EL DORADO COUNTY
PUBLIC HEALTH LABORATORY
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Healthy People Living in Healthy Communities in El Dorado County

INSTRUCTIONS FOR TAKING BACTERIOLOGICAL WATER SAMPLES
(READ COMPLETELY PRIOR TO SAMPLING)

- Obtain approved sample bottle from Laboratory.
- Select a sampling tap or faucet that is clean, frequently used, discharges downward and provides a smooth, even flow of water.
- Wash hands thoroughly with soap and water prior to collecting sample.
- Remove any faucet attachments (grit screens, strainers, hoses, etc...) as these can be false sources of contamination.
- Run cold water through faucet for 1 to 2 minutes. Turn water off and sanitize faucet by spraying or wiping down with bleach or alcohol. Be sure to spray up into mouth of faucet. Run cold water through faucet for 2 to 3 minutes. This allows for the removal of stagnant water from the pipeline so that a more representative sample of the water system can be obtained.
- Adjust flow rate for sample collection. Make sure the water is not lapping over the rim of the tap and that the tap is not leaking. Water should not be coming out of the faucet at full force as this may lead to overfilling of bottle or contamination of bottle with bacteria from a source other than your water (i.e. hands, outside of bottle, etc...).
- With clean hands, remove plastic safety seal from cap of collection bottle and discard. Unscrew cap (**do not set cap down on counter or allow your fingers to come into contact with the inside of the cap while collecting the water sample**). Fill bottle with a constant stream of water to the bottom of the bottle's neck (where the bottle first becomes narrower).
- **Do not rinse out the white powder present in the bottom of the bottle. If the bottle overflows, obtain another and start over. Do not allow your fingers to come into contact with the inside of the bottle or with the water as it enters the bottle.**
- Replace the cap and turn off the faucet. Replace any faucet attachments that were removed.
- Keep the water sample cool and deliver to the laboratory as soon as possible. The sample must reach the laboratory within 24 hours from the time of collection. However, it is best if the lab receives the sample as close to the time of collection as possible.
- The lab will not accept samples that are warm or over 24 hours old. It is suggested that the sample be transported in a cooler or on ice; this is especially important on warm days—do not let the water sample sit in a warm car.
- The laboratory accepts water samples Monday through Thursday from 8 AM to 12 PM and 1 PM to 4 PM. Days and times are subject to change due to holiday schedules. Please contact the lab to verify its schedule.
- NOTE: recent chlorination of a water supply can affect sample results—make sure there is no chlorine present when the sample is taken.

QUESTIONS AND ANSWERS REGARDING COLIFORM BACTERIA AND WATER CONTAMINATION

What are Coliform Bacteria? Coliform bacteria are "indicator organisms" used in the microbiological analysis of water. Coliforms are a group of bacteria readily found in soil, decaying vegetation, animal feces and raw surface water. They are not normally present in deep groundwater and treated surface water. These indicator organisms may be accompanied by pathogens (i.e. disease-causing organisms), but do not normally cause disease in healthy individuals. However, individuals with compromised immune systems (young children, elderly or ill individuals) should be considered at risk. Coliforms, rather than the actual pathogens, are used to assess water quality because their detection is more reliable. Pathogens appear in smaller numbers than coliforms, so are less likely to be detected. Drinking water found to contain coliform bacteria is considered biologically contaminated and, therefore, unsafe to drink.

How does the laboratory detect coliforms in a water sample? Since visual examination of water under a microscope is unreliable, the laboratory uses the Colilert Presence/Absence method. This method combines two examinations, one to determine the presence of coliform bacteria and another to determine if the coliform bacteria that are present are from feces (E. coli). The water sample is combined with a growth medium and is then incubated for 24 hours at 35 degrees Celsius. During the 24 hour incubation, any coliform bacteria that are present utilize the growth medium. This results in a change in the appearance of the water sample (yellow color development). If E. coli is present, a second change in the appearance of the water sample occurs simultaneously (fluorescence under Ultra violet light). The color changes that occur can only be detected after addition of the growth medium to the water sample and 24 hours of incubation.

Results:

TOTAL COLIFORM ABSENT/E. COLI ABSENT: This result means there are no coliform bacteria present at the time of sampling. The water is considered bacteriologically safe to drink**.

TOTAL COLIFORM PRESENT/E. COLI ABSENT: This result means that coliform bacteria was present at the time of sampling. The water is considered UNSAFE to drink**. It is advised that you super-chlorinate/flush your system and collect another sample.

TOTAL COLIFORM PRESENT/E. COLI PRESENT: This result means that E. coli (fecal coliforms) was present at the time of sampling. The water is considered UNSAFE to drink**. It is advised that you super-chlorinate/flush your system and collect another sample.

**The California Department of Health Services sets drinking water standards. It has determined that the presence of ANY coliform bacteria in drinking water is a possible health concern. A 100 milliliter sample of water must be ABSENT of coliform bacteria to be considered safe to drink.

How did the water become contaminated? Surface waters such as streams, creeks and lakes will almost always contain some degree of contamination. This is due to exposure to animals, humans, aquatic life, etc... Raw surface waters should always be treated prior to domestic use, and must include disinfection **and** filtration to remove turbidity and parasites that are resistant to simple disinfection. Wells and springs can become contaminated by faulty construction, poor protection from surface activity (including rain and flooding), a shallow water table, entrance of unfiltered surface water via rock fractures, close proximity to a sewage disposal system or leaky sewer pipe, and/or contamination during repair or construction. False positive coliform results can occur by inadvertently contaminating the water sample during collection (i.e. putting your finger into the water sample bottle, etc...) or by using a non-approved water sample bottle. For these reasons, it is necessary to follow the instructions on the proper procedure for collection of a water sample that has been provided with this informational packet. A well or spring should be super-chlorinated prior to collecting a sample for this test, especially if a repair has been made and the system was not chlorinated at the time.

What are some other forms of water contamination? Water contaminants commonly found in this area include hydrogen sulfide (rotten egg odor), excess iron (reddish-brown stains), iron bacteria (foul taste and odor), manganese (black stains and metallic taste), hardness (white deposits, increase in soap usage), salinity, corrosiveness (evidenced by the dissolving of copper plumbing leading to blue-green stains and a bitter taste), turbidity (cloudy or dirty water), and sediment. These are not considered health hazards but there are water treatment systems available for the removal/reduction of all of the above. Contact a professional water treatment company for more information. Man-made chemicals such as pesticides, herbicides, solvents, etc...can easily leach into a subsurface water supply through careless handling and dumping. Fortunately these forms of water contamination are rarely found in this area.

Prepared by EDC Environmental Management Department
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Building C
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530-621-5300

Private Well Owner Information can be found at :

http://www.waterboards.ca.gov/water_issues/programs/gama/well_owners.shtml

WATER WELL DISINFECTION

BEFORE DISINFECTION, READ THROUGH ALL INSTRUCTIONS. CALL ENVIRONMENTAL MANAGEMENT AT 530-621-5300 IF YOU HAVE ANY QUESTIONS.

1. Examine well head for missing bolts, open holes, casing cracks, etc... Take all steps necessary to completely seal off possible contamination entrance points. A screened, sanitary well vent is recommended. If a rope hole exists, tie off the pump rope under the sanitary well cap on an inverted eye bolt. Check surrounding area to make sure drainage is sloped away from the well.

2. Add chlorine (household liquid bleach) to the well at an opening (normally covered) dedicated for this purpose. The chlorine is added between the casing and the center pump drop pipe. If no accessible opening exists, contact a professional pump contractor/well driller for retrofit.

Amount of bleach to use = 1 quart bleach to every 100 gallons of water
Gallons of water in well = (Depth of well – static level) X 1.5 gallons per foot

3. Wait 30 minutes then surge the well (to mix) by opening and closing the nearest faucet/hose bib. Repeat the surging 3-5 times, pausing between surges to minimize stress on the pump.

4. One at a time, starting with the faucet/hose bib closest to the well, open every tap in the water piping system. Once the chlorine odor is detected in the open tap, shut off the tap and open the next one in line. Continue throughout the system (inside and outside faucets/hose bibs, showers, toilets, etc...) until all piping/plumbing has been in contact with the chlorine.

5. Let stand 12 – 24 hours.

6. After the recommended holding period, the chlorine can be flushed out of the system by opening taps until the chlorine odor can no longer be detected. To minimize impact on a septic system from the additional water, flushing should be done first at an outside hose bib, directing the flushed water away from the septic area. When the chlorine odor appears almost gone, flush the inside plumbing to rid the entire system of chlorine.

7. Resampling for coliform bacteria should be done after the chlorine is completely absent from the water supply to verify that the water is bacteriologically safe to drink.

***It is recommended that a well be chlorinated annually and after repairs are done to the well or plumbing system.**

****For flooded wells, flush water at the wellhead until it appears clear before chlorinating.**

*****For stubborn contamination problems, the well may need to be chlorinated by inserting a sprayer which recirculates the chlorinated water by spraying from the top down for a pre-determined period of time.**

******If a storage tank is connected to the system, add chlorine to the tank after chlorinating the well, and before moving the chlorine through the system. (One gallon bleach per 1000 gallon storage capacity.)**

LABORATORIES CERTIFIED FOR DRINKING WATER ANALYSES

LABORATORIES CONDUCTING BACTERIOLOGICAL AND CHEMICAL ANALYSES:

California Laboratory Services
3249 Fitzgerald Road
Rancho Cordova, CA 95742
916-638-7301

FGL Environmental Laboratory
2500 Stagecoach Road
Stockton, CA 95215
209-942-0181

Cranmer Engineering
1188 East Main Street
Grass Valley, CA 95945
530-273-7284

Sequoia Analytical
819 Striker Avenue, Suite 8
Sacramento, CA 95834
916-921-9600

LABORATORIES CONDUCTING BACTERIOLOGICAL ANALYSES ONLY:

Water Environmental Testing Lab (WET Lab)
Shingle Springs, CA 95682
530-677-5776

El Dorado County
Public Health Laboratory
931 Spring Street
Placerville, CA 95667
530-621-6115

Contact the laboratories directly to inquire about tests performed, collection procedures, collection containers, pricing and possible courier service. You may contact the State Department of Health Services at 510-540-2800 or through their web site (www.dhs.ca.gov/ps/ls/elap/Elapindex.htm) for a complete list of certified laboratories.