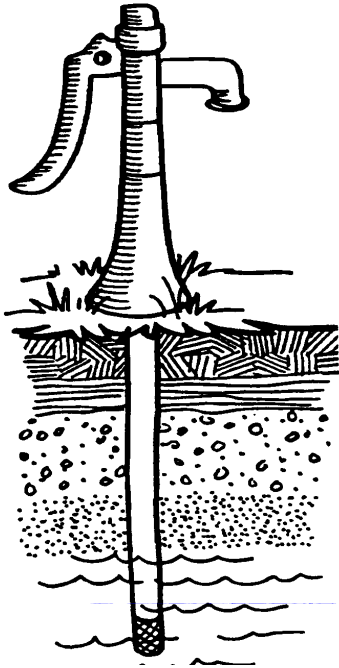
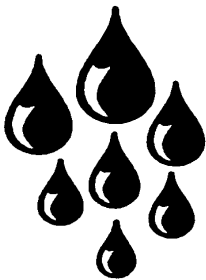




PROTECTING YOUR WATER QUALITY THROUGH A HOME & FARM ASSESSMENT



ASSESSING THE CONDITION & LOCATION OF YOUR DRINKING WATER WELL

WHY SHOULD YOU BE CONCERNED?

The condition of your well is important to consider when looking at potential drinking water contamination. You should be concerned about the location and condition of your well and the activities around your well that may affect your drinking water quality.

Bacteria or nutrients from failing septic systems or livestock; toxic chemicals from household hazardous waste, fertilizer, pesticide, or petroleum product storage areas can all enter your well if it is not built or maintained properly. Some contaminants in water may only affect appearance, while others such as microorganisms (bacteria, viruses, etc.), nitrate, and toxic chemicals can be harmful or even fatal.

WHAT CAN YOU DO?

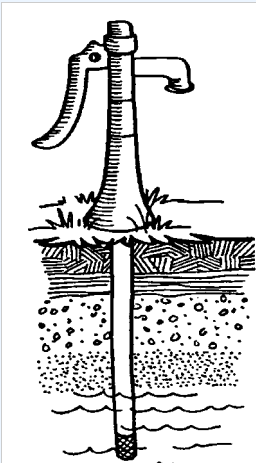
Use this worksheet to address questions you have answered **Yes** to or **do not know** the answer to in the **Assessing the Condition and Location of Your Drinking Water Well** section of your **Home & Farm Water Quality Assessment**. This worksheet will help you develop an Action Plan to establish practices that reduce the risks of contamination to your drinking water supply.

A PARTNERSHIP PROGRAM FOR VOLUNTARY POLLUTION PREVENTION

UVI Cooperative Extension
Service

VI Resource Conservation and
Development Council, Inc.

USDA Natural Resources
Conservation Service



ASSESSING THE CONDITION AND LOCATION OF YOUR WATER SUPPLY SYSTEM

If your drinking water comes from the V.I. Water and Power Authority (WAPA), continue to **Section II. Assessing Your Site**.

WELL WATER SUPPLY SYSTEM

Is your water supply from a domestic well? If yes, continue with the questions below. If no, go on to **Rainwater Collection Systems**.

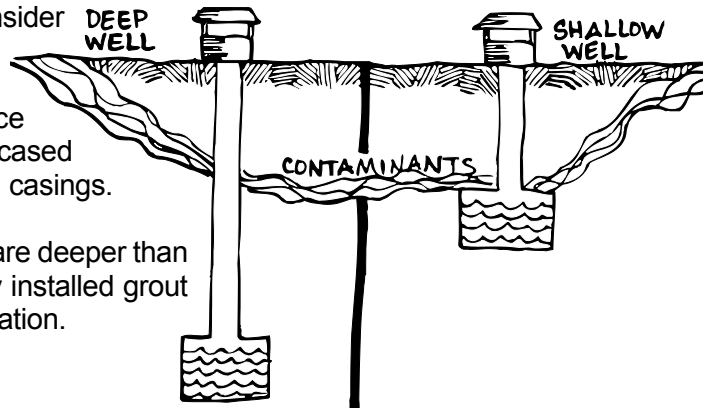
- | YES | NO | | |
|--------------------------|--------------------------|-----|---|
| ☐ | ☐ | 1. | Do you have a well less than 50 feet deep? |
| ☐ | ☐ | 2. | Do you have a dug well or driven well, rather than a drilled well? |
| ☐ | ☐ | 3. | Was your well built more than 50 years ago? |
| ☐ | ☐ | 4. | Has it been longer than three years since you had your well water tested or did your water test positive for nitrate and/or bacteria the last time it was tested? |
| ☐ | ☐ | 5. | Does your well casing (well pipe) extend less than 18 inches above the ground level? |
| ☐ | ☐ | 6. | Is there a hole or depression around your well casing? |
| ☐ | ☐ | 7. | Can you see any cracks or holes in your well casing? |
| ☐ | ☐ | 8. | Is your well downhill from any potential contamination sources (septic system; pesticide, fertilizer, manure, or petroleum product storage area; or other pollution sources)? |
| ☐ | ☐ | 9. | Is your well located closer to potential pollution sources than Virgin Islands code allows? |
| ☐ | ☐ | 10. | Are there abandoned wells on your property that have not been properly plugged? |

If you have answered **Yes** or **do not know** the answer to any of these questions, refer to this factsheet for valuable information that will help you develop an Action Plan to reduce the risk of contamination to your drinking water supply and surrounding surface waters.

1. DO YOU HAVE A WELL LESS THAN 50 FEET DEEP?

The depth of your well is important to consider when looking at the potential for ground water contamination. Contaminants that infiltrate (seep into the soil) from the surface are more likely to contaminate shallow, uncased wells than deep wells with properly installed casings.

Drilled wells with properly installed casings are deeper than most dug or driven wells and have properly installed grout surrounding the casing to prevent contamination.



2. DO YOU HAVE A DUG WELL OR DRIVEN WELL, RATHER THAN A DRILLED WELL?

There are three main types of wells: dug, driven and drilled wells.

A dug well is a hole normally wider than three feet and is often built by hand. This type of well has the greatest risk of being contaminated because it is usually shallow and often poorly protected from surface water runoff.

A driven well is usually two inches wide or less and is typically installed only in areas with relatively loose materials (such as sand). Because driven wells are usually shallow, less than 50 feet deep, the risk of contamination is high.

A drilled well that has a properly installed casing is usually the least susceptible to contamination and is usually the safest.

3. WAS YOUR WELL BUILT MORE THAN 50 YEARS AGO?

The age of your well is also a factor to consider when determining the potential for drinking water contamination. Older wells are generally shallow and more likely to be located in an area that may be downhill or close to potential contaminant sources. These wells may have structural problems such as inadequate or corroded casings.

4. HAS IT BEEN LONGER THAN THREE YEARS SINCE YOU HAD YOUR WELL WATER TESTED OR DID YOUR WATER TEST POSITIVE FOR NITRATE AND/OR BACTERIA THE LAST TIME IT WAS TESTED?

As part of your well maintenance program, you should test your well water every year. Water testing is the only sure way to know what substances are present in your drinking water.

Some contaminants may only affect appearance, while others, such as bacteria, nitrate and toxins can be extremely harmful or even fatal.

Consult the Department of Health or the DPNR Division of Environmental Protection (DEP) to determine what pollutants you might want to test for, and how to take a water sample. If your sample is positive for bacteria and/or contains a high level of nitrate, consider testing for additional contaminants.

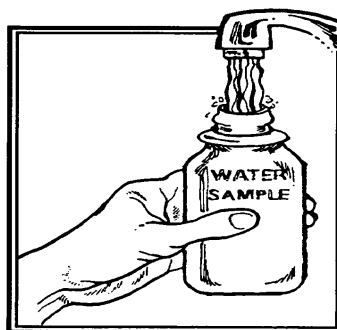
5. DOES YOUR WELL CASING (WELL PIPE) EXTEND LESS THAN 18 INCHES ABOVE THE GROUND LEVEL?

In assessing contamination potential, you need to look at your well casing height.

DPNR-DEP recommends that the well casing or cap (if the well has one) should project at least 18 inches above ground and have a sanitary seal.

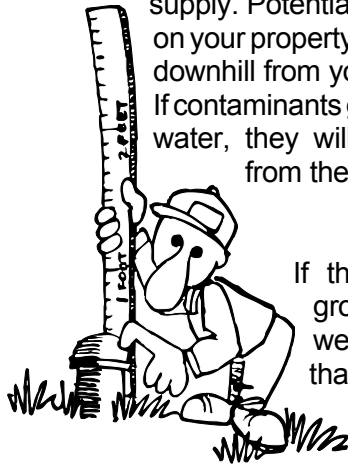
In addition, in areas subject to flooding, the top of the casing, cap, or well cover should be at least 2 feet above the highest known flood elevation.

The area surrounding the well casing should also be sealed with clay soil or another impervious material. Surface water that enters a well casing can directly channel contaminants to your drinking water. Virgin Islands' regulations require a casing depth of at least 8 feet below ground for a dug well. Also, the top of the well casing cannot end in basements, pits, or other areas below ground level.



6. IS THERE A DEPRESSION OR HOLE AROUND YOUR WELL CASING?

The direction of surface water flow can affect the risk of contamination to your drinking water supply. Potential pollution sources on your property should be located downhill from your well. This way, if contaminants get into the surface water, they will likely flow away from the well.



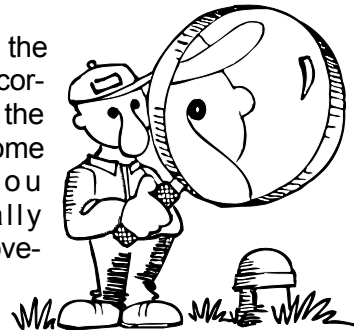
If the surface of the ground around your well casing is lower than the surrounding landscape, it provides an area for surface water to collect. Contaminants can either leak down along the well casing or through cracks in the well casing. DPNR requires all new wells to have a concrete curb around the well to prevent contamination.

7. CAN YOU SEE ANY CRACKS OR HOLES IN YOUR WELL CASING?

The condition of your well casing and cap needs to be inspected periodically. Wells are commonly cased with steel, plastic or concrete to prevent the collapse of the borehole. The space between the casing and the sides of the borehole is filled with grout, cement, concrete, or bentonite (clay), depending on the geological materials present. The casing and grout prevent pollutants from seeping into the well.

To prevent contaminants from flowing into the well casing, a tight-fitting, vermin-proof cap must be installed on the well when it is built. The cap should have a screened vent that is turned downward so air can enter the well. The vent should be high enough so it will not allow surface water to enter the well. Not all wells are capped; some wells have pumps mounted on top of the casing.

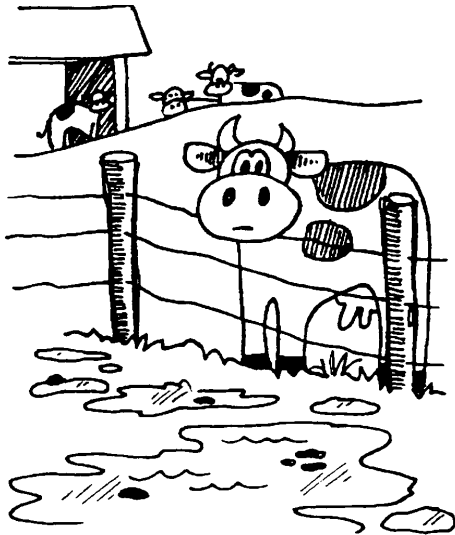
It is possible for the well casing to corrode or crack and the well cap to become damaged. You should visually inspect the above-ground portion of your well for holes or cracks



and make sure the cap is secure. You can also inspect the inside of the casing by removing the well cap and shining a light around the inside. (However, most wells in the Virgin Islands are too small for this.)

If you have a shallow well, you may also be able to determine the condition of your well casing. If you hear water running when the pump is not operating, there could be a crack or hole in the well casing.

8. IS YOUR WELL DOWNHILL FROM ANY POTENTIAL CONTAMINATION SOURCES (SEPTIC SYSTEM; PESTICIDE, FERTILIZER, MANURE, OR PETROLEUM STORAGE AREA; OR OTHER POLLUTION SOURCES)?



Whether a well taps water just below ground or hundreds of feet deep, its location is a crucial safety factor. A well downhill from a livestock yard, a leaking petroleum storage tank or a failing septic system runs a much greater risk of contamination than a well on the uphill side of these pollution sources.

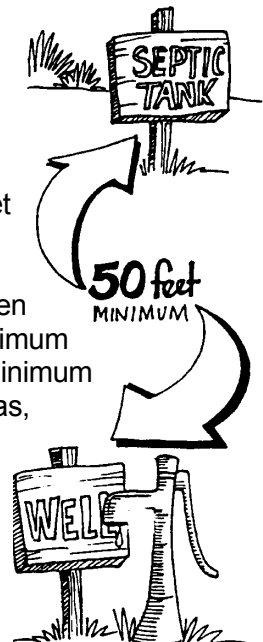
Surface slope does not always indicate the direction a pollutant might flow once it gets into the ground. In shallow aquifers, ground water flow is often in the same direction as the surface flow. If the aquifer supplying water to your well is deep below the surface, though, its slope may be different than that of the land surface.

Locating the well in a safe place takes careful planning and consideration. Factors such as direction of surface drainage and ground water flow are important. When planning for a new well, try to locate it up hill from potential contaminants. On existing wells that are down hill from contaminants, consider removing contaminant sources or diverting surface water runoff away from the well.

9. IS YOUR WELL LOCATED CLOSER TO POTENTIAL POLLUTION SOURCES THAN V.I. CODE ALLOWS?

Besides being uphill from potential pollution sources, your well should meet minimum separation distances from potential pollution sources.

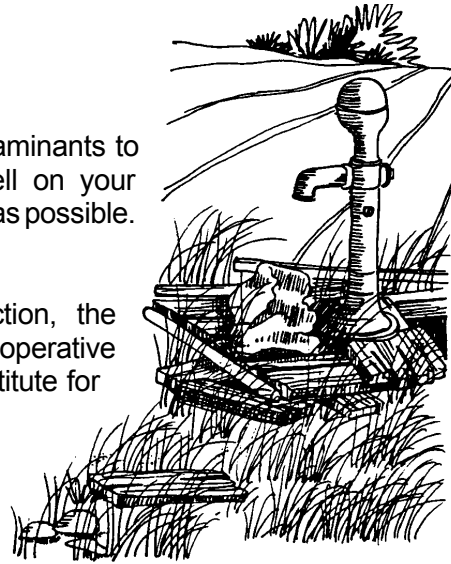
For example, Virgin Islands' regulations require that the minimum distance between your well and your septic tank and leach field should be at least 50 feet. The minimum separation distance between a well and seepage pit should be at least 100 feet. Minimum separation distances are required but greater distances are better. In some areas, site conditions (like soil texture) may require that the separation distance be much greater than the minimum allowed. For more information on minimum separation distances, contact the DPNR Division of Environmental Protection or Permits Division.



10. ARE THERE ABANDONED WELLS ON YOUR PROPERTY THAT HAVE NOT BEEN PROPERLY PLUGGED?

Abandoned wells are a hazard and a direct pathway for contaminants to enter the ground water. When you plug an abandoned well on your property, Virgin Islands guidelines should be followed as closely as possible.

Consult with the DPNR Division of Environmental Protection, the Department of Health, your local USDA-NRCS office, the UVI Cooperative Extension Service, or the UVI Water Resources Research Institute for information on the proper procedures to close your well.



FOR MORE INFORMATION

This assessment does not cover all potential risks on your property that could impact the quality of your drinking water. It is designed to: create an awareness of potential risks to water quality on your property; provide voluntary solutions to reduce pollution risks; and develop an action plan to protect your drinking water supply. Individual areas and states may vary in requirements on minimum standards for water supply protection. Always check with your local offices listed in the reference section of each worksheet before making changes to your water supply system. There are other, more detailed, Farm*A*Syst/Home*A*Syst programs available. If you have specific questions about protecting your drinking water, contact your local Extension Service Office, local USDA Natural Resources Conservation Service Office, or your local Soil and Water Conservation District Office. You may also contact the National Farm*A*Syst/Home*A*Syst Office at B142 Steenbock Library, 550 Babcock Drive, Madison, Wisconsin 53706-1293, Phone (608) 262-0024.

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ASSESSING THE CONDITION AND LOCATION OF YOUR DRINKING WATER WELL

If You Answered "Yes" to the Following Questions	What to Do	Who to Call	Other References	What You Did
Questions 1,2,3,4	Have your water tested annually for the most common contaminants (nitrate and bacteria) to see if a problem actually exists.	Department of Health, DPNR Division of Environmental Protection (DEP), UVI Cooperative Extension Service (CES), UVI Water Resources Research Institute (WRRI), USDA-NRCS, or private laboratory (for water testing).		
Questions 5,6,7	Measure well casing to make sure it is at least 18 inches above the ground surface. Extend casing if necessary. Fill in depression or hole and create a mound around the well. Have visible holes in the casing repaired.	Health Dept., DPNR-DEP, UVI-CES, UVI-WRRI, USDA-NRCS, or a licensed well driller.		
Questions 8,9	Relocate sources of contaminants down hill from the well.	Health Dept., DPNR-DEP, UVI-CES, UVI-WRRI, USDA-NRCS, or a licensed well driller.		
Question 10	Properly close all abandoned wells on your property.	Health Dept., DPNR-DEP, UVI-CES, UVI-WRRI, or USDA-NRCS.		

PHONE NUMBERS:

Dept. of Health: 773-1311 (St. Croix); 774-6880 (St. Thomas -St. John)

DPNR-DEP: 773-1082 (St. Croix); 774-3320 (St. Thomas - St. John)

USDA-NRCS: 692-9662, x. 106

UVI-CES: 692-4080 (St. Croix); 693-1080 (St. Thomas - St. John)

UVI-WRRI: 693-1063