Take shorter showers. Long showers can waste five to ten gallons every extra minute.
9. Install water-saving showerheads or flow restrictors. Area hardware or plumbing supply stores stock inexpensive water-saving showerheads or restrictors that are easy to install.
10. Use of disposable/single service dinnerware, cups and utensils would help minimize dishwashing.





## Protect Your Well Water from Contamination

1. Keep toxic chemicals such as paints, varnishes, oils, acids, thinners and medicine out of your sink and/or toilet. These chemicals may cause groundwater contamination through your leach field.
2. Keep application of pesticides, fertilizers and other lawn chemicals away from your well and the area of influence.
3. Keep chemicals, pesticides and petroleum products (including fuel tanks) a safe distance away from your well to prevent leaks or spills from contaminating your well.
4. Wash your cars and boats away from the wellhead area to prevent soap, oil and gas from entering into your water supply.
5. Recycle used oil. Never pour oil, gasoline, or antifreeze on the ground, on streets or in storm sewers.
6. Keep all animal wastes away from your well to prevent nitrates and bacteria from polluting your drinking water.
7. Have your septic system pumped every 1-4 years and be alert for signs of septic system failures.
8. An abandoned well can be a direct connection from the ground surface to the aquifer below. Contaminants that enter the well are introduced directly into the aquifer with no opportunity for natural filtration by soils. Abandoned wells should be properly sealed or filled by a certified well driller. Dug wells should be filled with earth similar to the existing subsoil; Drilled wells should be filled with concrete.
9. Do not plant large trees near the well. The roots of large trees may reach water in the draw down area creating potential paths for contamination, and potential root damage to the well.



10. Prevent back-siphoning which could draw pesticide and fertilizer contaminated water into your water system. This can be accomplished by installing vacuum breakers at every faucet that may either be submerged or have a hose attached to it. These faucets are potentially dangerous because a drop in water pressure may draw contaminated water backwards into the drinking water supply.

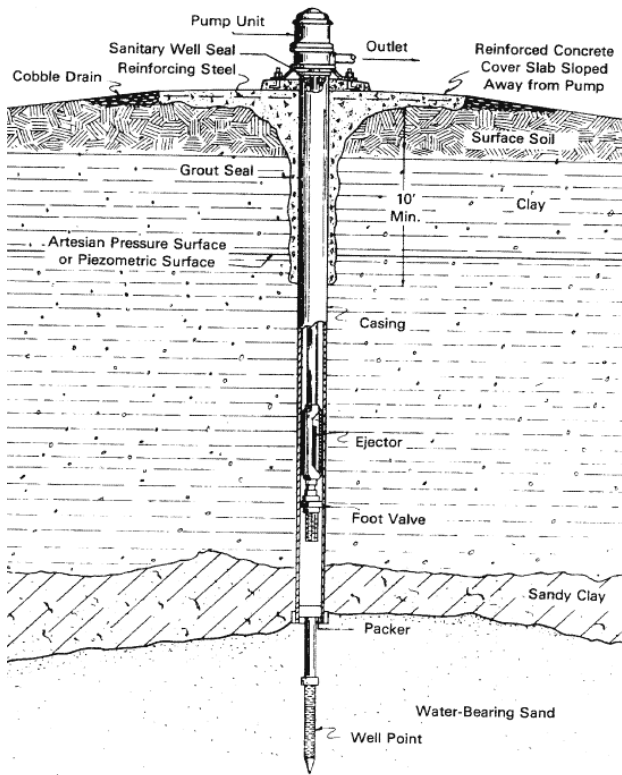
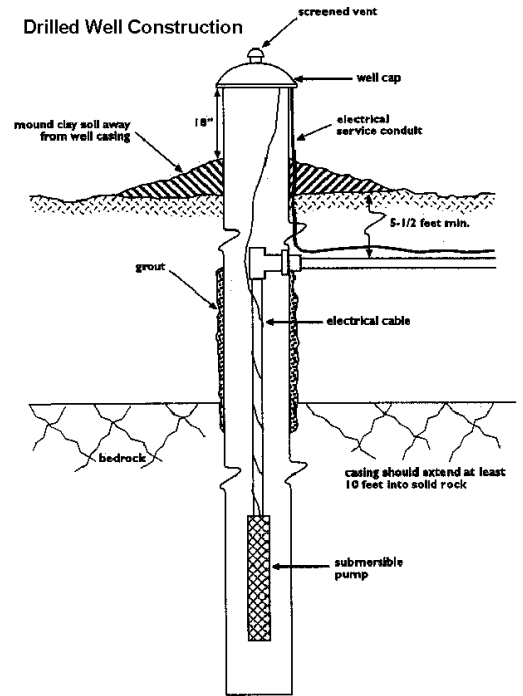


Vacuum Breaker

# Drilled wells

- Usually 60 feet deep or more.
- As the hole is drilled, metal or plastic casing is inserted until bedrock is reached.
- A well screen is placed in the lower portion of the well.

This type of well is the least likely to become contaminated because it is “protected” from surface water impacts and is the most dependable source of water.



## Driven

A special driving point with a well screen on a series of short pipe sections is driven into the ground.

### Limitations

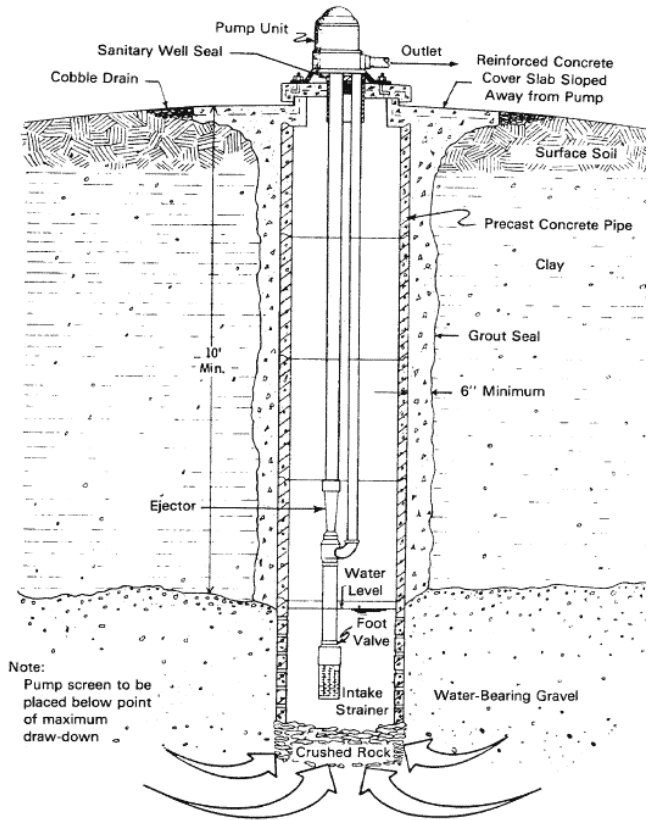
- Yields are small to moderate because of small pipe.
- Cannot be driven into coarse gravel, boulders and dense rock.

## Dug well

- The hole is dug the desired diameter and depth by hand or power.
- The walls are often brick, stone, concrete or pre-cast tile.
- These wells are relatively shallow in comparison to drilled or driven wells

### Limitations

- Due to the shallow depth, dug wells can easily go dry with fluctuation in the water table.
- Susceptible to contamination from surface pollution.

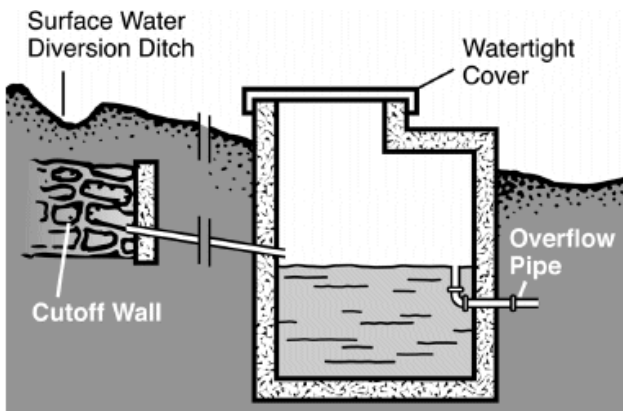


## Spring box

A water-tight box and cover usually made of concrete. Built 3 feet below and 1' above ground line.

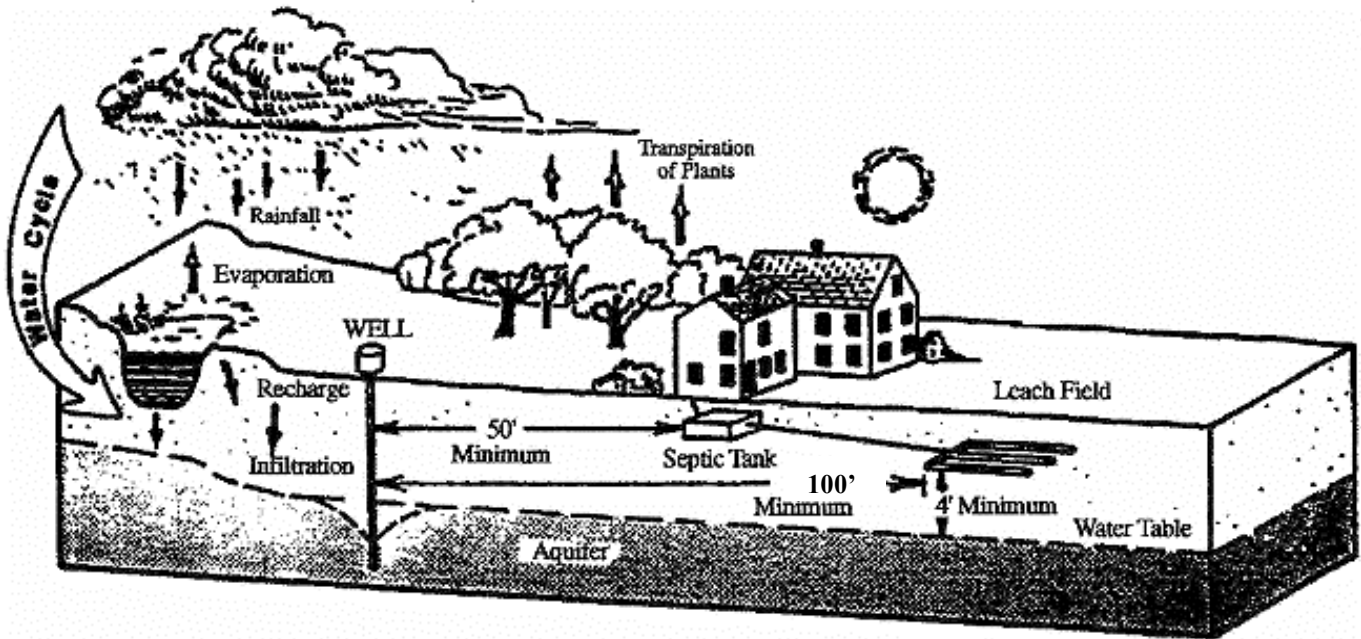
### Limitations

- When spring basins are not constructed over a true source, the yield is limited and pollution is common.
- Springs in limestone introduce major hazards because limestone is characteristically channeled and fractured, and pollution can travel long distances without being purified.
- Great potential for surface water infiltration or other impacts (frogs etc.)



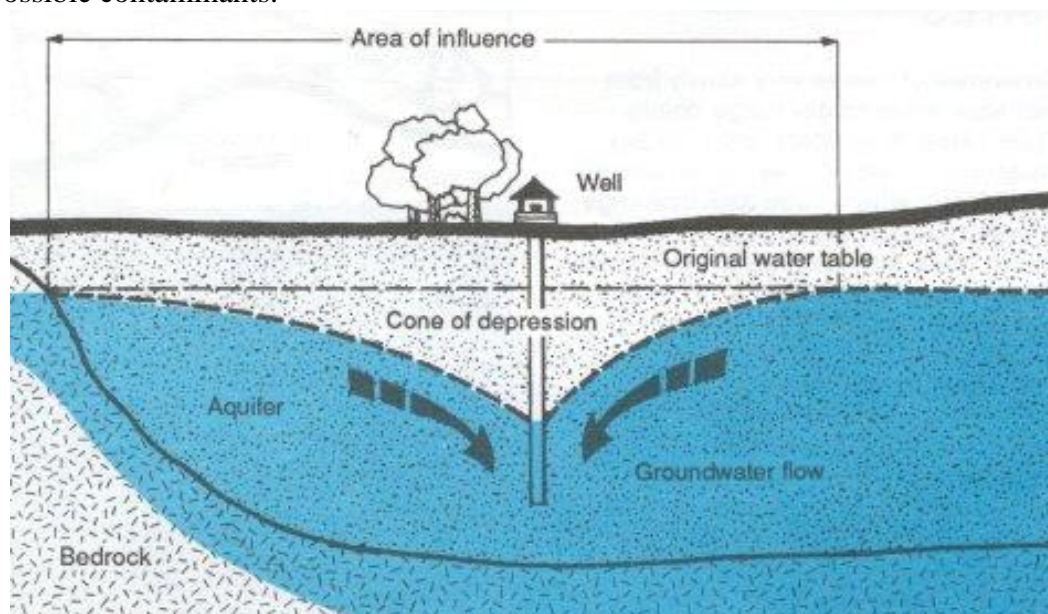
## Your Private Well

A private well can be a source of clean, drinkable water if it is properly located, appropriately designed, carefully installed, and properly maintained.

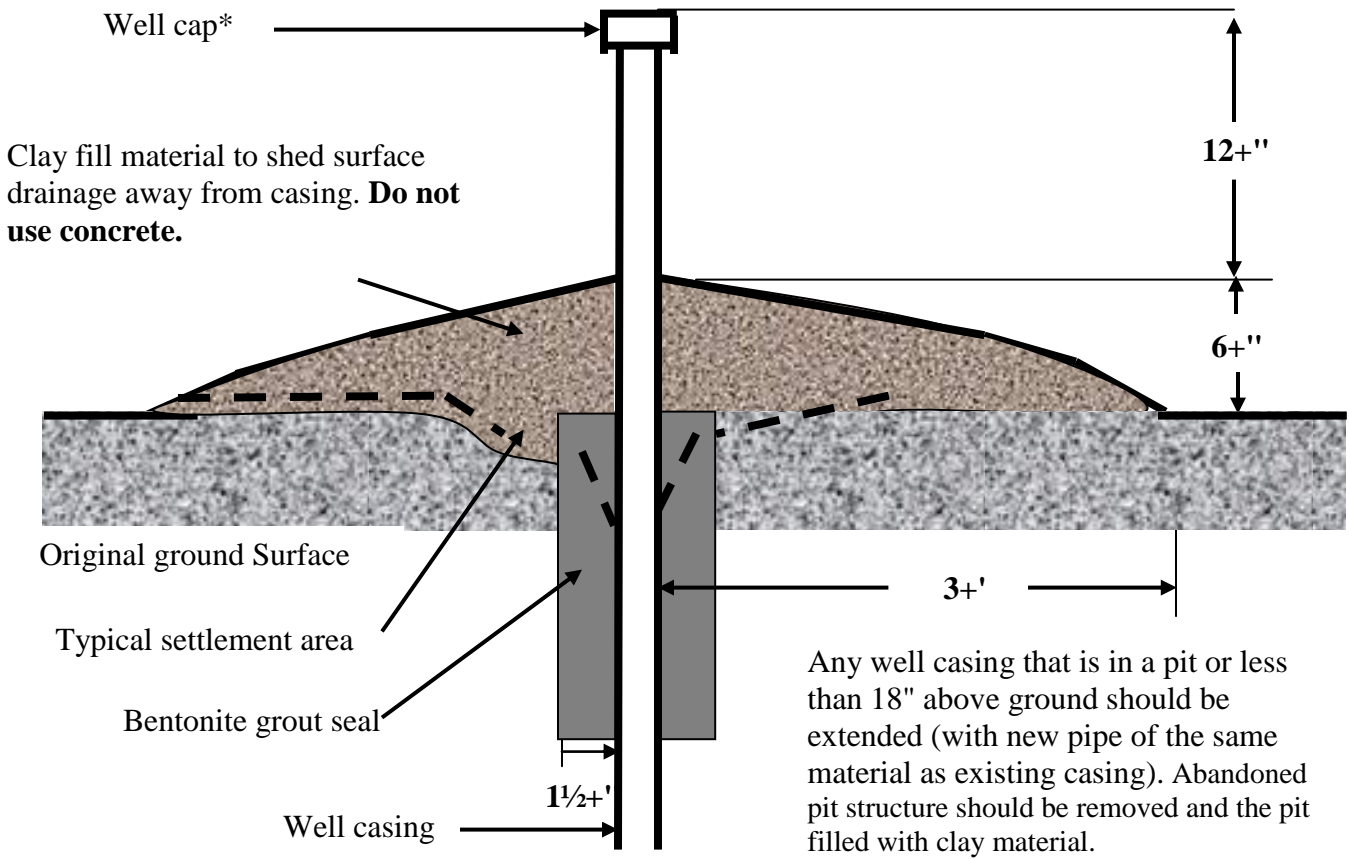


### How Your Well Works....

**Groundwater**, which occurs nearly everywhere, is the water from precipitation that falls and fills the spaces between grains of soil or fractures in the bedrock. Reservoirs of sufficient water bearing material are called **aquifers**. When pumping is started, the water level in the vicinity of the well is lowered. The amount of the drop in the water level is called **drawdown**. Drawdown is greatest close to the well and decreases to a point where the water level is essentially unaffected. Underneath the ground surface the area of drawdown is called a **cone of depression**, however on the surface it is known as the **wellhead** or area of influence. When pumping water from a well the direction of ground water flow will always be toward the well. The **area of influence** may extend as far away as 500-1,000 feet and must be protected from any possible contaminants.



## WELL DETAIL

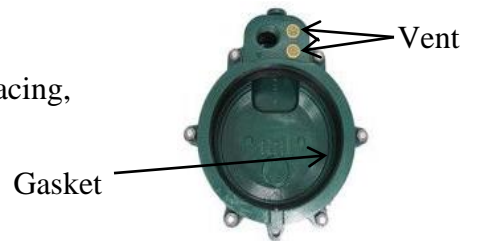


\*Well cap should be secured to casing and contain a sanitary seal (rubber gasket) and a downward-facing vent with 20 to 30 mesh per inch corrosion-resistant screen. The electrical conduit hole should be sealed. Split caps should not be used. A well cap should be secured with sturdy, weatherproof lock.

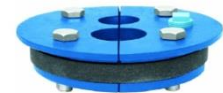
Well installations and modifications should be performed by a New York State licensed well driller.

### Typical Examples of Well Caps

**Proper Well Cap** – This cap is provided with a sanitary seal and down-facing, screened well vents, structurally sound, corrosion-resistant.



**Spilt Cap**- Used indoors or in other special situations. Must have additional cover to protect from elements. These caps should be replaced with a sealed vented cap indicated above.



**Improper Cap**-Very common and least expensive. These allow contaminants to enter the well and should be replaced even if no observed problems are noted.

