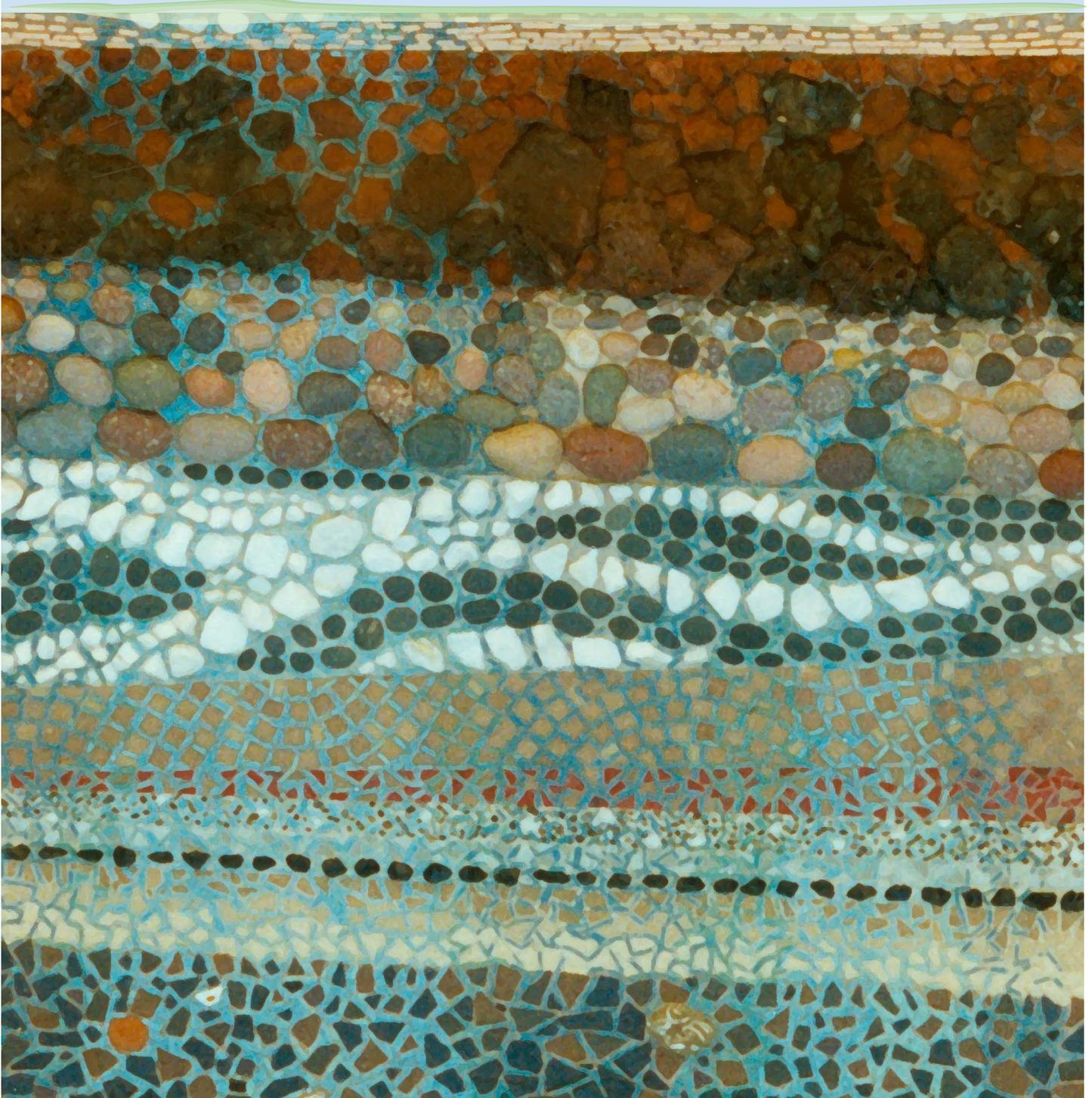




A GUIDE FOR THE  
PRIVATE WELL OWNER





#### **ON THE COVER**

The Santa Clara Valley Water District Administration Building, formerly its headquarters, boasts a mosaic depicting the layers beneath the valley floor. Water seeps from the surface through these layers to replenish the groundwater basin. The water district's formation in 1929 was in response to the over-pumping of groundwater and the need to have an agency dedicated to protecting and preserving this critical water resource.

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# INTRODUCTION

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

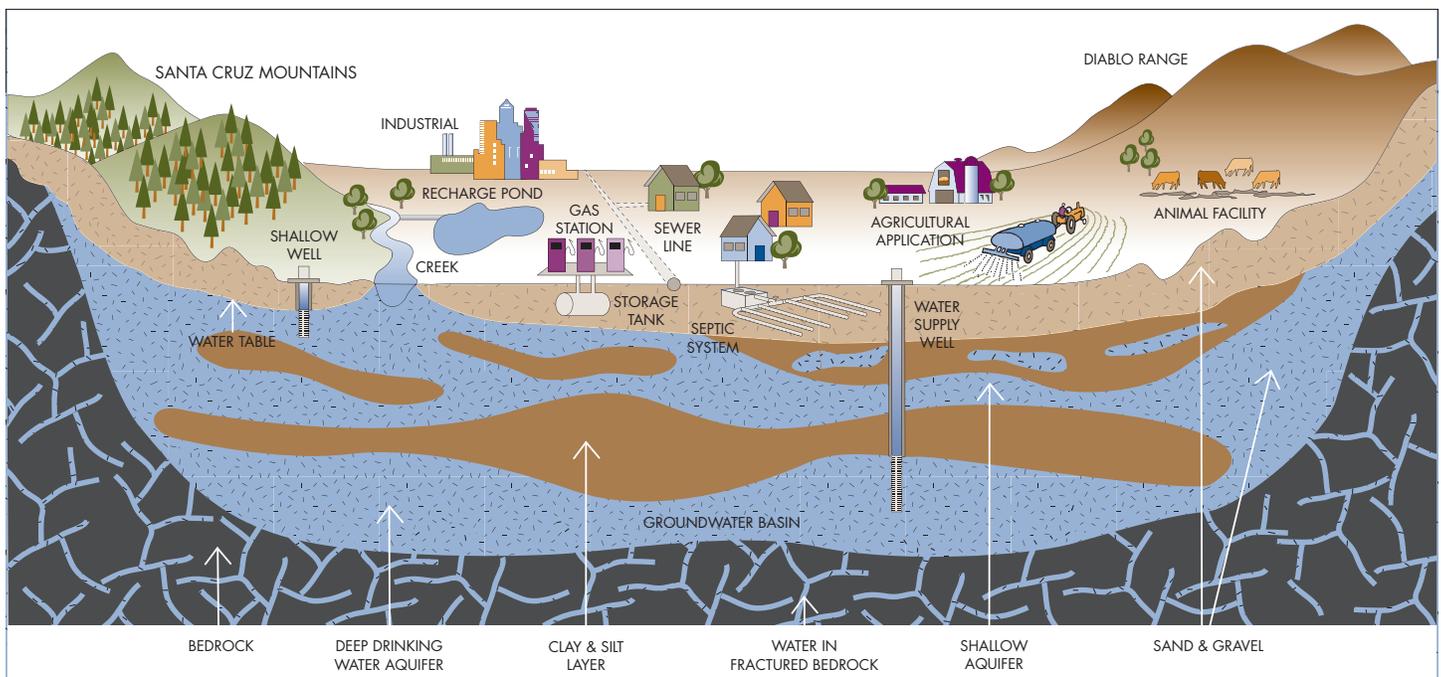
- Alert private well owners to the potential for contamination and the need for water quality testing;
- Introduce well owners to the basics of proper well construction, destruction and maintenance;
- Inform well owners of their responsibilities in Santa Clara County.

Nearly half of all water used in Santa Clara County comes from below the 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 treatment and distribution system. The groundwater basin provides some 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 infrastructure, such as pipelines or 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. In recent years, however, our drinking water aquifers have been threatened by toxic chemicals from industrial spills, leaking underground storage tanks, and agricultural applications, as well as biological pathogens from sewers, septic systems and 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 exacerbated by the presence of improperly constructed wells, abandoned wells, or wells located too near a potential contaminant source like 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 to protect public health, we need the cooperation of private well owners. We have produced this pamphlet to help you help us protect our groundwater resources and your health.

This guidebook is meant only as a guide for well owners. We do not claim that the recommendations made in this document will work in every situation, nor do we claim to have covered every possible scenario or contaminant.

## GROUNDWATER BASIN IN SANTA CLARA COUNTY



# WELL OWNER RESPONSIBILITIES



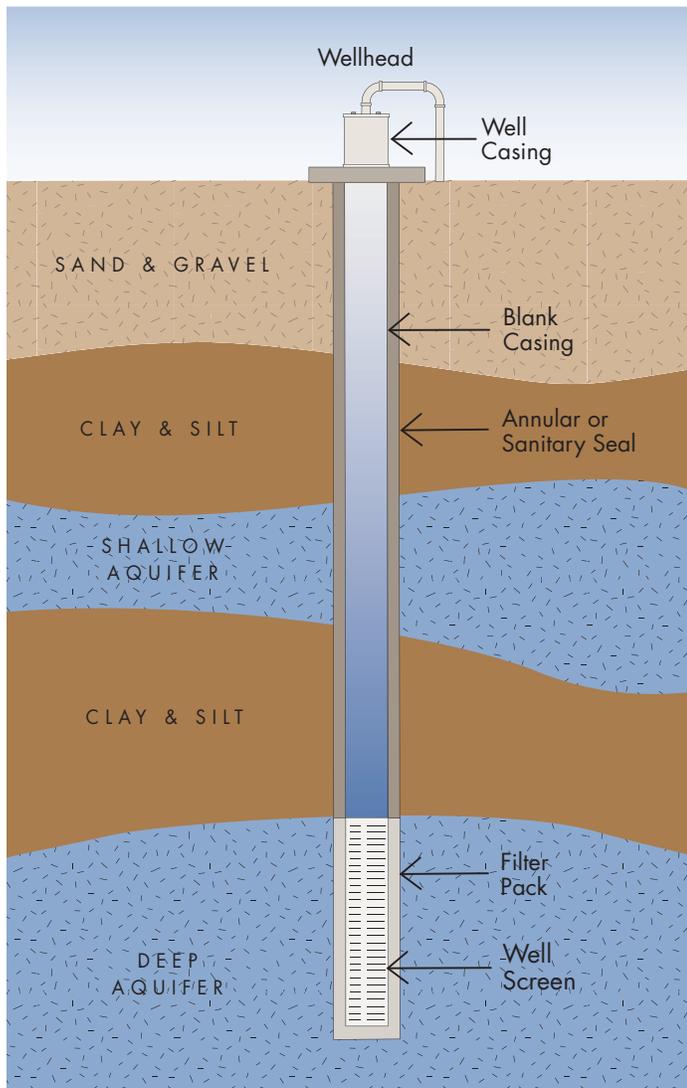
To protect public health and to maintain the high quality of water in our drinking water aquifers, well owners are required to adhere to various state and local laws relating to wells. In general, well owners are required to:

- Obtain permits from the Santa Clara Valley Water District before any well construction, destruction, or modification.
- Complete any well construction, destruction, or modification according to water district and state well standards. Wells must be constructed so that they do not allow poor quality surface water or water from shallow aquifers to migrate into drinking water aquifers. There are specific well construction practices that must be followed to ensure that wells are constructed properly. Note: all well construction, destruction, or modification activities must be completed by a C-57 licensed contractor.
- Register all wells with the water district.
- Obtain water system clearance from the Santa Clara County Department of Environmental Health before a well is used for drinking water purposes.
- Properly maintain the well so that it remains in compliance with the district 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 or animals cannot enter them.
- File Water Production Statements to report to the water district the amount of water that was produced from the well, if the well is located within one of the defined Groundwater Charge Zones.
- Properly destroy any wells that are 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. Generally, wells must be completely filled with impervious sealing materials.

For more information on your responsibilities as a well owner, contact the Wells Unit at (408) 630-2660 or visit the water district's web site at [www.valleywater.org](http://www.valleywater.org).

# WELL CONSTRUCTION AND WELL MAINTENANCE

## WELL CONSTRUCTION



The typical domestic well in Santa Clara 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 that 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 length 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. By regulation, 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 with 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 unperforated 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 poor 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 Santa Clara County, the minimum annular seal depth is 50 feet. The Santa Clara Valley Water District requires a deeper annular seal if the well is to be installed in the valley floor (vs. mountainous regions) and may also require that specific clay layers be sealed off. Typical well seal depths are 150 feet in the north county and 100 feet in the south county.

The annular seal extends to the surface of the ground where it is extended out to create a concrete pad with the well casing extending out of the middle of it. 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 from surface water contamination.

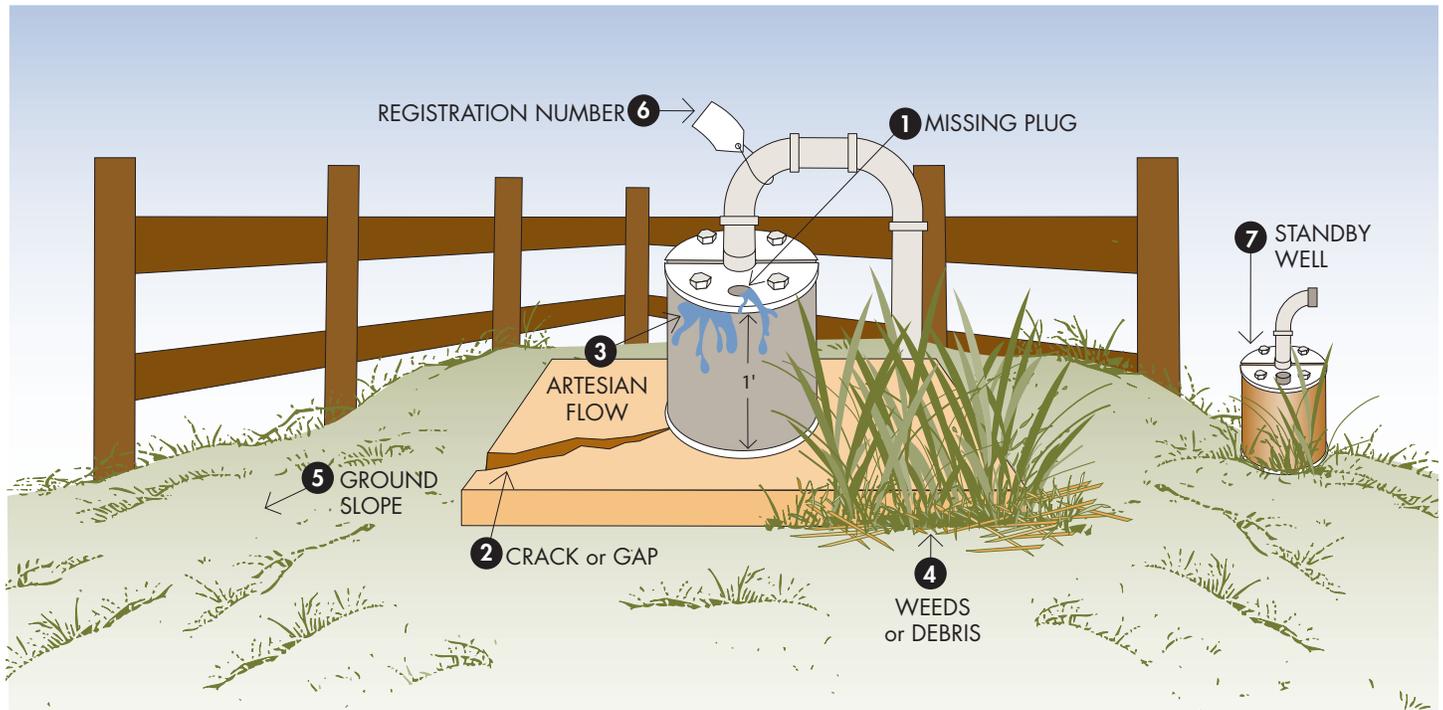
# WELL CONSTRUCTION AND WELL MAINTENANCE

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 wellhead

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

## WELLHEAD INSPECTION



- 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 follow the well casing 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. In addition to being a waste of water, if water can leak out, contaminants can seep in.
- 4 Remove weeds, leaves, and other debris from around your well. These can create great homes for rodents and other pests. Remember, 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 Make sure your well registration number is still visible on your well. This is a local legal requirement. Call the water district at (408) 630-2660 if you need a new, free registration tag.
- 7 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 for your active well. If you never plan to use the well again, you are legally required to properly destroy it. Properly destroying the well will prevent it from being an accidental pathway of contamination into your active well, your neighbor's well, or the groundwater. All inactive wells are required to be permitted as "standby wells" by the water district.



# WELL CONSTRUCTION AND WELL MAINTENANCE

## **Maintain complete well records**

Effective maintenance begins with complete records on the construction, testing, and maintenance of your well. 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, what depth it draws water from (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.

### **2. Pump test data**

The pump test gives information 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' property as well. This information can be invaluable as the properties change hands and repairs need 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 (e.g., the centerline of the road or corner of the house).

### **5. Maintenance records**

Record whenever you have any 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 your past water quality testing information in one place. By comparing results from one year to the next you will be better able to detect changes which may indicate problems.

### **7. Disinfection history**

If you disinfect your well, keep track of when, why and how it was done.

## **Deteriorating well performance**

The performance of all wells will deteriorate over time, but proper well construction and maintenance can delay this problem. 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, proper pump sizing, proper operation and maintenance, or preventative well maintenance. If not allowed to progress too far, most well performance problems can be corrected. To prevent or correct performance problems, you should work with your water well and/or pump contractor.

## **Well destruction**

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

To eliminate these vertical pathways for contaminant migration, abandoned wells must be destroyed by filling the entire well casing with cement-based sealing materials. As with all well construction, modification, or destruction, any well destruction work must be completed by a C-57 licensed contractor and under permit from the Santa Clara Valley Water District.

# WATER QUALITY PROTECTION

## Why should I protect groundwater?

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

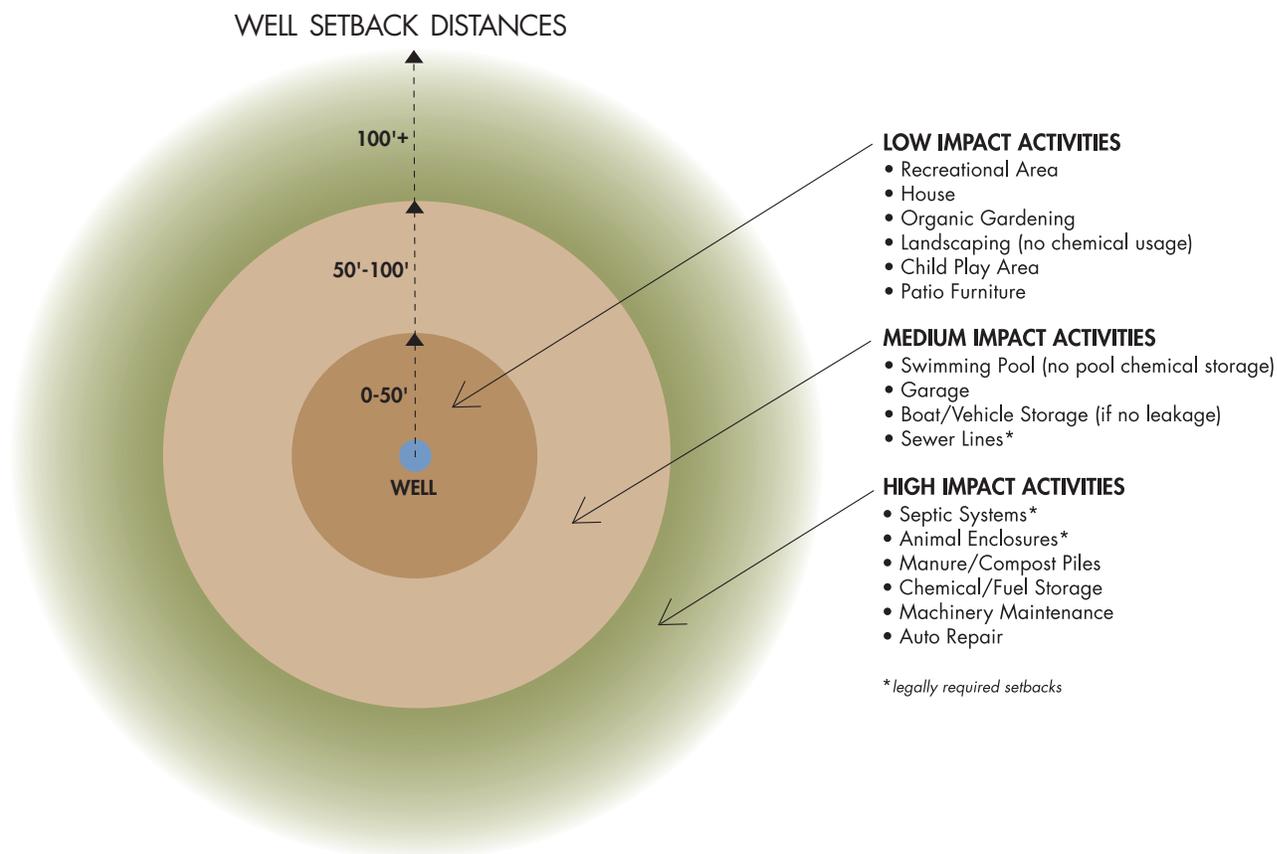
## How do I protect the quality of my water?

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

## Create a zone of protection around your well

Your well is a direct connection between you and your water supply. Contaminants can flow down your well as easily as water flows up it. The farther away from your well you are, the more sand, gravel and clay there is to filter out contaminants before they reach your water supply. So 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. For example, 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 you should use your common 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.



# WATER QUALITY PROTECTION

## **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 an 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**

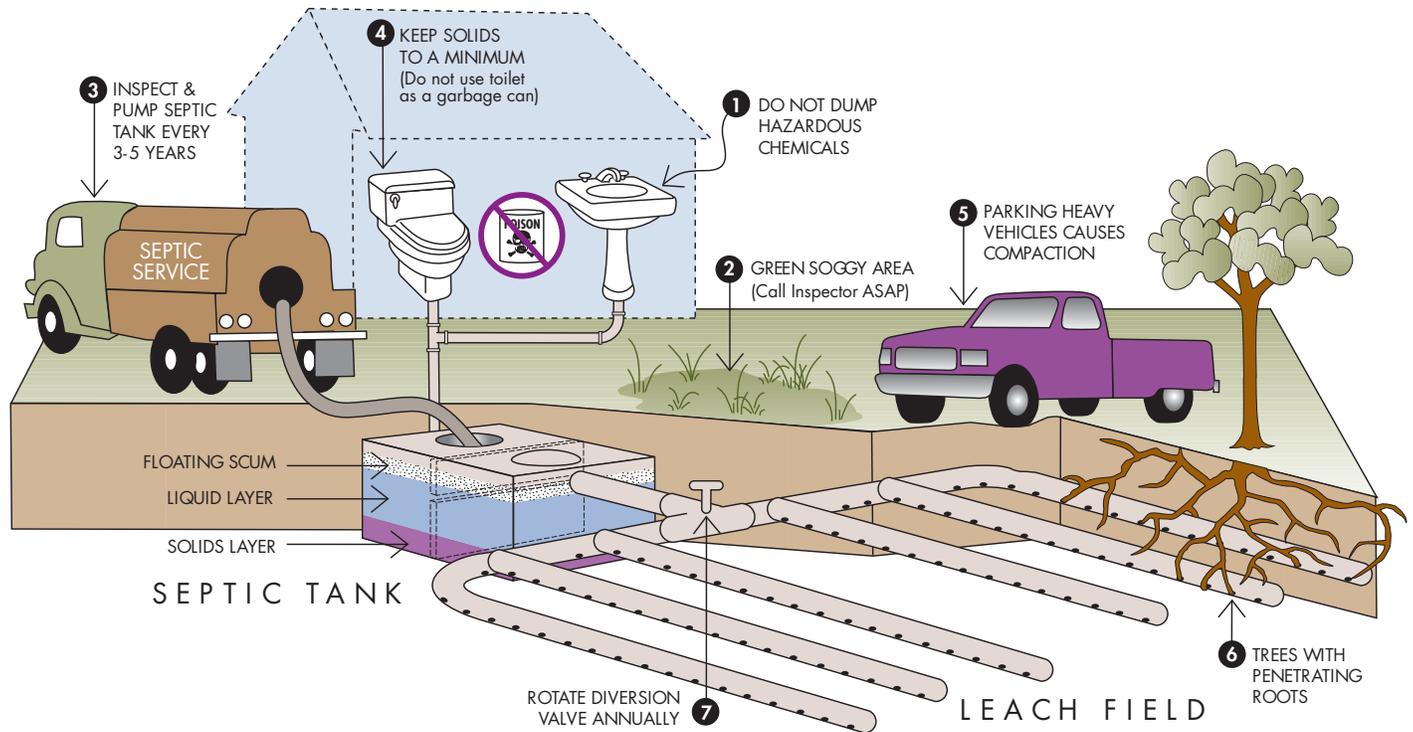
A septic system consists of a tank and a leach or drain field. All the solid/liquid waste from inside the home flows into the septic tank. The septic tank is composed of two compartments. The waste is deposited in the first compartment where the solids settle to the bottom and the liquid and scum float above it. 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 two to three 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 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 100-foot setback between your well and your septic system provides relatively good 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 as easily. See the information on the next page for some tips on septic system maintenance.



# WATER QUALITY PROTECTION

## SEPTIC TANK 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, a 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. Call 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.
- 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.

# WATER QUALITY SAMPLING AND TREATMENT

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 may 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 agriculture, urban stormwater runoff, and residential uses.
- 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.
- Radioactive contaminants that in our area are typically naturally occurring.



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 calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or by visiting [water.epa.gov/drink/hotline](http://water.epa.gov/drink/hotline).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons 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.

The most common groundwater contaminants currently of concern in Santa Clara County are bacteria and 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.

**Nitrate** is a naturally-occurring compound, but high amounts of nitrate in groundwater are typically due to human activity such as fertilizer applications, septic systems, and animal enclosures. Nitrate in drinking water at levels above 45 milligrams per liter (mg/L)  $\text{NO}_3$  or 10 mg/L  $\text{NO}_3\text{-N}$  is a health risk for infants less than six months of age, pregnant women and people with certain specific enzyme deficiencies. Nitrate concentrations in 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.

# WATER QUALITY SAMPLING AND TREATMENT

## 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. For a list of certified laboratories, contact the water district at (408) 630-2300 or search “certified labs” on [www.valleywater.org](http://www.valleywater.org).

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 <b>e.coli</b> 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 <sub>3</sub> )*  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.

≥ is greater than or equal to  
mg/l is milligrams per liter. 1 mg/l = 1 part per million (ppm). If your results are in micrograms per liter (ug/l), divide by 1000 to get mg/l.

\* Primary Maximum Contaminant Level

These are health-based regulatory standards that must be met by public water systems. Private wells are not subject to these standards, but comparison of your results may help you to better understand the quality of your water. Other standards shown are secondary maximum contaminant levels, which relate to taste, odor, or appearance, rather than health effects.

# WATER QUALITY SAMPLING AND TREATMENT

## 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 <b>iron (Fe)</b> or iron bacteria.	2
Porcelain fixtures or laundry are stained brown or black	This is commonly a result of high <b>manganese (Mn)</b> and/or <b>iron (Fe)</b> 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 <b>calcium (Ca)</b> and <b>magnesium (Mg)</b> can cause hard water, which leaves spots. <b>Hardness</b> can also be measured directly.	2
Water is blue	Blue water or blue deposits may be due to high levels of <b>copper (Cu)</b> , especially if coupled with corrosive water.	1
Water smells like rotten eggs	This is most likely caused by <b>hydrogen sulfide (H<sub>2</sub>S)</b> .	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 <b>calcium</b> , <b>pH</b> , <b>total dissolved solids (TDS)</b> , and <b>alkalinity</b> .	2
Water appears cloudy, frothy or colored	<b>Suspended particulates</b> , measured directly or as <b>turbidity</b> , can cause the water to appear cloudy, frothy or colored. <b>Detergents</b> and/or <b>sewage waste</b> may also be the culprit.	1
Home's plumbing system has lead pipes, fittings, or solder joints	<b>Corrosive</b> water can cause <b>lead (Pb)</b> , <b>copper (Cu)</b> , <b>cadmium (Cd)</b> , and/or <b>zinc (Zn)</b> to be leached from lead pipes, fittings, and solder joints.	1
Water has a turpentine odor	This may be due to <b>methyl tertiary butyl ether (MTBE)</b> .	1
Water has chemical smell or taste	This may be due to <b>volatile</b> or <b>semivolatile organic compounds (VOCs)</b> or <b>pesticides</b> .	1

## 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 <b>volatile organic compounds (VOCs)</b> , <b>pH</b> , <b>total dissolved solids (TDS)</b> , <b>chloride (Cl)</b> , <b>sulfate (SO<sub>4</sub>)</b> , and <b>metals</b> .	1
Agricultural crop production	Consider testing for <b>pesticides</b> commonly used near the well (consult the farmer or Department of Agriculture for a list), <b>nitrate (NO<sub>3</sub>)</b> , <b>pH</b> , and <b>total dissolved solids (TDS)</b> .	1
Livestock enclosure, manure, or compost storage area	Consider testing for <b>bacteria</b> , <b>nitrate (NO<sub>3</sub>)</b> , and <b>total dissolved solids (TDS)</b> .	1
Gas station or automobile repair shop	Consider testing for <b>total petroleum hydrocarbons (TPHg)</b> , <b>total oil, grease (TOG)</b> , <b>benzene</b> , <b>toluene</b> , <b>ethylbenzene</b> , <b>xylenes (BTEX)</b> , <b>MTBE</b> , <b>ethylene dibromide (EDB)</b> .	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

# WATER QUALITY SAMPLING AND TREATMENT

## What can I do if total coliform bacteria are present in my water?

**Step 1.** First, try to determine where the contamination came from. The table below lists some possible problems and recommended corrective actions. You may be able to correct some problems yourself, while others, marked by an asterisk (\*), are legally required to be corrected by a C-57 licensed well contractor. The water district recommends that corrective actions be completed by a licensed or certified groundwater professional such as a licensed well driller, pump maintenance contractor, or water system contractor. For more information on water system troubleshooting or for a list of C-57 licensed professionals, call the water district at **(408) 630-2660**.

**Step 2.** Once you have located and eliminated the source of the bacteria, you should disinfect the system. For instructions on how to properly disinfect your well and water system, visit the County Department of Environmental Health website at [www.ehinfo.org](http://www.ehinfo.org) (search "disinfection") or call them at (408) 918-3400. You can also contact the water district at (408) 630-2660 or call a licensed water system contractor.

**Step 3.** Before drinking the water, test again for total coliform bacteria. If total coliform bacteria are still present in your water, start at step one again.

Problem	Recommended Corrective Action
The well is newly constructed, or maintenance or repair was recently done.	Contact the contractor who performed the recent work and have them disinfect the well and water system.
The pump was primed with impure water.	Disinfect the well and water system.
There is standing water around the well or water draining toward the well.	Re-grade around the well so the ground slopes away from the well.
The concrete well pad is cracked or separated from the well casing.	Seal any small cracks.  *If large cracks or gaps exist, or if no concrete well pad exists, have a C-57 licensed well drilling contractor construct a new well pad.
The well is not completely sealed against surface water, insects, or other foreign matter.	Replace any missing plugs and cap any open pipes.  *If the wellhead gasket is degraded, damaged, or nonexistent, have a C-57 licensed well contractor replace or install a new one.
There is sediment at the bottom of the storage tank. The water tank is leaking or damaged. The storage tank vent or overflow pipe is unprotected.	Contact a water system contractor for tank cleaning or repair. Screen the storage tank vent or overflow pipe.
There are cross-connections in the plumbing system.	Make sure that your plumbing is not connected to another source of water that may be contaminated (e.g., a defunct community water system).
There is not adequate back-flow protection.	Install a back-flow prevention device on every outdoor faucet (available at most hardware and plumbing supply stores). Have a licensed groundwater professional inspect the system to ensure there is proper back-flow protection between the well and the water system.
There are dead-end or unused water lines connected to the plumbing system.	Remove any unused water lines.
The well casing is corroded. There is sediment at the bottom of the well.	*Have a C-57 licensed well contractor assess and repair the casing, if possible.
The well casing is perforated too high or the sanitary seal is not adequate.	*Have a C-57 licensed well contractor drill a new well and properly destroy the old well.

# WATER QUALITY SAMPLING AND TREATMENT

## What if I want to treat my water?

Most groundwater does not require any treatment. If you have had your water tested and found a problem that you want to treat, there are many different types of treatment available. Not all water treatment systems work for every contaminant or for every water type. Once installed, most systems require routine maintenance to continue performing properly.

**Improperly maintained treatment systems can cause more harm than having no system at all.**

You need to know what you want to remove and if you will be able to perform the routine maintenance *before* you invest any money in a system. See the guide below for treatment options. Some options remove a greater percent of the concentration than other options listed for the same substance. We highly recommend that you talk with the manufacturer or a water treatment professional to **get a guarantee** that the system you are considering will work in your situation. Some water may need to be softened or pre-filtered or the pH may need to be adjusted prior to treatment.

Contaminant	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/Radium 228	X				X	X				X
Radon	X									
Sulfate					X	X				X
Total Dissolved Solids (TDS)				X	X					X
Volatile Organic Chemicals	X									X

This table is meant to provide general guidance. Selection of a treatment technology should be based on site specific conditions, which vary. There are many types of treatment systems and the systems shown may not be appropriate for all situations.

Table adapted from the Water Quality Association, the California Department of Public Health, Texas A&M Agrilife Extension, and U.S. Environmental Protection Agency.

# RESOURCE GUIDE

## Local Government

### Santa Clara Valley Water District

The Santa Clara Valley Water District is the groundwater management agency for Santa Clara County. The water district's mission with respect to wells is to ensure that wells are constructed, maintained, and destroyed in a manner that will not potentially damage the groundwater basin. For information on the construction and destruction of wells, groundwater levels, groundwater quality, and local groundwater studies and services in Santa Clara County contact the water district.

(408) 265-2600 | [www.valleywater.org](http://www.valleywater.org)

#### Contact the water district if you have a question about:

- Groundwater quality, levels, flow direction, or general information
- Well construction, destruction, permitting, or protection
- Dry wells—storm water infiltration devices
- Nitrate (NO<sub>3</sub>)
- Salt water intrusion
- C-57 licensed well contractors
- State certified laboratories

For spills, hazardous materials accidents, or illegal dumping contact the 24-hour hotline (888) 510-5151

### Santa Clara County Department of Environmental Health

The Santa Clara County Department of Environmental Health is responsible for protecting public health. The county ensures that all wells that serve less than 15 homes comply with state and federal regulations for drinking water quality. Wells that serve 15 or more homes fall under the jurisdiction of the California Department of Public Health. The county is also the permitting agency for septic system installations.

(408) 918-3400 | [www.ehinfo.org](http://www.ehinfo.org)

#### Contact the county if you have a question about:

- Drinking water standards & health risks
- Septic systems
- State certified laboratories
- Well and drinking water system disinfection
- Underground storage tanks
- Methyl Tertiary-Butyl Ether (MTBE)

### Household Hazardous Waste Drop-Off Facilities

The Santa Clara County Household Hazardous Waste Program provides the community with practical pollution prevention strategies for the use, recycling, and disposal of products containing hazardous substances. Contact the county for information on the proper disposal of household hazardous waste including a list of facilities in Santa Clara County accepting household hazardous waste.

(408) 299-7300 | [www.hhw.org](http://www.hhw.org)

## Regional and State Government

### California State Water Resources Control Board, Division of Drinking Water (DDW)

The DDW regulates public drinking water systems. Although DDW does not regulate private domestic wells, DDW's web page contains useful information on water-related topics including drinking water regulations, water testing, and treatment. DDW certifies drinking water treatment devices which claim to treat water for contaminants related to public health, such as lead, bacteria, pesticides, and heavy metals. DDW maintains a directory of certified residential water treatment devices, which can be found on the website below.

916-449-5577 (Headquarters Office in Sacramento)  
[www.waterboards.ca.gov/drinking\\_water/programs/index.shtml#north\\_south](http://www.waterboards.ca.gov/drinking_water/programs/index.shtml#north_south)

### California Department of Water Resources

The Department of Water Resources has information on groundwater management issues throughout California. The website has a list of useful publications on groundwater, in addition to information on water levels and groundwater.

(916) 376-9600 | [www.dpla2.water.ca.gov](http://www.dpla2.water.ca.gov)

### 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](http://www.dtsc.ca.gov)

### Regional Water Quality Control Board—San Francisco Bay Region

The San Francisco Bay Regional Water Quality Control Board is the branch of the State Water Resources Control Board providing local oversight for the San Francisco Bay Watershed. The San Francisco Bay Region includes all of the northern cities in Santa Clara County to approximately Cochrane Road in Morgan Hill.

(510) 622-2300 | [www.swrcb.ca.gov/rwqcb2](http://www.swrcb.ca.gov/rwqcb2)

### Regional Water Quality Control Board—Central Coast Region

The Central Coast Regional Water Quality Control Board is the branch of the State Water Resources Control Board providing local oversight for the Monterey Bay Watershed. The Central Coast Region includes the southern portion of Santa Clara County from approximately Cochrane Road in Morgan Hill to the Pajaro River in Gilroy.

(805) 549-3147 | [www.swrcb.ca.gov/rwqcb3](http://www.swrcb.ca.gov/rwqcb3)

# RESOURCE GUIDE

## 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 | [water.epa.gov/drink/hotline](http://water.epa.gov/drink/hotline)

### 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](http://www.fda.gov)

## Other Resources

### State Certified Laboratories

A list of state certified laboratories can be obtained by calling the Santa Clara Valley Water District, at (408) 630-2660, or the County Department of Environmental Health, at (408) 918-3400. You can also find a list of certified laboratories on the water district's website. From the homepage at [www.valleywater.org](http://www.valleywater.org), search "Certified Labs."

### State Licensed Well Contractors

All well construction, destruction, or modification activities must be completed by a C-57 licensed contractor. For a list of C-57 licensed professionals, call the water district at (408) 630-2660.

### Water Quality Association

The Water Quality Association 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](http://www.wqa.org)

### National Sanitation Foundation

The National Sanitation Foundation 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](http://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.

(707) 578-4408 | [www.groundh2o.org](http://www.groundh2o.org)

### The Groundwater Foundation

The Groundwater Foundation is a not-for-profit organization 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 Groundwater Guardian Communities and Affiliates.

(800) 858-4844 | [www.groundwater.org](http://www.groundwater.org)

### National Ground Water Association

The National Ground Water Association 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 | [www.ngwa.org](http://www.ngwa.org)

MY WELL NUMBER:



Santa Clara Valley Water District

5750 Almaden Expwy  
San Jose, CA 95118  
(408) 265-2600  
valleywater.org



County of Santa Clara  
Department of Environmental Health

1555 Berger Drive, Suite 300  
San Jose, CA 95112-2716  
(408) 918-3400  
ehinfo.org

