

***Bernalillo County  
Environmental Health  
Department***

**Well  
Owner's  
Guide**

*How to maintain your well and  
keep your drinking water safe*

**111 Union Square SE  
Albuquerque NM, 87102  
(505) 314-0310**

Bernalillo County Commission  
Steve D. Gallegos, Chair  
District 2

Tom Rutherford  
District 3

Les Houston,  
District 5

E. Tim Cummins  
District 4

Ken Sanchez  
District 1

County Manager  
Juan R. Vigil

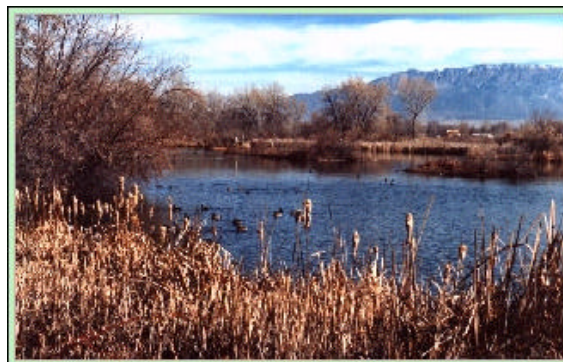


The Bernalillo County  
Environmental Health  
Department  
Mission

The Bernalillo County Environmental Health Department's mission is to work with the community to preserve and protect a quality environment that assures optimum public health and safety.

## Table of Contents

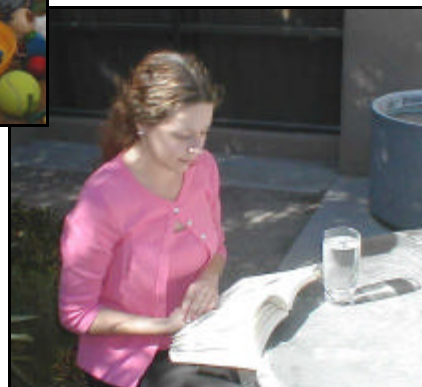
Introduction	2
Possible Sources of Contamination	3-4
Problem Indicators	5-6
Water Sampling	7-9
Treatment	10-12
Well Construction	13
Wellhead Protection	14-16
Contacts	17-21
Glossary	22-26
Sources	27-28
Contributors	29
Appendix	





## Introduction

Many residents in Bernalillo County rely on private wells for drinking water. While the Office of the State Engineer and the Bernalillo County Environmental Health Department (BCEHD) regulate private wells, those regulations are not as stringent as regulations governing public water supplies like that of the City of Albuquerque. Therefore, private well owners must be vigilant about assuring that their water is safe from potential contamination. The purpose of this guide is to provide well owners with information needed to maintain clean and safe drinking water systems.



## Possible Sources of Contamination

Although most water contamination in New Mexico occurs in shallow aquifers, deeper zones can be affected. The most likely sources of ground water contamination are:

- septic system leach fields;
- leaking storage tanks for gasoline, oil and other hazardous chemicals;
- active or abandoned mines and mills, including mine dumps, mill tailings, and pumping water from mines (dewatering);
- oil and gas leaks, spills or improper waste disposal;
- pits, ponds, lagoons and other holding areas for liquid waste from businesses, industry and domestic sewage facilities;





## Possible Sources of Contamination



- solid waste disposal sites, such as landfills and illegal dumps;
- improper disposal of small and large amounts of chemical waste, both at home and in industry;
- pesticides and fertilizers;
- improperly constructed wells;
- improperly abandoned wells;
- confined animal feeding operations; and/or
- stormwater runoff.

If your well was originally incorrectly constructed, is damaged, or is not maintained properly, it can also be a source of contamination by drawing contaminated water from shallow depths into deep, clean water zones of the aquifer.

## Problem Indicators

### Odor and Taste

In Bernalillo County high levels of iron, manganese and iron-reducing bacteria can lead to unpleasant odor and taste. Iron and manganese are naturally occurring metals found in the earth. Iron found in water may also be caused by corrosion of metal pipes, pumps and fixtures. Fortunately this problem can usually be treated easily and is not linked to serious health risks.



### Color and Turbidity

Pure water is clear and colorless. Water that is discolored contains foreign substances, such as decaying plant and animal matter. Water can also become discolored from the dissolving of metals or from industrial wastes or runoff. Turbidity is a haziness or lack of clarity in water caused by the presence of insoluble suspended particles ranging from fine dust to coarse matter. It is usually due to suspended inorganic or organic matter.





## **Problem Indicators**

### **Biological Contaminants**

Biological contaminants include organisms such as bacteria, algae, fungi, molds, viruses, protozoa, and parasitic worms that are difficult to spot until they cause a health problem. Coliform bacteria and related bacteria tend to be the most common source of biological contamination in Bernalillo County. Fecal coliform bacteria is derived from animal or human waste. Testing your water is one way to guard against biological contaminants.

### **Chemical Contaminants**

Numerous chemicals and chemical compounds can contaminate your water. Some chemical compounds, such as high levels of nitrate, can cause very serious health problems. Water hardness, while not a health risk on its own, indicates that calcium and magnesium salts are present. If you suspect chemical contamination, have your water tested.

### **Past Problems**

Past problems that you or previous owners of your well have had with water contamination can provide clues about your well's vulnerability to various sources of contamination. Becoming familiar with past contamination in your community can also help you to evaluate potential problems. Well records, local residents, water treatment companies, the New Mexico Environment Department (NMED), and the BCEHD are good sources for historical information about your well.





## Water Sampling

If you are unsure if your well is safe from shallow water contamination, or if you suspect one of the problem indicators (on pp. 5-6), a water test, or a sanitary survey is the best way to assess your water quality.

### **How often should I test my water?**

Test your well water annually. However, if you have infants, small children, pregnant women, elderly, and/or chronically ill individuals in your home, you may want to test your water more frequently, as those individuals are more susceptible to the effects of contaminants in drinking water. You also may want to test your water if you find the following:

- there is a sudden change in the smell, taste, or color of the water;
- the taste, smell, or color of the water is undesirable;
- you have mineral build-up or iron stains;
- you live near an industrial area, heavy agricultural operations, a landfill, or a dense concentration of septic tanks.

### **How do I take a water sample?**

To obtain a water sample, contact a certified testing laboratory (see p. 19). The laboratory will supply you with sample jars, packaging and sampling instructions. Remember to avoid touching the inside of the sample jar and its lid, as this may contaminate the water sample.



## **Water Sampling**



### **What do I sample for?**

The most commonly found water contaminants are nitrate and coliform bacteria. If you live near an industrial area, or have some other reason to suspect chemical contamination, you may wish to test for benzene, heavy metals, petroleum, or other chemicals used in the nearby industrial area.

### **Where do I take the samples?**

Refer to page 19 for a list of laboratories that are certified by the NMED.



## Water Sampling

### What do the results mean?

A bacteriological test identifies the presence or absence of total coliform bacteria. A sample that is “safe bacteriologically,” means that there are no coliform bacteria present at the time the sample was taken, and that the water is suitable for drinking. “Unsafe bacteriologically,” means that coliform bacteria are present. It is best to consider this water a health risk and to boil it for 20 minutes before consuming it. Retest any water that comes back with an “unsafe” result. If the retest shows the presence of bacteria you may wish to investigate the source of contamination and disinfect or treat your well immediately (see pp. 10-12).

For tests of chemical contamination, ask the lab personnel to explain test results to you, or contact the NMED Drinking Water Bureau, or the BCEHD for further information (see p. 17).





## Treatment

### **What do I do if my water is contaminated?**

If something is negatively affecting your water quality, there are several options to consider: drill a deeper well; hook up to a public water system (if available); purchase bottled water; or treat your water. If you choose to treat the water, first test the water so that each contaminant may be isolated and treated accordingly.

### **How do I treat my water if I find. . .**

#### **Chloride**

Treatment of chloride includes deionization and reverse osmosis. These techniques also reduce sulfate alkalinity, and total dissolved solids.

#### **Fluoride**

Treatment for fluoride includes ion-exchange or reverse osmosis. This is usually a specialized and expensive problem to treat.

#### **Hardness and Alkalinity**

Water softeners will often take care of hardness and alkalinity problems. Hardness refers to the soap-neutralizing ions, primarily magnesium and calcium present in water. Alkalinity is the ability of a water solution to neutralize an acid. It is important to note that alkalinity lower than the hardness value may indicate chloride, nitrate, or sulfate.





## Treatment

### Iron

Treatment methods for iron include water softeners, catalytic oxidizing filters, oxidation-filtration systems, or if iron bacteria are present, chlorination.

### Industrial Chemicals

Industrial chemicals include substances such as benzene, heavy metals (i.e. mercury and lead), pesticides and herbicides, polychlorinated biphenyls (PCBs), petroleum fuels, chlorinated alkenes, and hydrocarbons. Activated carbon filtration, aeration, ion-exchange, neutralization and other treatment techniques can be utilized, including a combination of any of the above, to remedy the problem. Treatment of chemical pollution should be handled on a case-by-case basis.

### Manganese

A problem with manganese can be treated with a water softener, or, if levels exceed 2.0 mg/L (milligrams per liter), oxidizing filters or oxidation-filtration may be required.

### Nitrates

Nitrates are the second most common type of contaminant found in private wells. They are generally treated through ion exchange or reverse osmosis. **Note: Boiling water increases the concentrations of nitrates.**



## Treatment

### **Radon**

Radon treatment occurs through aeration or carbon filtration.

### **Turbidity and Color**

Settling or filtration is used to treat problems with turbidity and color.

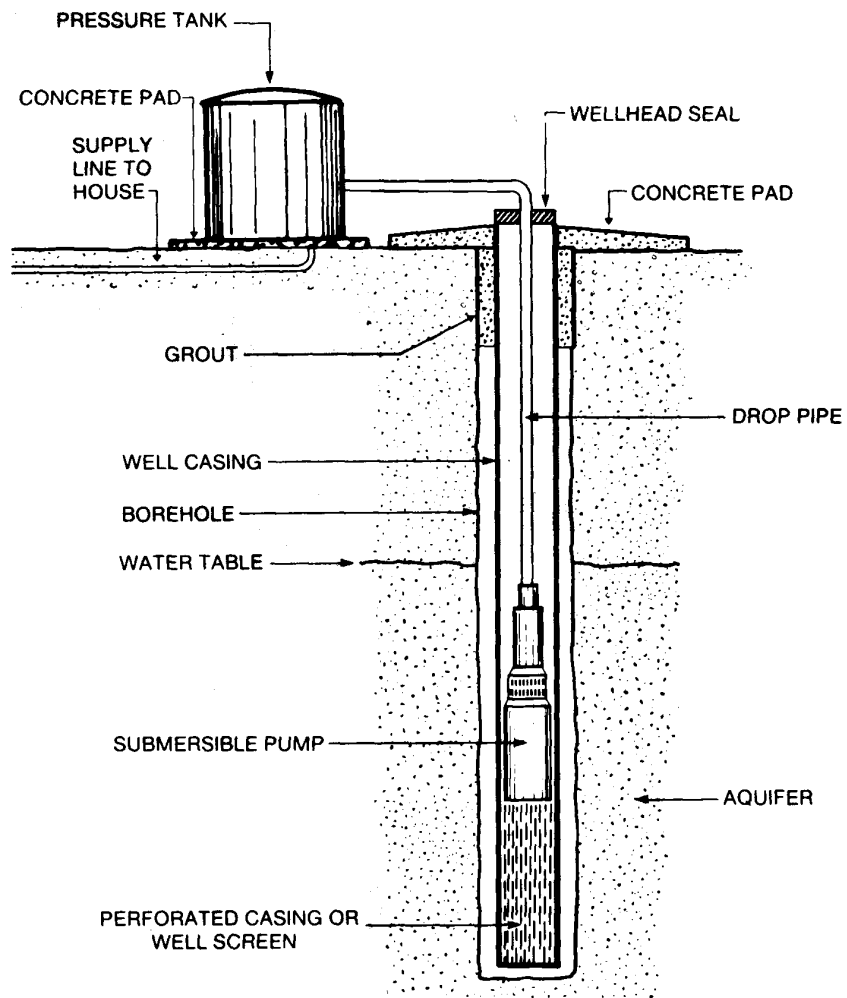
### **Taste and Odor**

Treatment techniques for taste and odor include carbon filtration and/or oxidation.

Contact the BCEHD or the NMED if you have other treatment questions. Refer to page 17.



# Typical Water Well Construction



Source Arizona Department of Water Resources





## Wellhead Protection

Protecting your water supply is always more economical than treating it. Wellhead Protection is a way to prevent pollution from reaching your well. The first step to wellhead protection is to delineate all land areas contributing water to the aquifer that supplies your well. Your wellhead protection area is the area through which contaminants are likely to reach your well. The New Mexico Wellhead Protection Program recommends that the wellhead protection area of a *public* well be at least a 1000 foot radius around the wellhead. To determine the size of your wellhead protection area you may call the BCEHD to inquire about a vulnerability assessment.

### **Wellhead Protection : What can you do?**

- Install a sanitary seal on your wellhead and place a cement pad that extends 3 feet around all sides of the well. This will protect it from potential contamination sources.
- Remove all potential and actual sources of contamination from your wellhead protection area (i.e., chemicals, abandoned vehicles, livestock).
- Learn about your water supply. If all or part of it is from ground water, find out its source in the areas or recharge, and the direction of ground water movement.





## **Wellhead Protection**

### **Wellhead Protection: What can you do?**

- Find out what activities are going on uphill from your well. Find out where local industry stores raw materials and chemicals, and where it disposes of its waste.
- Measure the distance between your well and the closest septic system/leach field. If it is less than the legal minimum of 100 feet, have your water tested for nitrates and bacterial contamination. Plan to relocate your well.
- Drill your new well at least 100 feet from the nearest septic system/leach field or other potential sources of contamination. Design it so that the shallowest water-bearing zone is not feeding into the well.
- Ensure that the outside of the well casing is properly sealed with bentonite or cement to protect the ground water in your well.
- To avoid potential spillage and ground water contamination, recycle your used motor oil. Most service stations and auto dealers will accept it. Contact the BCEHD for locations of places accepting oil and other household hazardous waste.



## Wellhead Protection

### Wellhead Protection: What can you do?

- Learn what toxic chemicals you use on your property, both indoors and in the garden. Read labels on containers, and use proper handling and disposal procedures.
- Purchase or mix only the amount of chemicals you need. Do not dispose of excess chemicals by dumping them down the drain or toilet as they can upset your wastewater system and may contaminate your water supply.
- Do not store chemicals, pesticides, or fertilizers within 100 feet of your well. Dispose of these only under proper procedures and never in your wellhead protection area. Contact the BCEHD for information on disposing of chemicals.
- Do not let trash and other solid waste accumulate within your wellhead protection area.
- Do not locate livestock holding areas, pens, stables, and manure piles within your wellhead protection area.
- Make sure that your well is properly constructed and maintained to keep contaminants from reaching your well water.





## **Contacts**

### **AGENCIES**

Bernalillo County Environmental Health Department  
111 Union Square SE  
Albuquerque, NM 87102  
(505) 314-0310

City of Albuquerque Environmental Health Department  
One Civic Plaza NW  
P.O. Box 1293  
Albuquerque, NM 87103  
(505) 768-2600

New Mexico Environment Department, District I Office  
4131 Montgomery Blvd., NE  
Albuquerque, NM 87109  
(505) 841-9450

New Mexico Environment Department  
Drinking Water Bureau  
525 Camino de los Marquez, Suite #4  
Santa Fe, NM 87501  
(505) 827-7536 or toll free 1-877-654-8720

Office of State Engineer, District I  
121 Tijeras Ave. NE, Suite 2000  
Albuquerque, NM 87102  
(505) 841-9480  
or Water Rights Division at 1-800-928-3766



## **Contacts**

### **AGENCIES**

New Mexico Department of Agriculture  
District Office  
2604 Aztec Rd., NE  
Albuquerque, NM 87107  
(505) 841-9425

New Mexico State University  
Cooperative Extension Service  
Albuquerque Office  
1510 Menaul Blvd., NW  
Albuquerque, NM 87107  
(505) 243-1386

U.S. Geological Survey, Water Resources Division  
5338 Montgomery Blvd., NE  
Albuquerque, NM 87109  
(505) 830-7900

U.S. Environmental Protection Agency, Region 6  
Fountain Place  
1445 Ross Ave., Suite 1200  
Dallas, TX 75202-2733  
(214) 665-6444

U.S. Environmental Protection Agency  
Safe Drinking Water Hotline  
toll free 1-800-426-4791





## **Contacts**

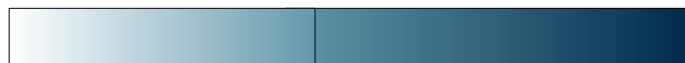
### **CERTIFIED TESTING LABORATORIES**

Albuchemist Laboratory  
501 Wyoming SE  
Albuquerque, NM 87123  
(505) 268-7367

Assaigia Analytical Laboratories, Inc.  
7300 Jefferson NE  
Albuquerque, NM 87109  
(505) 345-8964

Kramer & Associates Laboratory  
4501 Bogan NE Ste. A  
Albuquerque, NM 87106  
(505) 881-0243

Scientific Laboratory Division NM Department of  
Health  
P.O. Box 4700  
Albuquerque, NM 87196  
(505) 841-2537



## **Contacts**

### **ASSOCIATIONS**

American Ground Water Trust  
P.O. Box 1796  
Concord, NH 03301

American Water Works Association  
6666 West Quincy Avenue  
Denver, CO 80235

National Ground Water Association  
601 Dempsey Road  
Westerville, OH 43081

National Water Well Association  
6375 Riverside Drive  
Dublin, OH 43017

National Well Owners' Association  
[www.wellowner.org](http://www.wellowner.org)

New Mexico Rural Water Association  
3413 Carlisle Blvd., NE  
Albuquerque, NM 87110  
toll free 1-800-891-9893





## Contacts

### WEB SITES

Bernalillo County Environmental Health Department  
[www.bernco.gov](http://www.bernco.gov)  
(click on Environmental Health)

City of Albuquerque Environmental Health Department  
[www.cabq.gov](http://www.cabq.gov)

New Mexico Environment Department  
[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)

New Mexico State Engineer Office  
[www.seo.state.nm.us](http://www.seo.state.nm.us)

National Well Owners' Association  
[www.wellowner.org](http://www.wellowner.org)

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

American Ground Water Trust  
[www.agwt.org](http://www.agwt.org)

Des Moines Water Works  
(in conjunction with The U.S. Environmental Protection Agency)  
[www.dmww.com](http://www.dmww.com)

U.S. Geological Survey  
[www.usgs.gov](http://www.usgs.gov)

U.S. Environmental Protection Agency  
[www.epa.gov](http://www.epa.gov)





## Glossary

**Aquifer:** A geological formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield sufficient quantities of water to wells and springs.

**Bacteria:** Typically, one-celled microorganisms which have no chlorophyll and multiply by simple division. Some bacteria cause disease, but others are necessary for such things as fermentation.

**Biological Contamination:** An organic material present in water that can cause a health threat to those who drink or come into contact with the water.

**Chlorination:** The use of chlorine gas or solutions of its compounds to disinfect water.

**Clarification:** The process of making water clear and free of suspended impurities.

**Compound:** A chemical combination of two or more elements in definite ratios by weight in which the set of characteristics of each element is lost.

**Disinfection:** Methods and disinfectants that destroy organisms which may be present in water.





## Glossary

**Drilled Well:** A well constructed by either cable-tool or rotary methods usually to depths exceeding 50 feet with capacities to provide for industrial or municipal use or irrigation.

**Driven Well:** A shallow, usually small diameter well constructed by driving a series of connected lengths of pipe into unconsolidated material to a water-bearing stratum, without the aid of any drilling, boring, or jetting device.

**Fecal Coliform:** Matter containing, or derived from animal or human waste containing one or more of the coliform groups of bacteria. In drinking water, coliform can cause serious health problems.

**Fluoride:** A general reference to compounds containing fluorine used to supplement water supplies for the reduction of dental cavities.

**Ground Water:** Water in the subsurface saturated zone or deep underground aquifer.

**Hardness:** A measure of soap-neutralizing ions primarily magnesium and calcium present in water. Other alkaline metal ions also contribute to the effect.



## Glossary

**Injection Well:** A type of drilled well used specifically to inject water into an aquifer, or to inject other material into an area of ground water to eliminate or reduce contamination which is present.

**Infiltration:** The movement of water into the soil or rock through its breaks or fractures.

**Jetted Well:** A shallow-water well constructed by a high-velocity stream of water directed downward into the ground.

**Landfill:** A permitted disposal site for refuse.

**Leach Field:** An area where septic tank effluent is distributed for natural leaching or percolation through soil or a filter material.

**Mill Tailings:** This refers to the waste material dumped from mining operations. The corrosive substances usually contained in these wastes can seriously contaminate both surface and ground water.

**Monitoring Well:** A well used to obtain hydrologic and water quality data, usually installed at or near a known or potential source of ground water contamination.





## Glossary

**Nitrates:** Nitrogen compounds in water that are usually created by decaying organic matter, fertilizers, or human and animal waste. Nitrates can easily reach the water table because they are fast moving. Elevated concentrations of nitrates in drinking water can cause serious health problems.

**Organic Chemical:** A chemical characterized by its carbon-hydrogen structure (i.e. from living organisms).

**Pathogen:** Any organism capable of causing disease.

**Permeability:** The capacity of a porous substance to conduct or transmit fluids.

**Pesticide:** Any chemical used for killing insects, weeds, or rodents.

**Pollution:** As it applies to water, any foreign substance that is present in water it can be naturally occurring or human-induced.

**Potable:** Water that is suitable for human consumption.

**Recharge:** The downward movement of precipitation or water runoff to ground water. Artificial recharge can also be accomplished by injection.



## Glossary

**Septic Tank:** A holding tank, usually found in rural areas, that partially treats household sewage.

**Sewage:** Domestic and industrial waste in a liquid or semi-liquid state.

**Softening:** The process of removing the “hardness-producing” ions in exchange for less detrimental ions.

**Solid Waste:** Any kind of waste material originally disposed of in a solid state.

**Solid Waste Disposal Site:** Most common are landfills or “dumps” where mixed waste in a solid state is disposed of.

**Turbidity:** A measure of the degree of opaqueness (or cloudiness) of water that is caused by the presence of suspended matter.

**Waterborne Disease:** A disease caused by a bacterium or organism able to live in or be carried by water.

**Water Table:** The depth below ground level where ground water can be found. All water wells must be drilled below the water table.

**Well Head:** The well casing, cement pad, well seal, and all near-surface plumbing.





## Sources

American Ground Water Trust, (1999) "Well Owner Information Kit." Available: American Ground Water Trust, P.O. Box 1796, Concord, NH 03301.

American Water Works Association, (1998) "AWWA Standards for Water Wells." Available: American Water Works Association, 6666 West Quincy Ave., Denver, CO 80235.

Lecos, Chris, (1983) "Water: The Number One Nutrient." Available: Department of Health and Human Services, Public Health Office, U.S. Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20857.

Lehr, Jay H., Gass, Tyler E., Pettyjohn, Wayne A., DeMarre, Jack, (1988) "Domestic Water Treatment." Available: National Water Well Association, 6375 Riverside Dr., Dublin, OH 43017.

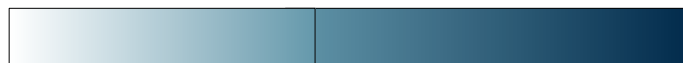
New Mexico Environment Department, (1989) "Ground Water" (English and Spanish). Available: NMED, Surface Water Quality Bureau, PO Box 26110, Santa Fe, NM 87502-6110.

New Mexico Environment Department, (1996) "Fact Sheet on Home Water Treatment." Available: NMED Community Services Bureau, 525 Camino de los Marquez, Suite 4, Santa Fe, NM 87501.

New Mexico Environment Department, (1996) "State of New Mexico Wellhead Protection Program." Available: NMED Drinking Water Bureau, 525 Camino de los Marquez, Suite 4, Santa Fe, NM 87501.

New Mexico Environment Department, (1997) "Guidelines for the Installation of Domestic Water Supply Wells." Available: NMED Drinking Water Bureau, 525 Camino de los Marquez, Suite 4, Santa Fe, NM 87501.

New Mexico State Engineer Office, (1991) "The Rural Homeowners Water Guide." Available: P.O. Box 25102, Santa Fe, NM 87504.



## Sources

New Mexico State University, College of Agriculture and Home Economics, Cooperative Extension Service, Plant Sciences Department, (1992) "New Mexico Farm-A-Syst Farmstead Assessment Program." Available: NMSU Agricultural Information, Bulletin Office, Box 30003, Dept. 3AI, Las Cruces, NM 88003.

NSF International, "Determining the Quality of Your Drinking Water." Available: NSF International, 3475 Plymouth Road, Ann Arbor, MI 48105.

Smith, Stuart A., CGWP, (1994) "Well and Borehole Sealing." Available: S.A. Smith Consulting Services, Ada, OH.

Wisconsin Department of Natural Resources, (1995) "You and Your Well." Available: Wisconsin DNR, P.O. Box 12436, Milwaukee, WI 53212.

Wisconsin Department of Natural Resources, (1995) "Well Abandonment." Available: Wisconsin DNR, P.O. Box 12436, Milwaukee, WI 53212.

Wisconsin Department of Natural Resources, (1995) "Bacterial Contamination of Drinking Water." Available: Wisconsin DNR, P. O. Box 12436, Milwaukee, WI 53212.

Witten, Jon and Horsley, Scott, (1995) "A Guide to Wellhead Protection." Available: American Planning Association, 122 S. Michigan, Chicago, IL 60603-6107.

U.S. Environmental Protection Agency, (1990) "Citizen Monitoring: Recommendations to Household Well Users." Available: U.S. EPA, Office of Water, Pub. 570/9-90-006, Safe Drinking Water Hotline: (800) 426-4791.

U.S. Environmental Protection Agency, (1991), "Home Water Testing." Available: U.S. EPA, Office of Water, Pub. 570/9-91-500, Safe Drinking Water Hotline: (800) 426-4791.





## Contributors

Thaddeus Lucero, Division Director  
Bernalillo County Community Services Division

Richard Brusuelas, Director  
Bernalillo County Environmental Health Department

Kristine Suozzi, Assistant Director  
Bernalillo County Environmental Health Department

Nolan Bennett, Environmental Health Scientist  
Bernalillo County Environmental Health Department

Jim Casaus, Environmental Health Scientist  
Bernalillo County Environmental Health Department

Tom Duker, Health Educator  
Bernalillo County Environmental Health Department

Bart Faris, Hydrogeologist  
Assessment and Abatement Section  
Ground Water Quality Bureau  
New Mexico Environment Department

Elizabeth Hamm, Manager  
Bernalillo County Public Information Office

Jeffrey L. Peterson, Geohydrologist/Environmental Health  
Scientist  
Bernalillo County Environmental Health Department

Ann H. Simon, Environmental Health Planner  
Bernalillo County Environmental Health Department

Rebecca C. Trujillo, Assistant Health Educator  
Bernalillo County Environmental Health Department

Jennifer Wellman, Hydrologist  
Drinking Water Bureau  
New Mexico Environment Department



## Appendix: Water Contaminants, Their Health Effects, and Treatment.

Contaminant Problem	Definition	Health Effects	Treatment Methods to Use
Acidic water	Acidic water has a pH level of less than 7.	Corrosive or acidic water can leach metals from pipes into drinking water. Lead leached into drinking water can cause developmental delays in children. In adults, lead can cause kidney problems and high blood pressure. Copper can cause gastrointestinal distress, or liver and kidney damage.	<ul style="list-style-type: none"> <li>▪ Neutralize the water by correcting the pH level.</li> </ul>
Chloride	An element that can originate naturally in rock, or may be caused by municipal sewage, industrial wastes, or road salt.	No known health effects.	<ul style="list-style-type: none"> <li>▪ De-ionization</li> <li>▪ Reverse osmosis</li> </ul>
Coliform Bacteria	Live organisms found in water that have been contaminated by human or animal waste.	Consuming water with pathogenic organisms may cause typhoid, dysentery, cholera, or gastrointestinal disorders.	<ul style="list-style-type: none"> <li>▪ Chlorine disinfection</li> </ul>
Fluoride	An element that occurs naturally in water from erosion of natural deposits. It is also found in some fertilizers and as by-product of aluminum factories.	There is a debate over the optimal level of fluoride in water. The standard is currently set at less than 4ppm. Fluoride can promote strong teeth. However, fluoride may cause bone disease and contribute to mottled teeth in children.	<ul style="list-style-type: none"> <li>▪ Ion-exchange</li> <li>▪ Reverse osmosis</li> </ul>

## Appendix: Water Contaminants, Their Health Effects, and Treatment.

Contaminant Problem	Definition	Health Effects	Treatment Methods to Use
Iron	An element that can leach into ground water from rocks and soils. Iron in water may be caused by the corrosion of metal pipes, pumps and fixtures.	No known health effects.	<ul style="list-style-type: none"> <li>▪ Water softeners</li> <li>▪ Catalytic oxidizing filters</li> <li>▪ Oxidation-filtration systems</li> <li>▪ Chlorination, or ozonation if iron bacteria are present</li> </ul>
Manganese	An element found in rock, soil, and organic materials.	No known health effects.	<ul style="list-style-type: none"> <li>▪ Water softener</li> <li>▪ If level exceeds 2.0 mg/L oxidizing filters or oxidation-filtration may be required.</li> </ul>
Nitrates	Are naturally occurring forms of nitrogen. Formed when fertilizers, decaying plants, manure, and/or other organic residue is broken down. They are also a by-product of septic system waste.	When consumed in high quantities nitrates can be absorbed by the blood, converting hemoglobin to methemoglobin. Methemoglobin does not carry oxygen effectively. Babies are especially susceptible to this condition causing "blue-baby syndrome."	<ul style="list-style-type: none"> <li>▪ Ion exchange</li> <li>▪ Reverse osmosis</li> </ul>

## Appendix: Water Contaminants, Their Health Effects, and Treatment.

Contaminant Problem	Definition	Health Effects	Treatment Methods to use
Radon	A colorless, odorless, and tasteless radioactive gas. Formed from the decay of naturally occurring minerals containing radioactive elements.	Radon becomes radon gas when vaporized. Radon gas has been linked to increased rates of lung cancer. Scientists remain unclear of the effects of radon in drinking water.	<ul style="list-style-type: none"> <li>▪ Aeration</li> </ul>
Taste and Odor	Most sources of odor and taste-bearing substances in water are generally harmless organic materials.	No known health effects.	<ul style="list-style-type: none"> <li>▪ Carbon filtration and/or oxidation</li> <li>▪ Potassium permanganate</li> <li>▪ Ozonation</li> <li>▪ Aeration</li> </ul>
Turbidity and Color	Visual haziness in water. Discolored water may be caused by organic compounds or metallic ions.	Turbidity has no health effect, per se, but it can interfere with disinfectants and provide a medium for bacteria to grow.	<ul style="list-style-type: none"> <li>▪ Settling</li> <li>▪ Filtration</li> </ul>

## **Notes**

## **Notes**



**Bernalillo County Environmental  
Health Department**  
111 Union Square SE  
Albuquerque, New Mexico 87102  
(505) 314-0310  
[www.bernco.gov](http://www.bernco.gov)