

WELL OWNERS GUIDE

A Guide for Private Well Owners in Napa County



*Napa County Public Works
Natural Resources Conservation*

*Groundwater Sustainability
Program*

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Acknowledgements

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Introduction

This guide is intended to make private well ownership a little easier. It is designed to:

- Alert private well owners to the potential for contamination and the need for water quality testing;
- Introduce well owners to the basics of proper well construction, destruction and maintenance;
- Inform well owners of their responsibilities in Napa County.

Nearly half of all water used in Napa County comes from below the Napa Valley floor, where layers of sand and gravel provide a natural reservoir for water in underground aquifers. In addition to being an extraordinary storage facility, the groundwater basin also serves as an inexpensive and efficient water treatment and distribution system. The groundwater basin provides natural treatment and filtration as water percolates through the soil and rock. It also transmits large quantities of water over long distances without the need for tanks, pipes and pumping plants.



The thousands of water supply wells that draw water from the county's groundwater basins have traditionally produced very high quality drinking water. However, our drinking water aquifers can be threatened by toxic chemicals from accidental spills, leaking underground storage tanks, misuse or improper application of chemicals on the land, as well as biological pathogens from sewers, septic systems and confined animal facilities. These contaminants can find their way through the natural protective layers of clay and silt and into our drinking

water aquifers. This problem can be intensified by the presence of improperly constructed wells, abandoned wells, or wells located too near a potential contaminant source, such as a septic system. These wells can act as vertical pathways, allowing chemicals and pathogens on the surface or in shallow aquifers to migrate into our deep drinking water aquifers. To help control and prevent the contamination of our groundwater basins and protect public health, the cooperation of private well owners is needed. This guide is intended to help you, and help all of us protect our groundwater resources and our health.

This publication is meant only as a guide. We do not claim that the recommendations made here will work in every situation, or that we have covered every possible scenario or contaminant. Any reference to trade names and companies does not constitute an endorsement.

Well Owner Responsibilities

Why should I protect groundwater?

Groundwater moves very slowly, often only a few feet per year. Because it moves so slowly, once it becomes polluted, it can take decades or longer for it to be naturally flushed clean. Manually cleaning pollutants out of groundwater can be extremely costly and difficult. Often, the only solution is to find a new source of water.

To protect public health and maintain the high quality of our drinking water aquifers, well owners are required to adhere to various state and local laws relating to wells. In general, well owners are required to:

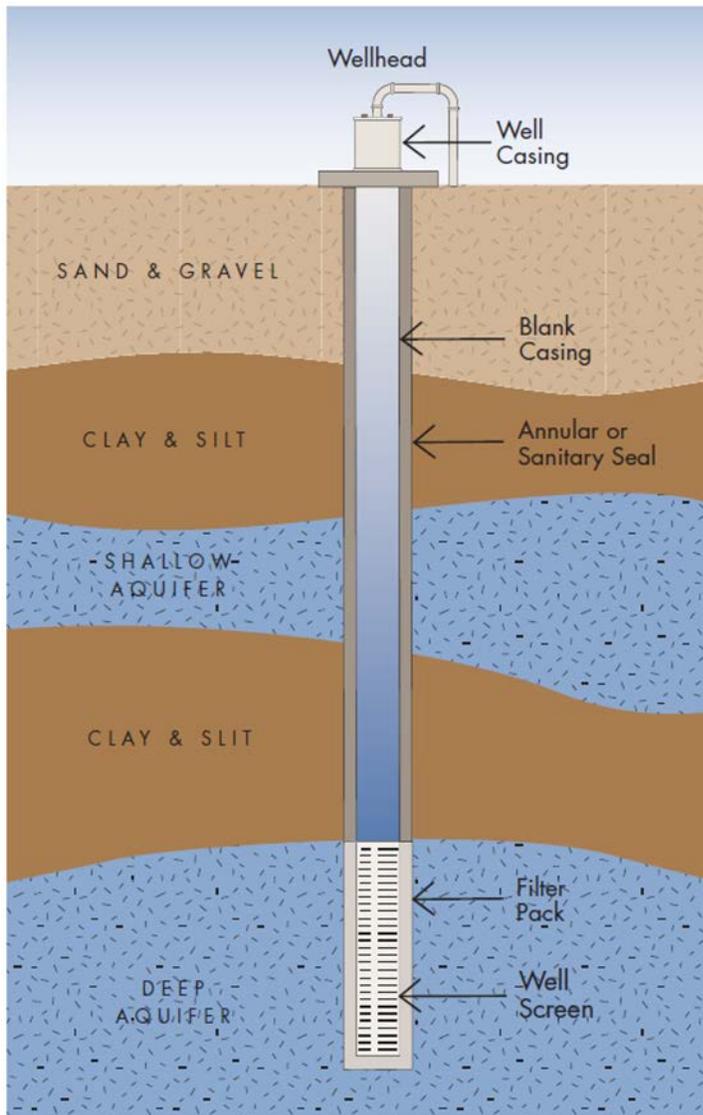
- Obtain permits from the Napa County Planning Building and Environmental Services Department before any well construction, destruction, or modification.
- Complete any well construction, destruction, or modification according to Napa County regulations and state well standards. Wells must be constructed so that they do not allow poor quality surface water or water from the shallow aquifers to migrate into drinking water aquifers. Specific well construction practices must be followed to ensure that wells are constructed properly. Note: all well construction, destruction, or modification activities must be completed by a licensed well contractor.
- Properly maintain the well so that it remains in compliance with Napa County and state well standards. Wells must be maintained so that they do not allow the introduction of surface waters or other materials into them through improperly sealed well casings or gravel fill/sounding tubes. Wells must be secured so that children and animals cannot enter them.
- If required, file appropriate water usage reports with Napa County.
- Properly destroy any wells that are abandoned or not being used. When no longer in use, wells must be destroyed so that they can never act as vertical conduits or endanger public health.

For most well owners, groundwater is their only source of water and should, therefore, be protected.

For more information on your responsibilities as a well owner, contact the Napa County Planning, Building and Environmental Services Department at:

(707) 253-4417 or visit: <http://www.countyofnapa.org/PBES/Environmental>

Well Construction



The typical domestic well in Napa County is constructed by drilling a hole in the ground to a depth of 100 to 300 feet. As the well driller is drilling the hole, the type and depth of materials that the bit passes through are noted. This information is recorded on the driller log, which is submitted to the permitting agency and provided to the well owner by their drilling contractor.

The well is constructed once the driller finds layers of sand or gravel that produce enough water to meet the well owner's needs. These water producing layers are called aquifers. To construct the well, the driller installs a strip of plastic or steel pipe called the well casing into the hole. The well casing keeps the hole from collapsing and allows pumping equipment to be installed. Regulation requires that the well casing must have a diameter at least four inches smaller than the diameter of the hole.

Where the hole intersects the best water producing layers (the sand and gravel aquifers), the driller installs well casing that has thin cuts, or perforations. This

portion of the well is called the well screen. The well screen allows water to pass into the casing, but keeps out sand and gravel. Where the hole intersects layers of clay or fine silt (layers that don't typically produce significant quantities of water), the driller installs un-perforated pipe called blank casing.

To keep fine sand, silt and clay from entering the well screen, the driller installs a sand and gravel mix called the filter pack into the space between the casing and the hole. To protect the water quality in the deeper drinking water aquifers from lesser quality surface water and shallow aquifer water, the driller also installs a concrete or cement seal (annular or sanitary seal) between the blank casing and the hole. In Napa County, the minimum concrete or cement seal depth is 20 feet or at least two feet into the first impervious layer, whichever is greater. In the case of a shallow water well where no water-bearing stratum is encountered below 20 feet, the seal shall extend to a minimum depth of 10 feet. For water

wells which will serve a public water system, the seal shall extend to a minimum depth of 50 feet or two feet into impervious soil, whichever is greater.

The well seal extends to the surface of the ground, where it is incorporated into a concrete pad around the well casing. These surface features are called the wellhead. At the wellhead, the casing extends at least one foot above the ground surface and is securely capped to prevent anything, including surface water, from entering the well. The concrete pad is sloped away from the casing to protect the well from damage and surface water contamination.

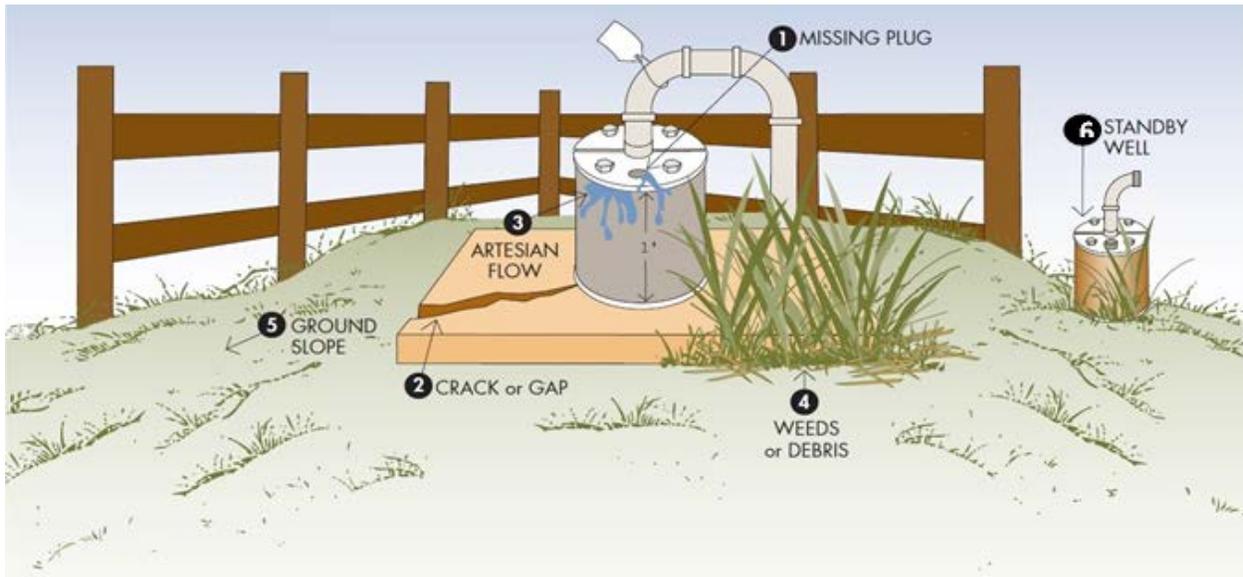
Your well is a direct connection between you and your water supply.

Maintenance

A poorly maintained well can lead to a variety of problems including poor water quality and reductions in the amount of water your well can produce. To minimize these potential problems, a well maintenance program is an important part of a well owner's responsibilities.

Inspect your well head

Get in the habit of doing a visual check on your well at least once a year. More often is better. Below are some of the things to look for when inspecting your well.



1. Look for openings that insects, rodents, water, or anything else can enter. Cap, seal, or otherwise plug them.
2. Look for cracks in the concrete pad that would allow water, and any contaminants it may be carrying, to enter the well casing and down into your drinking water aquifer. Seal cracks, or re-pour a new concrete pad.
3. If water is flowing out the top of the well, call a licensed well contractor to stop the flow. If water can leak out, contaminants can seep in (not to mention a waste of water).

4. Remove weeds, leaves, and other debris from around your well. These can create great homes for rodents and other pests. Do not use herbicides or any other chemical near the well.
5. Make sure the ground slopes away from your well, and that your well casing extends at least one foot above the ground to ensure that surface water does not collect or flow near the well.
6. If you have an inactive well, turn the pump on several times during the year to make sure that everything is functioning properly. Inspect and maintain your inactive well following the same guidelines as an active well. If you plan to never use the well again, you are legally required to properly destroy it. Properly destroying the well will prevent it from becoming an accidental pathway for contamination into the groundwater utilized by your active well, and other nearby wells.

Maintain complete well records

You should work with your water well and/or pump contractor to establish inspection and routine maintenance schedules based on the specific characteristics of your well and water supply needs. Complete well records should include:

1. The driller log (well completion report) - This document describes the construction of the well—how deep it is, from what depth it draws water (the perforated interval) and the soil types encountered while drilling. This information is important to help troubleshoot problems should they arise. The drilling contractor should provide you with a copy of the driller log following completion of the well construction and testing. If you do not have a copy of the driller log (well completion report), it may be available from state or local records. Visit: http://www.water.ca.gov/groundwater/wells/well_completion_reports.cfm to learn how to obtain the record for your well, or check with Napa County Planning, Building and Environmental Services Department, (707) 253-4417.
2. Pump test data - The pump test provides an estimate on how much water the well can produce. This information is also useful to assess well performance as the well ages.
3. Distribution map - Draw a map showing the location of all the buried water pipes connected to the well. If you share a well with adjacent properties, it is a good idea to have a map of all the plumbing on your neighbors' properties as well. This information can be invaluable as the properties change hands and repairs to be made or as new wells are added.
4. The physical location of the well - Measure the distance to the well from permanent structures and property lines (e.g. the centerline of the road or corner of the house).
5. Maintenance records - Record whenever you have maintenance done, such as replacing the pump or check valves. This is important information to keep track of how old the various components are, and who repaired them last.
6. Water quality data - Keep all of your past water quality testing information in one place. By comparing results from one year to the next you will be able to better detect changes which may indicate potential problems and/or need for maintenance.
7. Disinfection history - If you disinfect your well, keep track of when, why and how it was done.

Effective maintenance begins with complete records on the construction, testing and maintenance of your well.

Deteriorating well performance

The typical causes of performance deterioration include: mineral encrustation or biofouling (bacteriological encrustation) of the well screen, physical plugging of the well screen, filter pack and surrounding soils by fine particles, corrosion of the well casing and pump problems. Many of these problems can be prevented by proper well design and construction, pump sizing, operation and maintenance, or preventative well maintenance. If addressed early-on, most well performance problems can be corrected. To prevent or correct performance problems, you should work with your licensed water well and/or pump contractor.

The performance of all wells will deteriorate over time, but proper well construction and maintenance can delay this problem.

Well destruction

Because unused, abandoned wells can act as pathways that allow poor quality surface water or shallow groundwater to move into deeper drinking water aquifers, it is very important that they are properly destroyed. This is especially true if other water supply wells are operating in the area. When a well is being used in the vicinity of an abandoned well, the pumping activity in the operating well can actually pull poor quality water down the abandoned well, into the drinking water aquifers, and then into the operating well.

Any well that is no longer being used for its intended purpose is required by law to be properly destroyed.

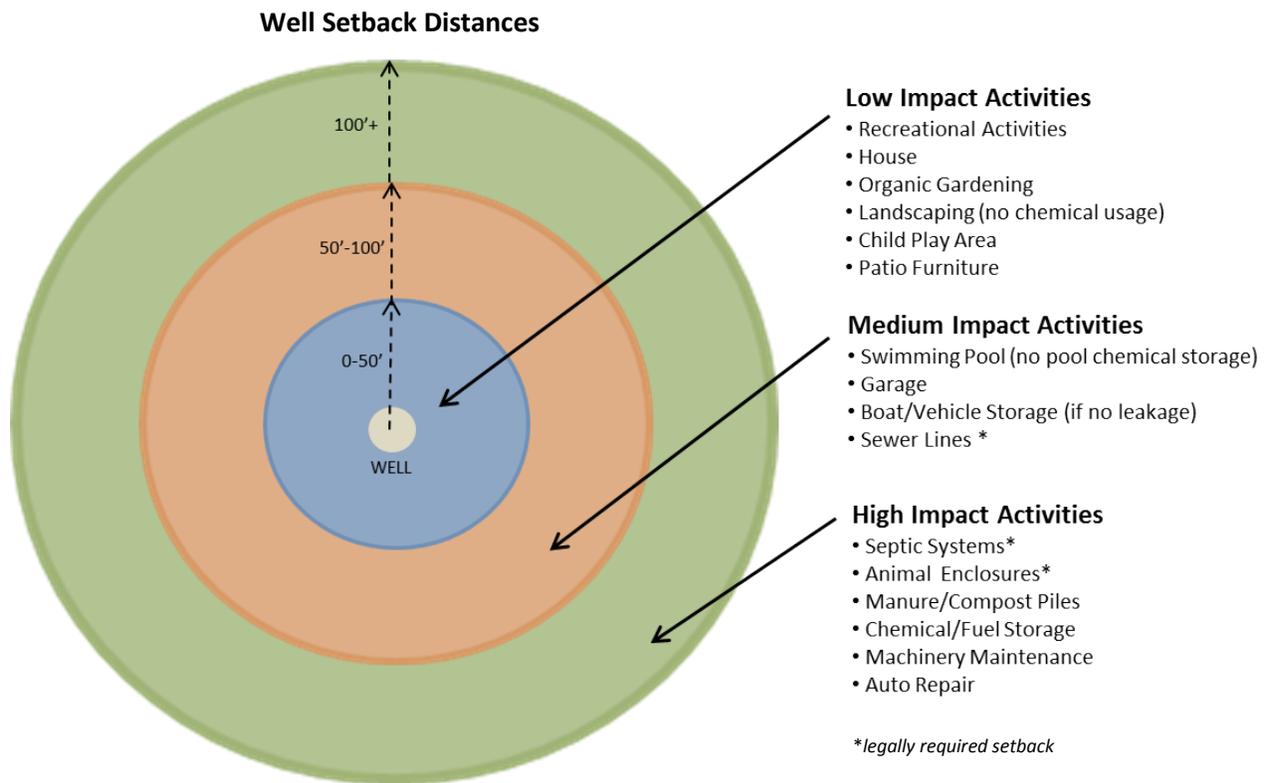
To eliminate these vertical pathways for contaminant migration, abandoned wells must be properly destroyed. As with all well construction, modification or destruction, work must be completed by a licensed contractor and under permit from Napa County Planning, Building and Environmental Services Department, (707) 253-4417.

Water Quality Protection

Create a zone of protection around your well

Contaminants can flow down your well as easily as water flows up it. The farther away the contaminants are, the more opportunity for filtration. Create a circle at least 50 feet in diameter around your well where you don't store, mix, spray, spill, bury or dump anything that you don't want to drink. Don't forget to look out for your neighbor's well if it is near your property line. Any contamination in your neighbor's well can travel into your well.

Some activities legally require more than a 50-foot zone of protection. In most cases, septic tanks, leach fields and animal enclosures need to be at least 100 feet away from any well to ensure that no waste products reach your drinking water. There are many activities that do not have formal, legal setback requirements, but require the use of commons sense. For example, don't tie your dog or goat to the well structure - not only do you risk breaking the casing, piping or electrical connections, you risk contamination from urine and feces.



Inspect your wellhead on a regular basis

It is very important to keep any foreign materials, including surface water, out of your well. Therefore, it is important that your well is free from openings and that your concrete well pad is structurally sound. Your well should be inspected annually to be sure that there are no openings in the wellhead or cracks in the well pad. Any openings or cracks should be secured or sealed. Refer to the Well Construction and Well Maintenance section titled “Inspect Your Wellhead” for more information on how to complete a simple inspection.



Protect the well structure

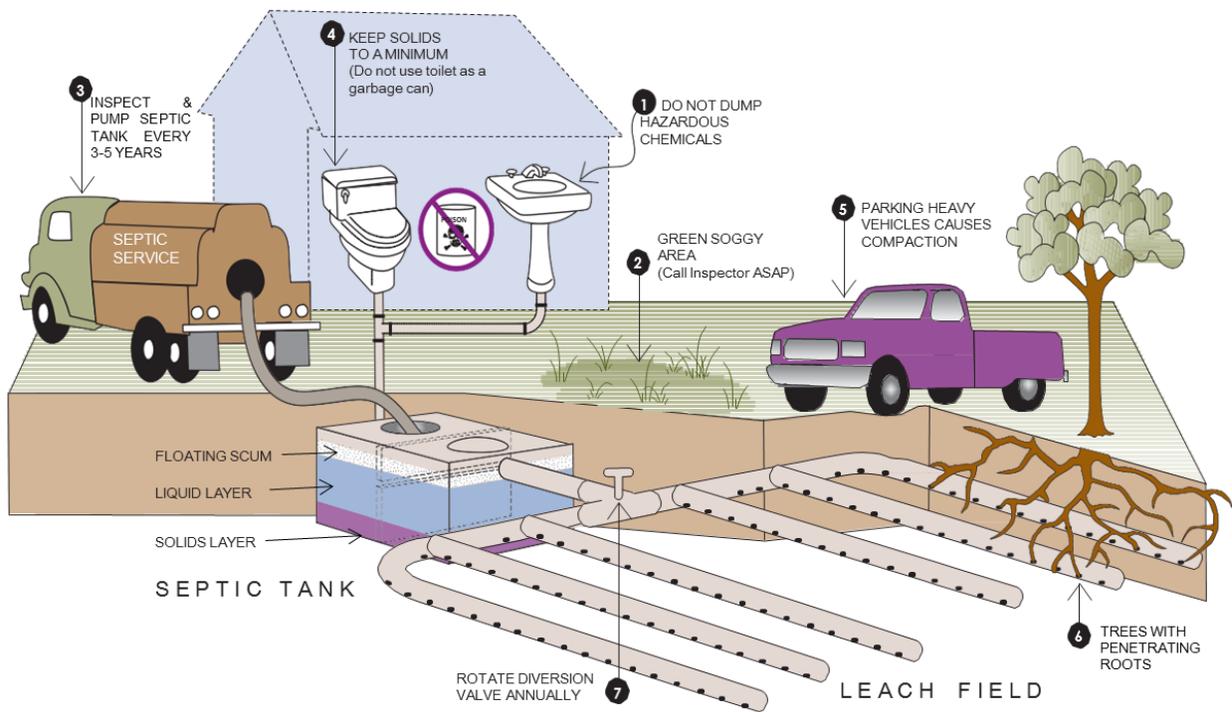
Many well repairs can be very costly, so it pays to protect your well from any physical damage. The safest way to protect your well from being damaged or lost is to build a small structure or fence around it. Keep in mind that you will need easy access to the well for maintenance and repairs. If you don't have a structure around your well, then clearly mark it so when the weeds grow up in the spring, it doesn't become buried and lost. Lock the well enclosure to minimize the chance of vandalism.

Maintain your septic system

A septic system consists of a tank and a leach or drain field. All the wastewater from inside the home flows into the septic tank, which is composed of two compartments. The waste is deposited in the first compartment where the solids settle to the bottom and the liquid and scum float on top. Bacteria and other microorganisms break down the solid material. As the liquid separates from the solids, it overflows into the second compartment where more separation and decomposition occur before it flows into the leach/drain field. The leach/drain field is a network of perforated pipes within a trench of washed drain rock buried about one to one and a half feet deep. The liquid waste flows out of the perforated pipe, trickles into the drain rock and filters down through the soil where additional pollutants are removed. By the time the wastewater is naturally cleansed and reaches the groundwater, few impurities should remain.

If you have a septic system, keep in mind that whatever goes down the drain may find its way into your drinking water. The required setback between your well and your septic system provides protection against bacteria and viruses when it is working properly. However, this setback was not designed to protect against things like photographic processing chemicals, hazardous art supplies, hazardous household cleaners, paint and paint cleaners, automotive wastes, pesticides and other hazardous chemicals that may not break down and filter out easily.

Septic Tank Maintenance



Tips on septic system maintenance

1. Do not dump hazardous chemicals down the drain. If your drain is plugged try using boiling water or a drain snake instead of chemical drain cleaners. Use less toxic cleaning supplies whenever possible. Take all hazardous chemicals to a hazardous waste drop-off for disposal. See the Resource Guide Section in this guide for drop-off locations.
2. If you notice a sewage smell, continuously wet area in your yard, lush vegetation around the septic tank or leach field, or liquid waste backing up through your drains, then something is not working properly. Use a licensed septic tank inspector immediately.
3. Have your septic tank inspected and pumped every three to five years (more often if you have a garbage disposal). If the solid waste in the tank builds up too high, it can flow into the leach lines, plug them and cause your system to fail.
4. Keep the solids in your system to a minimum. Do not use your toilet as a garbage can. Food wastes, feminine hygiene products and other household solids are better placed in the garbage or compost.
5. Do not park or drive heavy equipment over your leach lines. This may compact the soil around the lines and prevent adequate percolation of the liquid waste, causing your system to fail.
6. Do not plant trees near your leach line. Tree roots often seek out the moist environment inside your leach lines and plug them, causing your system to fail.
7. If you have a dual leach field system, change the diversion valve setting once a year.

Always keep in mind that you live on top of your drinking water.

Water Quality Sampling and Testing

How do I protect the quality of my water?

The layer of earth between you and the water provides some protection from contamination, but it is not perfect. The safest way to protect your water supply is to teach your family, friends and neighbors: if you don't want to drink it, don't put it on or in the ground!

This section identifies ways to help protect the quality of your water.

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals and human activity.

Contaminants that may be present include:

- Microbial contaminants such as viruses and bacteria that come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, animal facility waste generation, mining, or farming.
- Pesticides and herbicides that may come from a variety of sources such as urban stormwater runoff, home owner and agricultural application, and septic systems.

- Organic chemical contaminants, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Naturally occurring radioactive contaminants in our area.

Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by visiting: <https://www.epa.gov/privatewells>.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as persons with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water supply.

Common Groundwater Contaminants

The most common groundwater contaminants of concern in Napa County are bacteria, arsenic¹, and to a lesser degree nitrate.

Bacteriological quality of drinking water is determined by analyzing for coliform bacteria. These bacteria occur naturally in the intestinal tracts of humans and animals, and in soil. Although coliform bacteria normally do not cause illness, they should not be present in drinking water. The presence of these bacteria in the drinking water indicates that other potentially harmful bacteria may be present. Bacteria levels can fluctuate seasonally with wet and dry periods.

Arsenic is an element found naturally. Arsenic compounds are used in industry, most commonly as a wood preservative, but also as components of pesticides, paints, dyes, and semiconductors. In Napa County, natural erosion of rocks and minerals is believed to be the primary source of the arsenic found in drinking water supplies. The current Maximum Contaminant Level (MCL) for arsenic is 10 ug/l. If your drinking water source is a private well extracting hot groundwater in the Calistoga area or possibly in the deeper aquifers in the Sarco-Tulocay Basin, it is a good precaution to have your water tested for arsenic. Once the water is tested, the Department of Planning, Building and Environmental Services can help interpret the results and water treatment companies can review treatment options with you. Several point-of-use filters can be installed and, if maintained correctly, can reliably remove arsenic from your drinking water.

Nitrate is a naturally-occurring compound, but high amounts of nitrate in groundwater are typically due to human activity such as excessive fertilizer applications, septic systems and animal enclosures. Nitrate in drinking water at levels above 45 milligrams per liter is a health risk for infants less than six months of age, pregnant women and people with certain specific enzyme deficiencies. Nitrate concentrations in

¹ County of Napa Public Works Flood Control and Water Resources, *2016 Napa Annual GW Report* (Napa: 2016) and Planning, Building and Environmental Services Staff.

groundwater may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant or are pregnant, you should seek advice about your drinking water from your health care provider.

Electrical conductivity (EC) is a measure of all the dissolved ions in your water. By itself, EC does not tell you if your water is safe to drink. However, since the electrical conductivity test is easy and inexpensive, it can be used as an indicator of changing conditions that may require further testing.

Fecal coliforms are bacteria that are associated with human or animal wastes. They usually live in human or animal intestinal tracts, and their presence in drinking water is a strong indication of recent sewage or animal waste contamination. *Escherichia coli* or *E. coli* is a type of fecal coliform and although most strains of *E. coli* are harmless, the *E. coli* O157:H7 strain produces a powerful toxin and can cause severe illness.

During rainfall events, coliform from animal or human waste may be washed into creeks, rivers, streams, lakes, or shallow groundwater. Inadequately sealed wells or wells of unknown construction are especially vulnerable. Your well is also vulnerable if it has been inadequately disinfected after construction, repair work, or other work that allows surface contamination to enter the well. When this water is used as a source of drinking water, *E. coli* may end up in drinking water.

When water is tested, it is initially screened for total coliform. Total coliforms are generally harmless; they are not usually found in water that is free of surface water or fecal contaminants. If total coliforms are found in the water, pathogens could also be present. If the presence of coliform is detected, the water is then tested to see whether or not fecal coliform is present.

What are the health effects of *E. coli* O157:H7? Infection often causes severe bloody diarrhea and abdominal cramps. Often, no fever is present. However, it should be noted that these symptoms are common to a variety of diseases, and may be caused by sources other than contaminated drinking water. In some people, particularly children under 9, the elderly and those with compromised immune systems, an infection can also cause a life-threatening complication called hemolytic uremic syndrome, in which the red blood cells are destroyed and the kidneys fail.

What should I test my water for?

There are dozens of tests that can be performed on drinking water and no one analysis can assure that your water is “safe to drink.” We have tried to compile the most commonly performed tests and their recommended testing frequencies below. This table should be used for general guidance only. Since coliform bacteria and nitrate are the most commonly found contaminants of concern in this area, we recommend testing for them most frequently.

Testing for electrical conductivity and minerals is recommended in order to establish a baseline understanding of the water quality in your well and as a mechanism to indicate water quality changes.

Recommended Test			Interpreting Your Results	
Test	Recommended Frequency	Cost	If the lab report shows:	Then you may want to consider one or more of the following options:
Total Coliform Bacteria	Twice per year: Wet season Dry season	\$20 – 60	Total coliform present Note: If e.coli is present, the County Department of Environmental Health recommends using bottled water for drinking and cooking until the bacteria is eliminated.	Eliminate cause, disinfect and retest (see page 15). Increase testing frequency. Install a treatment system or find an alternative water supply. Consult a water treatment professional for more advice.
Nitrate	Annually	\$15 – 50	≥ 45 mg/l as nitrate (NO ₃)* or ≥ 10 mg/l as nitrogen (N)*	Install a treatment system or find an alternate water supply. Reverse osmosis, distillation, or anion exchange, will remove some of the nitrate. Consult a water treatment professional for more advice. Increase testing frequency.
Electrical Conductivity (EC)	Annually	\$15 – 30	≥ 900 umhos/cm or significantly different from previous year result	Conduct further testing, such as nitrate and/or minerals to determine the cause of the high EC, or the change in EC.
MINERALS Aluminum (Al) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium, total (Cr) Fluoride (F) Iron (Fe) Lead (Pb) Manganese (Mn) Mercury (Hg) Selenium (Se) Silver (Ag)	Every 5-10 years, or If EC changes significantly, or If taste, color, odor or surrounding land use change	Package \$90 – 300 Individual \$20 – 35 Mercury \$15 – 60	Al ≥ 1.0 mg/l* As ≥ 0.01 mg/l* Ba ≥ 1.0 mg/l* Cd ≥ 0.005 mg/l* Cr ≥ 0.05 mg/l* F ≥ 2.0 mg/l* Fe ≥ 0.3 mg/l Pb ≥ 0.015 mg/l* Mn ≥ 0.05 mg/l Hg ≥ 0.002 mg/l* Se ≥ 0.05 mg/l* Ag ≥ 0.1 mg/l	Compare to previous results. Install a treatment system or find an alternate water supply. The appropriate treatment system is dependent on your overall water chemistry and what constituents you would like to remove. Consult a water treatment professional for more advice.

What do I test for when my water has specific taste, odor, or appearance problems?

Below is a guide for some potential problems in drinking water and substances you can test for (in **bold**). Not all of the problems and possible causes pose a health risk to the consumer.

Problem	Possible Cause	Health Risk*
Water is orange or reddish brown	This may be due to high levels of iron (Fe) or iron bacteria.	2
Porcelain fixtures or laundry are stained brown or black	This is commonly a result of high manganese (Mn) and/or iron (Fe) levels. As little as 50 parts per billion (ppb) manganese and 300 ppb iron can cause staining.	2
White spots on the dishes or white encrustations around fixtures	High levels of calcium (Ca) and magnesium (Mg) can cause hard water, which leaves spots. Hardness can also be measured directly.	2
Water is blue	Blue water or blue deposits may be due to high levels of copper (Cu) , especially if coupled with corrosive water.	1
Water smells like rotten eggs	This is most likely caused by hydrogen sulfide (H₂S) .	2
Water heater is corroding	Water can be corrosive, neutral, or noncorrosive. Water that is very corrosive can damage metal pipes and water heaters. The lab can calculate the corrosivity of your water by measuring calcium , pH , total dissolved solids (TDS) , and alkalinity .	2
Water appears cloudy, frothy or colored	Suspended particulates , measured directly or as turbidity , can cause the water to appear cloudy, frothy or colored. Detergents and/or sewage waste may also be the culprit.	1
Home's plumbing system has lead pipes, fittings, or solder joints	Corrosive water can cause lead (Pb) , copper (Cu) , cadmium (Cd) , and/or zinc (Zn) to be leached from lead pipes, fittings, and solder joints.	1
Water has a turpentine odor	This may be due to methyl tertiary butyl ether (MTBE) .	1
Water has chemical smell or taste	This may be due to volatile or semivolatile organic compounds (VOCs) or pesticides .	1

- 1 Some of the possible causes can have a detrimental effect on health even if present in low concentrations
- 2 No known health risk at commonly found concentrations

What do I test for if I'm concerned a nearby activity may be contaminating my well?

Here are some land uses and possible contaminants to test for.

Land Use	Possible Contaminants	Health Risk*
Landfill, industry, or dry cleaning operation	Consider testing for volatile organic compounds (VOCs) , pH , total dissolved solids (TDS) , chloride (Cl) , sulfate (SO₄) , and metals .	1
Agricultural crop production	Consider testing for pesticides commonly used near the well (consult the farmer or Department of Agriculture for a list), nitrate (NO₃) , pH , and total dissolved solids (TDS) .	1
Livestock enclosure, manure, or compost storage area	Consider testing for bacteria , nitrate (NO₃) , and total dissolved solids (TDS) .	1
Gas station or automobile repair shop	Consider testing for total petroleum hydrocarbons (TPHg) , total oil, grease (TOG) , benzene , toluene , ethylbenzene , xylene (BTEX) , MTBE , ethylene dibromide (EDB) .	1

- 1 Some of the possible causes can have a detrimental effect on health even if present in low concentrations
- 2 No known health risk at commonly found concentrations

What should you do?

Don't panic. If your water is provided by a public agency, the water is already tested and required to meet safe limits. However, if your drinking water comes from a well and the well has not been tested or if you suspect that your well is vulnerable to contamination, do not drink the water.

Napa County currently does not conduct well water quality testing; however, State Certified Laboratories in the area do provide this service². If you choose to test your well, call the lab directly for instructions on how to collect a sample and submit it for testing. Failure to follow the instructions provided by the lab can lead to inaccurate results. Once the water is tested, the Planning, Building and Environmental Services Department can help you interpret your results, and if necessary, water treatment companies can review your treatment options with you.

² A subset of wells enrolled in Napa County's Voluntary Groundwater Level Monitoring Program may be tested for water quality with the owner's permission in order to monitor long-term groundwater quality trends on a basin-level scale. If you are interested in the Voluntary Well Monitoring Program see page 20 of this report.

What if I want to treat my water? Most groundwater does not require any treatment. If you have found a problem that you want to treat, there are many different types of treatment available. Systems require routine maintenance. **Improperly maintained treatment systems can cause more harm than good.** Know what you want to remove and if you will be able to perform the routine maintenance *before* you invest. See the guide below for treatment possible options. Some options remove a greater percent of the concentration than others. Talk with the manufacturer or a water treatment professional to **get a guarantee** the system will work in your situation.

Contaminant ³	Carbon Filtration	Chlorination/Disinfection	Coagulation/Filtration	Deionization	Distillation	Ion Exchange	Iron Based Media	Oxidation	Ozonation	Reverse Osmosis
Arsenic	X		X		X	X	X			X
Asbestos			X		X					X
Chloride				X	X	X				X
Chromium			X		X	X				X
Coliform Bacteria		X							X	X
Color	X	X			X	X			X	X
Copper			X		X	X				X
Fluoride					X					X
Hardness						X				
Hydrogen Sulfide	X	X					X			
Inorganic Minerals (some)			X	X	X	X				X
Iron/Manganese		X	X			X		X		
Lead			X		X	X				X
MTBE	X									
Mercury	X				X	X				X
Nitrate					X	X		X		X
Odor and Taste	X	X						X		
Perchlorate						X				X
Pesticides (some)	X				X			X		X
Radium 226/Radium228	X				X	X				X
Radon	X									
Sulfate					X	X				X
Total Dissolved Solids (TDS)				X	X					X
Volatile Organic Chemicals	X									X

³ This table is meant to provide general guidance. Selection of a treatment technology should be based on site specific conditions. There are many types of treatment systems. The systems shown may not be appropriate for all situations. This table was adapted from the Water Quality Association, the California Department of Public Health, Texas A&M Agrilife Extension, and U.S. Environmental Protection Agency.

Voluntary Groundwater Monitoring Program

Napa County has a Voluntary Groundwater Level Monitoring Program. This Program measures groundwater levels in the spring and fall in approximately 100 wells throughout the Napa Valley. These measurements improve the understanding of groundwater for both the well owner and the County. This network of privately owned volunteer wells, along with a handful publicly owned wells, provides a greater understanding of our local aquifers. The program is strengthened by expanding the voluntary well network to areas where additional data is needed or nonexistent. Napa County Natural Resources Division has created a video highlighting the importance of groundwater monitoring in our community and how you can get involved. To view the video visit: <https://youtu.be/yyGHAWyegK0>.



Why should I measure the water depth in my well?

Many want to know how water depth changes over the course of the year in order to better understand how the groundwater reservoir beneath their land responds to winter recharge and use over the dry summer months. Measurements are best taken in the spring and fall over multiple years to understand the long-term trends in recharge that occur with annual rainfall.

Will someone curtail my well use if I participate?

No. The Voluntary Groundwater Level Monitoring Program is a non-regulatory, voluntary program that measures the depth to groundwater (level only). Groundwater usage is not being measured or monitored as part of this program.

Will my well information be kept confidential?

Napa County will make every effort to maintain the confidentiality of a well owner's information. However, such information could be accessed through a public records request. In such a case the County will notify the well owner.

How long is the voluntary groundwater level monitoring program going to last?

The monitoring program will last as long as funding and resources are available. A well owner may leave the program at any time.

Who is eligible to participate?

If your well is in an area where data is lacking and well construction information is available, your well may be eligible to participate in the program.

How will the collected information be used?

The information will be used to monitor and track groundwater levels to help the County better understand relationships between surface water and groundwater, maintain a centralized data management system, and improve the accuracy and reliability of relevant water resource models.

Well owners who participate in the voluntary groundwater level monitoring program:

- Receive accurate groundwater level readings twice per year (spring and fall);
- See seasonal and long-term groundwater level trends for their well;
- Receive water quality data for their well (if testing is agreed to and conducted); and
- Receive notification if anyone submits a public records request for information.

The County monitors approximately 100 wells throughout the community. If you are interested in volunteering your well for County monitoring, please contact us, as we periodically update our monitoring network. The County publishes an annual report on the status of overall groundwater conditions. The report can be found by visiting <http://www.countyofnapa.org/groundwater>.

You can also sign-up to be on the County's Groundwater List-Serve to receive updates regarding the Groundwater Monitoring Program and other information about our local groundwater resources. You can scan the code below with your mobile phone or contact Napa

Do it Yourself (DIY) Groundwater Level Monitoring:

Napa County has a Groundwater Self-Monitoring Program. This DIY program offers training and a special hand-held sonic measuring device to determine the depth to water in most wells.

How do I borrow the tool from the County?

1. Contact County staff and indicate your interest ,
2. Napa County Resource Conservation District staff will demonstrate the equipment at your well and help with initial tool calibration,
3. Then you can borrow the equipment seasonally to measure your water level.

Reserve the tool or learn more:

Paul Blank, 707-252-4189 x3121, paul@naparcd.org

Jeff Sharp, 707-259-5936, jeff.sharp@countyofnapa.org



Groundwater Resource Information

You can [sign-up](#) to receive updates and informational emails regarding the County's Voluntary Groundwater Monitoring Program, annual monitoring updates, and other information about our groundwater resources and sustainability planning. Join the Napa County Groundwater Email List by visiting: <http://eepurl.com/bWgdin>.



Another way to learn more about our County's groundwater, along with other watershed news and events, is by visiting the Watershed Information and Conservation Council (WICC) website: www.napawatersheds.org. The WICC website hosts a special section devoted to groundwater that can be found at www.napawatersheds.org/groundwater.

You may also contact Napa County Public Works, Natural Resources Conservation Division for additional information about the County's groundwater resources at (707) 259-8600, or visit their office at 804 First St., Napa CA 94559.

Additional Resources

Regional and State Government

State Water Resources Control Board - SWRCB's Drinking Water Program regulates public drinking water systems. SWRCB certifies drinking water treatment devices which claim to treat water for contaminants related to public health, such as lead, bacteria, pesticides and heavy metals. SWRCB maintains a directory of certified residential water treatment devices, which can be found at the link below by searching "Residential Treatment". (916) 449-5577

https://www.waterboards.ca.gov/drinking_water/programs/index.shtml

SWRCB Well Owner Guide http://www.waterboards.ca.gov/gama/docs/wellowner_guide.pdf

California Department of Water Resources – Groundwater resources play a vital role in maintaining California's economic and environmental sustainability. During an average year, California's 515 alluvial groundwater basins and subbasins contribute approximately 38 percent toward the State's total water supply. During dry years, groundwater contributes up to 46 percent (or more) of the statewide annual supply, and serves as a critical buffer against the impacts of drought and climate change. DWR

<http://www.water.ca.gov/groundwater/index.cfm>

The Sustainable Groundwater Management Act (SGMA) established a framework for sustainable, local groundwater management. SGMA requires groundwater-dependent regions to halt overdraft and bring basins into balanced levels of pumping and recharge. Information about Groundwater Sustainability Agencies, resources available to local agencies and the public, the latest tools and guidance in managing groundwater basins sustainably can be found at <http://www.water.ca.gov/groundwater/sgm/index.cfm>.

The Groundwater Information Center is DWR's portal for groundwater information, groundwater management plans, water well basics, and statewide and regional reports, maps and figures.

<http://www.water.ca.gov/groundwater/gwinfo/index.cfm>

Department of Toxic Substances Control – The Department of Toxic Substances Control can help answer questions about what is a hazardous waste, how to reduce household hazardous waste, where to report spills and illegal dumping, as well as provide information on specific hazardous waste disposal or handling facilities. (800) 728-6942 www.dtsc.ca.gov

San Francisco Bay Regional Water Quality Control Board – The San Francisco Bay Regional Water Quality Control Board is the branch of the State Water Control Board providing local oversight for the San Francisco Bay Watershed. The San Francisco Bay Region includes the entire Napa River watershed in Napa County. (510) 622-2300 www.swrcb.ca.gov/rwqcb2

Local Government

Napa County Planning, Building and Environmental Services – PBES’s Environmental Health Division has information on wastewater disposal and monitoring, protection of public water systems, water wells and pollution prevention within the County. (707) 253-4471

<http://www.countyofnapa.org/PBES/Environmental/>

Napa County Resource Conservation District – The RCD uses scientifically sound methods to assess and better-understand water quality in Napa County’s watersheds as it relates to supporting ecological, agricultural, rural and urban uses. The RCD has reports on the monitoring and assessment results from water quality testing. (707) 252-4189 <http://naparcd.org/resources-documents/watershed-assessments/>

Napa County Public Works– The Natural Resources Conservation Division has information for residents on the County’s groundwater program and sustainable groundwater management, watershed resources, and WIC council, water and energy conservation, clean energy, green business, recycling and waste reduction programs.(707) 259-8600

<http://www.countyofnapa.org/FloodControlandWaterResources/>

Federal Government

USEPA’s Safe Drinking Water Hotline - The U.S. Environmental Protection Agency’s Safe Drinking Water Hotline is available to help the public, drinking water stakeholders, and state and local officials understand the regulations and programs developed in response to the Safe Drinking Water Act. More information about contaminants and potential health effects can be obtained by calling the USEPA’s Safe Drinking Water Hotline. The hotline and web page also provide information on testing and protecting private well water and where to find more information. (800) 426-4791

<https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline>

EPA private well publications <https://www.epa.gov/privatewells/additional-private-well-publications>

Food and Drug Administration - Among other things, the Food and Drug Administration regulates the bottled water industry. Contact the FDA if you have questions about the safety or regulation of bottled water. (888) 463-6332 www.fda.gov

Other Resources

University of CA Davis, Groundwater Information & Educational Resources – UCD offers groundwater, drought, and groundwater quality information and educational resources.

<http://groundwater.ucdavis.edu>

State Licensed Well Contractors – All well construction, destruction, or modification activities must be completed by a C-57 licensed contractor. To check if a contractor is licensed contact the Contractors State License Board at (800) 321-2752 or go to <http://www.cslb.ca.gov/>

Water Quality Association – The Water Quality Association (WQA) is a not-for-profit international trade association. WQA is a resource and information source for residential, commercial and industrial water treatment industry. The website includes a diagnostic tool to diagnose many types of water problems and offer potential treatments and solutions. The website also has a tool to help you find a water professional in your area. (630) 505-0160 www.wqa.org

The Private Well Class –The Private Well Class provides rural residents with training webinars, events and resources to maintaining and protecting their private well. <http://privatewellclass.org/>

National Sanitation Foundation – The National Sanitation Foundation (NSF) is a not-for-profit organization that tests products relating to health and the environment. NSF certifies that home treatment units meet the manufacturers' performance claims. Contact the NSF for a list of treatment units that are certified to remove your contaminant of concern. (800) 673-6275 www.nsf.org

California Groundwater Association – The California Groundwater Association is a non-profit organization, whose members include water well drilling and pump contractors, suppliers and manufacturers, geologists, engineers, hydrologists, government employees and others working in the groundwater field throughout California. Contact CGA for information on the quantity, quality and availability of California's groundwater resources. www.groundh2o.org

The Groundwater Foundation – The Groundwater Foundation (GWF) is a not-for-profit that is dedicated to informing the public about groundwater resources. They provide numerous educational programs and publications for all ages on the importance of groundwater and groundwater protection. The GWF also offers recognition and support for the Groundwater Guardian Communities and Affiliates. (800) 858-4844 www.groundwater.org

National Ground Water Association – The National Ground Water Association (NGWA) is a not-for-profit organization whose mission is to enhance the skills and credibility of all groundwater professionals, develop and exchange industry knowledge, and promote the groundwater industry and understanding of groundwater resources. Contact the NGWA for information on groundwater studies and publications nationwide, for answers to frequently asked questions about groundwater, and for the latest groundwater news and legislation. (800) 551-7379 <http://www.ngwa.org/Pages/default.aspx>