

**WELLS &  
GRANT TO COUNTIES**



**wellcare® information  
for Home Inspectors:  
Evaluating Water Wells**

**Water Systems Council  
2009**



## About Water Systems Council



Water Systems Council (WSC) is the only national, nonprofit organization solely focused on household wells and small water well systems. WSC is committed to ensuring that Americans who get their water from household, private wells have safe, reliable drinking water and to protecting our Nation's groundwater resources.



WSC offers a wide variety of programs and services including public education, training and technical assistance, policy research, Children's Water Festivals, the **wellcare®** hotline, the **wellcare® Well Owners Network**, publications and technical manuals.

WSC maintains voluntary industry standards to promote excellence in the manufacturing of components for water well systems. WSC also provides its manufacturer and distributor members with statistical reports of interest to the water well industry.

WSC is a leader in groundwater protection efforts nationwide and works to promote responsible stewardship of water resources.

For more information on WSC, visit [www.watersystemscouncil.org](http://www.watersystemscouncil.org).

For answers to questions on wells or groundwater, contact the **wellcare®** Hotline at 888-395-1033 or [www.wellcarehotline.org](http://www.wellcarehotline.org).



*The **wellcare® Well Owners Network** is a new resource for well owners. Members have access to information that is critical to maintaining a safe supply of drinking water for their families. Encourage your clients to learn more about how to ensure their well will provide safe drinking water for years to come by joining the **wellcare® Well Owners Network** today!*

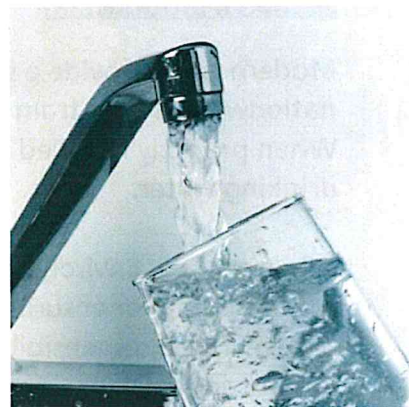
*Call 1-888-395-1033 or visit [www.watersystemscouncil.org](http://www.watersystemscouncil.org).  
**MEMBERSHIP IS FREE!***

*Disclaimer: This publication was developed in part under Assistance Agreement No.EM-83331201-0 awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed in this document are solely those of WSC. EPA does not endorse any products or commercial services mentioned in this publication.*



## TABLE OF CONTENTS

- I. Introduction.....page 4
- II. The Inspection.....page 5
  - o *Reviewing the Well's History*.....page 5
  - o *Examining the Well's Location*.....page 6
  - o *Inspecting Well Components*.....page 6
    - *Sample Water Well System Schematic*.....page 7
  - o *Testing the Water Quality*.....page 8
  - o *Determining the Well Yield/Flow* .....page 10



- III. Well Inspection Checklist\*..... page 11
- IV. Tips for Your Clients/Customers\*.....page 14
- V. Appendix A: State Oversight Agencies.....page 16
- VI. Appendix B: Glossary of Terms.....page 19

*\* Note: Additional copies of the "Well Inspection Checklist" and "Tips for Your Clients/Customers" can be downloaded at [www.watersystemscouncil.org](http://www.watersystemscouncil.org). Click on the "welcare® Information Sheets" thumbnail on the right side of the screen and scroll down to the information "For Home Inspectors."*

WELL WATER - NATURALLY BETTER®

MORE THAN **75** YEARS

**WATER  
SYSTEMS  
COUNCIL**

SINCE 1932

## Section I: Introduction

Modern wells provide a safe, efficient water supply to more than 21 million homes nationwide. Water from modern wells is naturally filtered and is cool, natural and pure. When properly installed and maintained, wells can provide many years of safe, affordable drinking water.

While the U.S. Environmental Protection Agency (EPA) regulates public water systems, the responsibility for ensuring the safety of water from private wells belongs to the well owner. These responsibilities should include knowing the well's history, testing the **water quality** annually (or more often as needed), and having the well system and its components inspected regularly by a professional well contractor.

Installation of private wells is regulated by various state agencies. Many local governments also have additional requirements. Before beginning an inspection, you will want to research state and local regulations regarding wells. See Appendix A of this guide for a list of state agencies that oversee and/or regulate private wells (hereafter referred to as "oversight agency"). The state or local health department may also play a role. Visit the WSC website at [www.watersystemscouncil.org/wellcare-hotlinks.php](http://www.watersystemscouncil.org/wellcare-hotlinks.php) for a list of state health departments.

### State/Local Oversight Agency Responsibilities

State/local agencies that oversee private wells are usually responsible for:

- Issuing permits approving the location of a new well;
- Inspecting the well after construction to verify proper grouting (the seal) and sufficient water capacity (the yield);
- Maintaining records of well logs provided by well drillers;
- Taking or verifying drinking water test results and/or issuing certificates attesting to water quality; and/or
- Providing annual **water testing** and well maintenance recommendations to local residents.



### Home Inspector Responsibilities

When purchasing a new home, families want to be assured that their water supply is safe and good-tasting. Including a well water evaluation in your inspection report will improve the value of your services and put your client's mind at ease. Although **water well** inspection is not typically included as part of a regular home inspection, home inspectors may be asked to perform a well inspection and water testing. The state where the well is located may have rules regarding who can inspect and/or perform water testing on private wells. See Appendix A of this guide for a list of state agencies that oversee private wells.



## Section II: The Inspection

A well inspection should ensure that the well and its components are in good working order at the time of inspection. Water Systems Council (WSC) recommends that the water well be inspected as part of any real estate transaction; in fact, most real estate contracts require well testing.

The well inspection may include:

- 1) Reviewing the Well's History;
- 2) Examining the Well's Location;
- 3) Inspecting Well Components;
- 4) Testing the Water Quality; and
- 5) Determining the Well Yield/Flow.

*This section discusses the ideal conditions of a water well. Keep in mind that state/local regulations may also exist. If state/local regulations differ from the guidelines in this booklet, the state/local regulations should be followed.*

*All of the information in this section is summarized in the form of a checklist in Section III.*

### Reviewing the Well's History

Try to get as much information as possible on the construction, maintenance and condition of the well to pass along to the purchasers. Ask the seller or contact the company that drilled the well for the **well log** or well history (also known as a water well record or drilling report). If the well owner (or seller) does not have a copy of the well log, contact the well contractor who installed the well or the oversight agency. Some states can provide copies of missing well logs upon request. Several states offer this information online.

The well log will include a reference number for the well, the well owner at the time of construction, location of the well and various construction details. These may include the drilling method used, the depth of the well, the strata penetrated, the depth at which water was found and the static water level at the time of completion. The well log may also include information on well components, such as the amount and type of casing, the size and type of screen, and the type of **pump**.

*Find out if there are any abandoned or out-of-service wells on the property. Abandoned wells must be properly closed and sealed so that they do not pose a threat to **groundwater** quality and a potential safety hazard. See the **wellcare®** information sheet on "Closing an Abandoned Well" for more information on abandoned wells.*

In addition to the well log, home owners should keep track of any maintenance on the well and annual well water test results. Keeping good, accurate records is essential to ensure good water quality and top performance in a water well. Ask the well owner for a copy of well maintenance records and well water test results, if available.



### Examining the Well's Location

When inspecting a well, the inspector should evaluate – to the best of his ability – the well's location. The well should be uphill from possible contamination sources (e.g., septic systems, farms), to ensure that **surface water** doesn't reach the wellhead.

Check state/local regulations for well separation distances and any other **water well codes**. Although it varies with the **hydrogeology** of the site, the U.S. Environmental Protection Agency (EPA) experts suggest 50 feet for **septic tanks**, livestock yards, and septic leach fields; 100 feet for petroleum tanks, pesticide and fertilizer storage; and 250 feet for manure stacks. In addition, the well should be 10 feet from any property line.

#### **A Note about Shared Wells:**

*Shared wells must serve connecting or adjacent properties. Properties sharing a private well should not be across the street or multiple lots away from the well location. Finally, for a FHA-insured property, evidence of water rights and recorded maintenance agreement must be provided for acceptance of the well as the primary source of water.*

Finally, the soil around the well should be burmed as to prevent puddling around the well head and to divert any runoff water from going to the wellhead. In addition, there should be no voids in the soil around the top of the wellhead which could allow water to travel down the borehole to the aquifer.

Individual water systems/wells should be located on the subject property site. See the box on this page for special information pertaining to shared wells.

### Inspecting Well Components

The well log should provide information about the age of the well, the drilling method used, the depth of the well and information on well components. Most private wells are drilled by one of two methods: **cable-tool or percussion method** and **rotary well drilling**. The U.S. Department of Housing and Urban Development (HUD) requires that new wells be drilled, no less than 20 feet deep and cased. Casing should be steel or other durable material that is leak-proof and acceptable to the local health authority and/or the trade or profession licensed to drill and repair wells in the local jurisdiction. *Detailed inspection of water well components should only be performed by a licensed well professional.*



*Sample Water Well System Schematic*

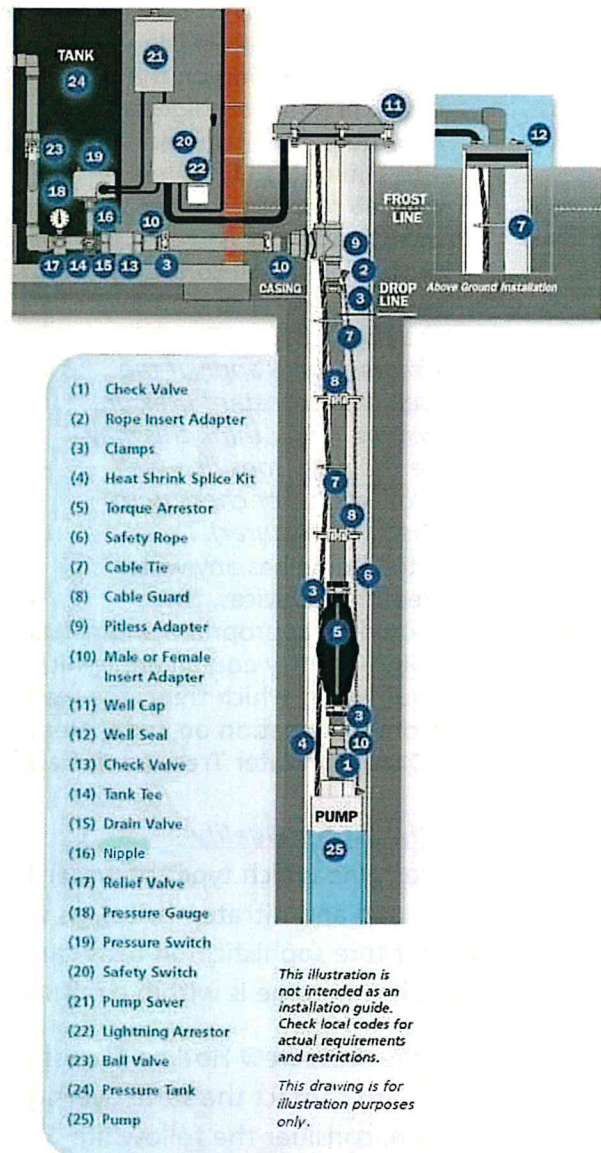
A modern water well system includes parts specifically manufactured to make sure the well operates properly and provides many years of service. Most well components must meet strict manufacturing standards, such as the American National Standards Institute/Water Systems Council Standard for Pressurized Water Storage Tanks (ANSI/WSC PST 2000-2005). See [www.watersystemscouncil.org/standards.php](http://www.watersystemscouncil.org/standards.php).

*The illustration below is intended to represent some of the components that can be included in a water well system.*

An inspection of well components should include the following:

- **Casing height** – The lining of the well (the **well casing**) is 12 or more inches above the land surface. In flood prone areas, the casing is one to two feet above the highest recorded flood level. This ensures that no substances can wash into the well.
- **Condition of casing and well cap** – No holes or cracks are visible in the **well casing**. The **well cap** is vermin-proof, watertight, and securely attached to the well casing.
- Common casing materials are carbon steel, galvanized steel, stainless steel and plastic, usually PVC. The type is dictated by the site’s geologic formation and local codes.
- **Casing depth** – The casing depth, as recorded in the well log, is sufficient to meet state and local codes. If no codes exist, the casing should extend 50 or more feet below the land surface. If drilled into loose sand and gravel, the well casing should extend the full depth of the well. A **well screen** is fitted to the bottom to keep out sand. If the well is drilled into hard rock, the casing extends into the top of the rock and is sealed to keep out **surface water**, and no screen is needed.

**Sample Water Well System**





- **Well components** – The pump, pressure tank and water treatment system, if any, have been regularly maintained, according to well records.
- Only high-quality pitless equipment, listed as approved under industry standard PAS-97(04), should be used. Refer to [www.watersystemscouncil.org/standards.php](http://www.watersystemscouncil.org/standards.php) for the most current standard and product list. This information should be obtained from the well log.
- Check for corrosion at the plumbing fittings and the pressure/storage tank.
- Check the pressure gauge. Pressure tanks have a “cut-in” and a “cut-out” pressure. The low number is the “cut-in” pressure and the high number is the “cut-out” pressure. Turn the water on at a laundry tub or sink and note the pressure when the pump comes on and when it goes off. These pressures will be the low and high limits, respectively. The difference between the “cut-in” and “cut-out” pressure is called the “differential.”
- Measure the time it takes for the pump to go from the low limit to the high limit with no water running in the house. Depending on the size of the pressure/storage tank and the pump, it should take 1 to 2 minutes. If it is less than 45 seconds, further investigation by a professional well contractor should be done to diagnose the cause. *(Note: Special circumstances apply if the well has a constant pressure system. If you think this may be the case, consult a well professional or check with the manufacturer).*
- If the home has any water treatment devices, these should be appropriate and regularly maintained. Water treatment devices include point-of-entry equipment, which treats the water as it enters the house, or point-of-use equipment, which treats the water at an individual tap, such as the kitchen sink. For more information on water treatment devices, see the wellcare® information sheets on “Drinking Water Treatments” and “Home Drinking Water Treatment Devices.”

**All of the information sheets referenced in this guide can be found on WSC's website at <http://www.watersystemscouncil.org/infoSheets.php>.**

wellcare® Information for you about  
**Selecting a Well Contractor**

**Using a Water Well Professional**  
Hiring the right water well professional is essential for a successful project. An improperly installed or poorly maintained well can result in a poor quality of water supply. Take the time to learn more to help you avoid potential problems.

**Well Professionals**  
To find a well professional in your area, ask your neighbors. Call your state water and agriculture or local health department. Check in the yellow pages of the telephone book under "Water and Drilling" and "Professional Services." Other people who have a well may be able to refer you to a well professional.

**Checklist**  
Ask for two to three references from former customers. Request to see the company's well log and other records. Verify that the well has been installed according to local codes and regulations.

**Professional Qualifications**  
The well professional should be certified, licensed or registered with your state health or environmental agency. Verify requirements for your state. Ask for proof of insurance (liability and well installation) and other qualifications.

**Contract**  
A written contract is essential. The contract should include details of the job and payment schedule. If any

**Permits and Licenses**  
A well professional should be licensed. Some states require licensing and bonding. Ask the well professional about the licensing requirements for your state.

**Local Building**  
Check with your local building department about the zoning for your well and whether a permit is required.

**Cost and Time**  
Get a written estimate and ask for a breakdown of the costs. Ask for a timeline for the project.

**Warranty and Final**  
Check the warranty and make sure it is in writing. Ask for a copy of the contract and make sure you understand the terms before you sign.

wellcare® Well to Drinking Water Treatment      September 2005

wellcare® Information for you about  
**Drinking Water Treatments**

Point-of-entry water treatment systems are used to treat water before it enters your home. They can remove a wide range of contaminants, including chlorine, lead, and other metals. They can also improve the taste and odor of your water.

**Point-of-Use Water Treatment**  
Point-of-use water treatment systems are used to treat water at a single tap. They can remove a wide range of contaminants, including chlorine, lead, and other metals. They can also improve the taste and odor of your water.

**Choosing a Water Treatment System**  
The most important factor in choosing a water treatment system is the type of contaminants you want to remove. Different systems are designed to remove different types of contaminants.

**Table 1. Water Treatment and Removal Efficiency**

Contaminant	Reverse Osmosis	Activated Carbon	Ion Exchange	Distillation	UV Radiation
Chlorine	100%	100%	100%	100%	100%
Lead	100%	100%	100%	100%	100%
Iron	100%	100%	100%	100%	100%
Manganese	100%	100%	100%	100%	100%
Nitrate	100%	100%	100%	100%	100%
Nitrite	100%	100%	100%	100%	100%
Radon	100%	100%	100%	100%	100%
Sulfate	100%	100%	100%	100%	100%
Total Dissolved Solids	100%	100%	100%	100%	100%
Unpleasant Taste and Odor	100%	100%	100%	100%	100%
Unpleasant Looking	100%	100%	100%	100%	100%
Unpleasant Smell	100%	100%	100%	100%	100%
Unpleasant Taste	100%	100%	100%	100%	100%
Unpleasant Smell	100%	100%	100%	100%	100%
Unpleasant Taste	100%	100%	100%	100%	100%
Unpleasant Smell	100%	100%	100%	100%	100%

wellcare® Well to Drinking Water Treatment      September 2005

Testing the Water Quality

First, determine which types of water tests are needed. These typically include tests for bacteria, lead and nitrate/nitrites, as well as contaminants of local concern, such as arsenic or radon. More sophisticated tests can include Volatile Organic Compounds (VOCs). Test for these if the home is within a mile of a gas station.

Contact the wellcare® Hotline for assistance in identifying contaminants of local concern. You may also contact the state oversight agency, a local well professional or analytical lab. In addition, consider the following:

- Is there livestock nearby? If so, test for bacteria, nitrate/nitrite, pH, methane gas, and Total Dissolved Solids (TDS).



- Are pesticides being used on nearby agricultural crops or nurseries? If yes, test for pesticides and nitrates/nitrites.
- Are lawn fertilizers used near the well? If so, test for pesticides and nitrate/nitrite.
- Is the well "downstream" from any septic system on the property, or neighboring properties? If yes, test for bacteria and nitrate/nitrite.
- Is the well located near a road that is frequently salted or sprayed with de-icers during winter months? If yes, test for chloride, TDS, and sodium.
- Are household wastes or used motor oil disposed of in the backyard, even in small amounts? If so, test for VOCs.
- Is the well located within a mile of a gas station? If yes, test for VOCs.

State and local health departments maintain a list of state-certified laboratories, qualified to test for specific contaminants for the homeowner. The laboratory will provide specific sampling instructions and clean bottles in which to collect the water sample. These instructions should be followed carefully to avoid inaccurate results.

For example, water samples may require refrigeration or need to get to the lab within a certain period of time.

In addition to any instructions provided by the laboratory, follow these steps to collect the water sample:

1. Identify the collection point (for example, the kitchen sink).
2. Remove the washer and aeration device from the faucet. This is usually required, depending on the type of water test(s) you're performing.
3. Disinfect the faucet with either isopropyl alcohol or bleach, and let it stand for 4-5 minutes. Some states require that you use a flame to superheat the metal to disinfect it.
4. Turn the water on and allow it to run until there is a noticeable change in temperature or until you've ensured the well pump has come on and started to fill the tank.
5. Fill your container according to the lab's instructions.

Compare test results with U.S. Environmental Protection Agency (EPA) **maximum contaminant levels** for the contaminant, which are guidelines used for public water supplies. EPA does not regulate private wells. Go to [www.epa.gov/safewater/hfacts.html](http://www.epa.gov/safewater/hfacts.html) for individual standards. There also may be state or local standards for contaminants, such as sodium, that EPA does not regulate. For more information on testing and test results,

**What tests are required in order to sell a home with a well?**  
*The requirements vary by state. Contact your state oversight agency or local well professional for current requirements in your state. A list of state oversight agencies is included in Appendix A of this guide.*

*Most real estate contracts require well testing. You may also refer to the U.S. Department of Housing and Urban Development (HUD) testing requirements, which are the minimum standard acceptable for Federal Housing Administration (FHA) insured loans. See the wellcare® brochure, "A Real Estate Agent's Guide to Buying or Selling Homes with Wells," available on the WSC website at [www.watersystemscouncil.org/infoSheets.php](http://www.watersystemscouncil.org/infoSheets.php).*



see the **wellcare®** information sheets on “Drinking Water Testing” and “Understanding Your Drinking Water Test Results.”

If the well tests positive for bacteria or other contaminants, the home inspector should recommend well disinfection by a local well professional (for bacteria). Consult a water treatment expert, and refer to the **wellcare®** information sheets.

### Determining the Well Yield/Flow

The minimum safe yield of a well represents its dependable and continuous output during a long drought. The **well yield** at the time the well was drilled may be found in the well log. Many communities also require a yield test when a property is bought or sold.

### What is a Well Yield Test?

Determining the yield of a well involves a complex test to see the balance between the maximum amount of water that can be pumped out of the well and the amount of water that recharges back into the well from the surrounding ground water source. These tests, if required, should be performed by a local well professional. Many communities set minimum levels. The state/local oversight agency or a well professional can provide this information.

### How to Conduct a Flow Test

A flow test involves pumping water from an outside hose bib for 30 minutes to determine if the well can sustain an adequate flow for normal peak demand. The flow is noted every 10 minutes. If the flow is less than 8 gallons per minute (GPM), this can be due to pump sizing, backflow prevention on the fixture and possibly small plumbing lines. In these cases, a well professional can investigate further to determine if anything can be done to improve the flow.

***The flow test does not represent actual recovery in the well and may only reflect adequate storage in the well at the time of testing. This test represents conditions and data collected on the day of testing.*** If more extensive testing is needed, such as a true yield test where static, drawdown and recovery rates are determined, the home inspector should contact a local well professional.

**Note: A yield test or flow test is not necessarily indicative of how the well will perform; it is only to be used as a guide as to how much water the well may yield. This is because it is a snapshot of the well, not a long-range test. There are many variables, such as the amount of rainfall the area has recently received, the level of the **water table** at that time, the type of aquifer and the specific usage or demands on the well.**

### A Few Notes about Well Capacity and Yield:

- **The well log or drilling report contains information on the well's estimated capacity and yield in gallons per minute, at the time the well was drilled.**
- **There is a minimum well yield of one gallon per minute, which amounts to 1,440 gallons of water per day. The average family of four consumes 300 gallons per day.**
- **The ideal yield is five gallons or more per minute to accommodate all water uses typical of a suburban or rural family home.**
- **Planned use should also be taken into consideration. For example, the well yield may not be adequate for a large family, but may be sufficient for an elderly person living alone.**
- **With proper storage equipment, low producing wells can be a reliable water source.**
- **The yield test will generate lots of water that must be discharged to an appropriate location. Take care not to let the water flow towards or back into the well being pumped. Try to direct the water to a stream, pond or wetlands.**

**Section III: Well Inspection Checklist****Part 1: Well Location and Condition**

1. According to the well log, is the well a drilled well?
  - Yes
  - No; if no, how was the well constructed? \_\_\_\_\_
2. If the well is NOT a drilled well, has it been brought up to current standard or code, according to well records?
  - Yes
  - No
3. How old is the well, according to the well log? \_\_\_\_\_
4. How deep is the well, according to the well log? \_\_\_\_\_ feet
5. Are well records available? Check all that are available and attach a copy with the report.
  - Well Log
  - Water Testing Results
  - Maintenance Records
  - Other: \_\_\_\_\_
6. According to well maintenance records, how often has the well been inspected?  
\_\_\_\_\_
7. According to well maintenance records, how often were water tests performed on the well? \_\_\_\_\_
8. Where is the well located on the property?  
\_\_\_\_\_  
\_\_\_\_\_
9. Is the soil around the well buried, so as to prevent puddling around the wellhead and to divert any runoff water from going to the wellhead?
  - Yes
  - No
10. Are there any voids in the soil around the top of the wellhead which could allow runoff to travel down the borehole to the aquifer?
  - Yes
  - No
11. Is the wellhead visible and above ground?
  - Yes
  - No
12. Are any permanent structures located within 10 feet of the wellhead?
  - Yes; if so, is the well still accessible for future repairs and service? \_\_\_\_\_
  - No



13. Is it apparent from a site inspection that the well location meets the minimum distance from contamination sources as outlined by state or local regulation?

- Yes
- No; if no, please explain:

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14. According to well records, are there any abandoned wells on the property?

- Yes; if so, are there records showing that these have these been properly closed? \_\_\_\_\_
- No

Part 2: Well Components

15. Is the lining of the well (the casing) 12 or more inches above the land surface? *Note: In flood prone areas, the casing should be one to two feet above the highest recorded flood level.*

- Yes
- No; if no, indicate height of casing: \_\_\_\_\_

16. Are there any visible holes or cracks in the well casing?

- Yes; if yes, please describe:

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- No

17. According to the well log, does the casing depth meet state and local codes?

- Yes
- No; if no, please describe:

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18. Is the well cap vermin-proof, watertight and securely attached to the well casing?

- Yes
- No; if no, please describe:

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19. Is there any corrosion visible at the plumbing fittings and/or the pressure/storage tank?

- Yes; if yes, describe \_\_\_\_\_
- No

20. According to the well log, is pitless equipment used?
- Yes; if yes, what type? \_\_\_\_\_; is this listed as approved under industry standard PAS-97(04)? (The most current standard and product list is available at [www.watersystemscouncil.org/standards.php](http://www.watersystemscouncil.org/standards.php)).
  - No
21. Pressure Tank
- What is the pump cut-in pressure? \_\_\_\_\_
  - What is the pump cut-out pressure? \_\_\_\_\_
  - What is the pressure differential? \_\_\_\_\_
22. How long does it take for the pump to go from the low limit to the high limit with no water running in the house? \_\_\_\_\_
23. Does the home have any water treatment devices?
- Yes; if so, list:  
\_\_\_\_\_
  - No
24. Have water treatment systems been regularly maintained, according to well maintenance records?
- Yes
  - No; please explain:  
\_\_\_\_\_  
\_\_\_\_\_

Part 3: Water Testing

25. Is a water sample needed?
- Yes; if yes, what types?
 

<input type="checkbox"/> Bacteria	<input type="checkbox"/> Arsenic
<input type="checkbox"/> Nitrate/Nitrite	<input type="checkbox"/> Radon
<input type="checkbox"/> Lead	<input type="checkbox"/> VOCs
<input type="checkbox"/> Other (Please list): _____ _____	
  - No

Part 4: Well Yield/Flow

26. Well Flow Test Results: \_\_\_\_\_ gallons per minute (GPM)
27. Is a more extensive test needed to evaluate well yield?
- Yes
  - No

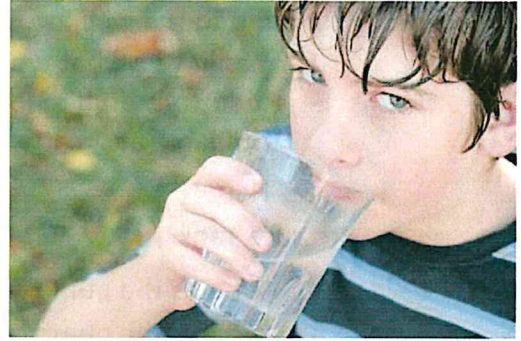
*If the well falls short of ideal conditions, the home inspector should recommend that the homeowner contact a local well professional about further well inspection, water testing and/or the need for well repair or replacement.*



### Section IV: Tips for Your Clients/Customers

Properly constructed private water supply systems require little routine maintenance. These simple steps will help protect your system and investment.

- Always use a licensed or certified water well driller and pump installer when a well is constructed, a pump is installed or the system is serviced.
- An annual well maintenance check, including a water test for bacteria, is recommended. Any source of drinking water should be checked any time there is a change in taste, odor or appearance, or anytime a water supply system is serviced.
- Keep hazardous chemicals, such as paint, fertilizer, pesticides, and motor oil, far away from your well.
- Periodically check the well cover or well cap on top of the casing to ensure it is in good repair.
- Always maintain proper separation between your well and buildings, waste systems or chemical storage facilities. Your water well professional knows the rules.
- Take care in working or mowing around your well. A damaged casing could jeopardize the sanitary protection of your well. Don't pile snow, leaves, or other materials around your well.
- Keep your well records in a safe place. These include the well log completed at the time of construction, as well as annual water well system maintenance and water testing results.
- When your well has come to the end of its serviceable life (usually more than 20 years), have your qualified water well contractor properly decommission your well after constructing your new system.

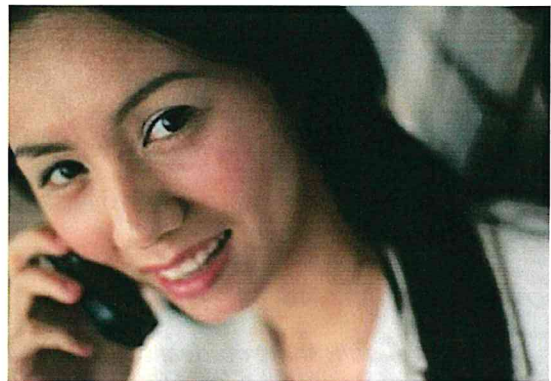


### The wellcare® Hotline: Answering Your Questions about Wells

If you have a question about wells or need help, contact the wellcare® Hotline Monday through Friday at 888-395-1033, or visit [www.wellcarehotline.org](http://www.wellcarehotline.org) at any time for information on:

wellcare® Hotline  
888-395-1033 or  
[click here](#)

- Well construction codes and other regulations related to wells or water well systems
- Well care and maintenance
- Water testing
- Water quality
- Identifying potential contaminants
- Avoiding seasonal threats
- Understanding well mechanics
- Learning well basics
- Well components
- Water conservation
- Finding a licensed well contractor...and much more!







## Join the **wellcare**. Well Owners **Network**

More than 42 million people in the U.S. rely on private wells to supply drinking water for their families. These wells tap into groundwater supplies stored beneath the earth's surface.

If you have a private water well, learn more about how you can ensure it will provide safe drinking water for years to come by joining Water Systems Council's **wellcare® Well Owners Network**.

The **wellcare® Well Owners Network** is a new resource for well owners. As a member of the network, you will have easy access to information that is critical to maintaining a safe supply of drinking water for you and your family.

Join the network today! Call 1-888-395-1033 or visit

[www.watersystemscouncil.org](http://www.watersystemscouncil.org).

**wellcare® Well Owners Network** Members enjoy...

- Access to information and tools to help you better understand your drinking water source
- A quarterly e-newsletter with information on wells, well water and practical tips for protecting the nation's groundwater resources
- Annual reminders to test your well water
- Opportunities for discount well water test kits

The **wellcare® Well Owners Network** is part of WSC's **wellcare®** Program, a national program that offers a free hotline for answers to questions about wells, well water and source water protection. The **wellcare®** program also offers workshops and publishes information sheets on well maintenance, well water testing and groundwater quality. It issues reports on national data related to the number of wells, water usage, groundwater resources, water rights, and related subjects.

# MEMBERSHIP IS FREE!

*well water naturally better...* Contact your local water well professional

Appendix A: State Oversight Agencies

Before beginning an inspection, you will want to research state and local regulations regarding wells. The following is a list of state agencies that oversee and/or regulate private wells. For more on state/local oversight agency responsibilities, see page 4 of this guide.

State	Agency	Website
Alabama	Alabama Department of Environmental Management	<a href="http://www.adem.state.al.us">www.adem.state.al.us</a>
Alaska	Alaska Department of Natural Resources/Division of Mining, Land & Water	<a href="http://dnr.alaska.gov/mlw/water/wrfact.htm">dnr.alaska.gov/mlw/water/wrfact.htm</a>
	Alaska Department of Commerce, Community & Economic Development	<a href="http://www.commerce.state.ak.us">www.commerce.state.ak.us</a>
Arizona	Arizona Department of Water Resources	<a href="http://www.azwater.gov/azdwr">www.azwater.gov/azdwr</a>
Arkansas	Arkansas Water Well Construction Commission	<a href="http://www.arkansas.gov/awwcc">www.arkansas.gov/awwcc</a>
California	California Department of Water Resources	<a href="http://www.dpla2.water.ca.gov">www.dpla2.water.ca.gov</a>
Colorado	Colorado Division of Water Resources	<a href="http://water.state.co.us">water.state.co.us</a>
Connecticut	Connecticut Department of Consumer Protection	<a href="http://www.ct.gov/dcp/site">www.ct.gov/dcp/site</a>
Delaware	Delaware Department of Natural Resources & Environmental Control	<a href="http://www.dnrec.delaware.gov">www.dnrec.delaware.gov</a>
Florida	Northwest Florida Water Management District	<a href="http://www.nfwmd.state.fl.us">www.nfwmd.state.fl.us</a>
	South Florida Water Management District	<a href="http://www.sfwmd.gov">www.sfwmd.gov</a>
	Suwannee River Water Management District	<a href="http://www.srwmd.state.fl.us">www.srwmd.state.fl.us</a>
	St. Johns River Water Management District	<a href="http://sjr.state.fl.us">sjr.state.fl.us</a>
	Southwest Florida Water Management District	<a href="http://www.swfwmd.state.fl.us">www.swfwmd.state.fl.us</a>
Georgia	Georgia Department of Natural Resources	<a href="http://www.gadnr.org">www.gadnr.org</a>
Hawaii	Hawaii Department of Natural Resources	<a href="http://www.ehawaii.gov/dakine/index.html">www.ehawaii.gov/dakine/index.html</a>
Idaho	Idaho Department of Water Resources	<a href="http://www.idwr.idaho.gov">www.idwr.idaho.gov</a>
Illinois	Illinois Department of Public Health	<a href="http://www.idph.state.il.us">www.idph.state.il.us</a>
Indiana	Indiana Department of Natural Resources, Division of Water	<a href="http://www.in.gov/dnr/water">www.in.gov/dnr/water</a>
Iowa	Iowa Department of Natural Resources	<a href="http://www.iowadnr.gov">www.iowadnr.gov</a>
Kansas	Kansas Department of Health and Environment	<a href="http://www.kdheks.gov/waterwell/index.html">www.kdheks.gov/waterwell/index.html</a>
Kentucky	Kentucky Department for Environmental Protection, Division of Water	<a href="http://www.water.ky.gov">www.water.ky.gov</a>



State	Agency	Website
Louisiana	Louisiana Department of Transportation & Development	<a href="http://www.dotd.state.la.us">www.dotd.state.la.us</a>
Maine	Maine Geological Survey	<a href="http://www.maine.gov/doc/nrimc/mgs/mgs.htm">www.maine.gov/doc/nrimc/mgs/mgs.htm</a>
Maryland	Maryland Department of the Environment	<a href="http://www.mde.state.md.us/">www.mde.state.md.us/</a>
Massachusetts	Massachusetts Department of Conservation and Recreation	<a href="http://www.mass.gov/dcr/">www.mass.gov/dcr/</a>
Michigan	Michigan Department of Environmental Quality	<a href="http://www.michigan.gov/deq">www.michigan.gov/deq</a>
Minnesota	Minnesota Department of Health	<a href="http://www.health.state.mn.us/divs/eh/">www.health.state.mn.us/divs/eh/</a>
Mississippi	Mississippi Department of Environmental Quality	<a href="http://www.deq.state.ms.us/MDEQ.nsf/page/L&amp;W_Home?OpenDocument">www.deq.state.ms.us/MDEQ.nsf/page/L&amp;W_Home?OpenDocument</a>
Missouri	Missouri Department of Natural Resources, Water Protection Program	<a href="http://www.dnr.mo.gov/env/wpp/index.html">www.dnr.mo.gov/env/wpp/index.html</a>
Montana	Montana Department of Natural Resources & Conservation, Water Resources Division	<a href="http://www.dnrc.mt.gov/wrd/default.asp">www.dnrc.mt.gov/wrd/default.asp</a>
Nebraska	Nebraska Department of Health and Human Services	<a href="http://www.hhs.state.ne.us/">www.hhs.state.ne.us/</a>
	Nebraska Department of Natural Resources	<a href="http://www.dnr.state.ne.us/">www.dnr.state.ne.us/</a>
Nevada	Nevada Department of Conservation & Natural Resources, Division of Water Resources	<a href="http://www.water.nv.gov/">www.water.nv.gov/</a>
New Hampshire	New Hampshire Department of Environmental Services, Water Division, Drinking Water and Groundwater Bureau, Water Well Board	<a href="http://des.nh.gov/organization/divisions/water/dwgb/www/index.htm">des.nh.gov/organization/divisions/water/dwgb/www/index.htm</a>
New Jersey	New Jersey Department of Environmental Protection, Division of Water Supply	<a href="http://www.nj.gov/dep/watersupply/">www.nj.gov/dep/watersupply/</a>
New Mexico	New Mexico Office of the State Engineer	<a href="http://www.ose.state.nm.us/">www.ose.state.nm.us/</a>
New York	New York State Department of Health	<a href="http://www.health.state.ny.us/">www.health.state.ny.us/</a>
	New York State Department of Environmental Conservation	<a href="http://www.dec.ny.gov/">www.dec.ny.gov/</a>
North Carolina	North Carolina Department of Environment and Natural Resources, Division of Water Quality	<a href="http://h2o.enr.state.nc.us/agw.html">h2o.enr.state.nc.us/agw.html</a>
North Dakota	North Dakota State Water Commission	<a href="http://www.swc.state.nd.us/4dlink9/4dcqi/redirect/index.html">www.swc.state.nd.us/4dlink9/4dcqi/redirect/index.html</a>
Ohio	Ohio Department of Health	<a href="http://www.odh.ohio.gov/odhPrograms/eh/water/water1.aspx">www.odh.ohio.gov/odhPrograms/eh/water/water1.aspx</a>
	Ohio Department of Natural Resources, Division of Water	<a href="http://ohiodnr.com/water/tabid/3252/Default.aspx">ohiodnr.com/water/tabid/3252/Default.aspx</a>

State	Agency	Website
Oklahoma	Oklahoma Water Resources Board	<a href="http://www.owrb.ok.gov/">www.owrb.ok.gov/</a>
Oregon	Oregon Water Resources Department	<a href="http://www.wrd.state.or.us/">www.wrd.state.or.us/</a>
Pennsylvania	Pennsylvania Geological Survey	<a href="http://www.dcnr.state.pa.us/topogeo/">www.dcnr.state.pa.us/topogeo/</a>
Rhode Island	Rhode Island Department of Environmental Management	<a href="http://www.dem.ri.gov/pubs/index.htm">www.dem.ri.gov/pubs/index.htm</a>
South Carolina	South Carolina Department of Health & Environmental Control	<a href="http://www.scdhec.gov/environment.htm">www.scdhec.gov/environment.htm</a>
South Dakota	South Dakota Department of Environment & Natural Resources	<a href="http://denr.sd.gov/">denr.sd.gov/</a>
Tennessee	Tennessee Department of Environment & Conservation, Division of Water Supply	<a href="http://www.state.tn.us/environment/dws/">www.state.tn.us/environment/dws/</a>
Texas	Texas Department of Licensing and Regulation, Water Well Drillers and Pump Installers Advisory Council and Authority	<a href="http://www.license.state.tx.us/wwd/wwdcouncil.htm">www.license.state.tx.us/wwd/wwdcouncil.htm</a>
	Texas Water Development Board	<a href="http://www.twdb.state.tx.us/home/index.asp">www.twdb.state.tx.us/home/index.asp</a>
Utah	Utah Division of Water Rights	<a href="http://www.waterrights.utah.gov/">www.waterrights.utah.gov/</a>
Vermont	Vermont Department of Environmental Conservation	<a href="http://www.anr.state.vt.us/dec/dec.htm">www.anr.state.vt.us/dec/dec.htm</a>
Virginia	Virginia Department of Health	<a href="http://www.vdh.state.va.us/index.htm">www.vdh.state.va.us/index.htm</a>
Washington	Washington Department of Ecology	<a href="http://www.ecy.wa.gov/water.html">www.ecy.wa.gov/water.html</a>
West Virginia	West Virginia Bureau for Public Health, Office of Environmental Health Services, Environmental Engineering Division	<a href="http://www.wvdhhr.org/oehs/eed/">www.wvdhhr.org/oehs/eed/</a>
	West Virginia Department of Environmental Protection, Division of Water and Waste Management	<a href="http://www.wvdep.org/">www.wvdep.org/</a>
Wisconsin	Wisconsin Center for Watershed Science and Education, Central Wisconsin Groundwater Center	<a href="http://www.uwsp.edu/cnr/gndwater/">www.uwsp.edu/cnr/gndwater/</a>
	Wisconsin Department of Natural Resources	<a href="http://dnr.wi.gov/org/water/dwg/">dnr.wi.gov/org/water/dwg/</a>
Wyoming	Wyoming State Engineer's Office	<a href="http://seo.state.wy.us/">seo.state.wy.us/</a>



## Appendix B: Glossary of Terms

**Cable-tool method (also called percussion method):** A drilling method that involves raising and dropping a heavy chisel-shaped bit to break up the soil in a borehole.

**Groundwater:** Water stored underground in rock and unconsolidated materials.

**Hydrogeology:** The part of hydrology that deals with the occurrence, movement and quality of water beneath the Earth's surface.

**Maximum Contaminant Level (MCL):** Standards that are set by the United States Environmental Protection Agency (EPA) for drinking water quality in Title 40 of the Code of Federal Regulations. A Maximum Contaminant Level (MCL) is the legal threshold limit on the amount of a hazardous substance that is allowed in drinking water under the **Safe Drinking Water Act**.

**Pressure Tank:** Vessel used to provide cycle control of the pump.

**Pump:** A mechanical device that moves liquid or gas by pressure or suction; a device that converts mechanical torque and motion into hydraulic fluid power.

**Rotary well drilling:** Method in which a rotating bit fixed to the lower end of a steel pipe chews into the rock or other earth materials.

**Safe Drinking Water Act:** Federal law established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking water use, whether from above-ground or underground sources.

**Septic tank:** A tank used to detain domestic wastes to allow the settling of solids prior to distribution to a leach field for soil absorption.

**Shared well:** Wells drilled to serve two or more nearby homes; sometimes referred to as cluster wells.

**Surface water:** Water that is on the Earth's surface.

**Tank:** A container that stores water from a well before it enters the distribution system.

**Water quality:** A term used to describe the physical, chemical and biological characteristics of water.

**Water table:** The top of the water surface in the saturated part of an aquifer.

**Water testing:** Process of collecting a water sample from a clean faucet (some states require a sampling faucet) for laboratory analysis to determine whether it is safe to drink.

**Water well:** An excavation or structure created in the ground by digging, driving, boring or drilling to access groundwater in underground aquifers.

**Water well code:** State law that regulates potable water testing to verify that it is safe to drink.

**Well cap:** Protective cover, usually made of aluminum or thermoplastic, that seals the upper end of a well to keep out the elements, contaminants and vermin.

**Well casing:** Steel or plastic lining permanently installed in drilled wells to prevent cave-ins or contamination by surface water.

**Well log:** A written form on which the driller lists well characteristics; required in many states.

**Well screen:** Installed at bottom of a well casing to prevent sand and sediment from contaminating the well.

**Well yield:** The volume of water that can be pumped during a specific period of time, usually expressed in gallons per minute.



Published by the Water Systems Council  
[www.watersystemscouncil.org](http://www.watersystemscouncil.org)



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## WATER WELL CONSTRUCTION: GENERAL STANDARDS AND REGISTRATION OF CONTRACTORS

## CHAPTER 38

## PRIVATE WATER WELL CONSTRUCTION PERMITS

**567—38.1(455B) Definitions.**

*“Abandoned well”* means a water well which is no longer in use or which is in such a state of disrepair that continued use for the purpose of accessing groundwater is unsafe or impracticable.

*“Agreement”* means a signed document between the department and the county board of supervisors with which the department delegates the authority to issue private well drilling permits to the county board of supervisors or its designee.

*“Construction”* means the physical act or process of making a water well including, but not limited to, siting, excavation, construction and installation of equipment and materials necessary to maintain and operate the well.

*“Contiguous”* means any number of parcels of land that physically touch one another, including tracts of land separated by roads, railroads or streams, except that for the purpose of reporting on other existing wells on the property, the radius of a contiguous piece of land shall be limited to one mile from the site of the new well constructed.

*“Contractor”* means a person engaged in the business of well construction or reconstruction. The term may include a corporation, partnership, sole proprietorship, association or any other business entity, as well as any employee or officer of the entity.

*“Department”* means the Iowa department of natural resources.

*“Director”* means the director of the department or a designee.

*“Groundwater”* means any water below the surface of the earth.

*“Inactive water well”* means a water well which is not currently in use and is capped or sealed to prevent the entrance of contaminants into the well, but is in such a condition that it can be activated to produce a safe supply of water.

*“Landowner”* means an individual, trust, partnership, corporation, government or governmental subdivision or agency, association or other legal entity that has legal or equitable title to a piece of land.

*“Landowner’s agent”* means a person who acts for or in place of the landowner by authority from the landowner.

*“Private water well”* means a well that does not supply a public water supply system.

*“Protected source”* means a surface water or groundwater source recognized by rule as deserving special protection in order to ensure its long-term availability, in terms of either quality or quantity, or both, to preserve the public health and welfare.

*“Public water supply system”* means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. The term includes (1) any collection, treatment, storage, and distribution facilities under control of the supplier of water and used primarily in connection with the system, and (2) any collection (including wells) or pretreatment storage facilities not under the control which are used primarily in connection with the system.

*“Water well”* means an excavation that is drilled, cored, bored, augered, washed, driven, dug, jetted, or otherwise constructed for the purpose of exploring for groundwater, monitoring groundwater, utilizing the geothermal properties of the ground, or extracting water from or injecting water into the aquifer. Water well does not include an open ditch or drain tiles or an excavation made for obtaining or prospecting for oil, natural gas, minerals, or products mined or quarried.

**567—38.2(455B) Forms.** The following application form is currently in use:

Application for Private Water Well Construction Permit. 12/98. 542-0988

**567—38.3(455B) Permit requirement.**

**38.3(1) When permit required.** A landowner or landowner’s agent shall not drill or construct a new private water well without first obtaining a well construction permit issued by the department or by a

county board of supervisors or the board's designee authorized to issue permits pursuant to this chapter. Examples of private water wells requiring well construction permits include, but are not limited to: domestic wells, livestock wells, irrigation wells, recreational-use wells, monitoring wells, heat pump wells, industrial wells, and dewatering wells, except that dewatering wells shall be exempt from the construction standards of 567—Chapter 49 (nonpublic water wells).

**38.3(2) Exemptions.** The following types of excavations do not need private water well construction permits: soil borings, percolation test holes, sand and gravel and limestone exploration holes, excavations for storing and extracting natural gas or other products, gravel pits and quarries and all monitoring wells required as part of a permit or a construction approval issued by the department. Test holes, used to determine the availability, quality or depth of groundwater are also exempt provided that all the following conditions are met.

- a. The use of the test hole is limited to the conduct of the test only.
- b. The duration of the test is not more than seven consecutive days.
- c. The test hole is properly closed immediately after the test is completed in accordance with 567—Chapter 39 “Requirements for Properly Plugging Abandoned Wells.”

**38.3(3) Caveat.** Nothing in these rules shall be construed as exempting public water supply wells from the construction permit and water withdrawal permit provisions of the environmental protection commission rules, 567—Iowa Administrative Code.

**567—38.4(455B) Form of application.** Application shall be made on forms supplied by the department. However, counties that have active delegation of authority to issue new private well construction permits pursuant to rule 38.15(455B) may develop and use their own application forms subject to the approval of the department. Each application shall list all wells, including nonplugged abandoned wells, on the applicant's property contiguous to the well site described in the application and shall describe the location of each well site. The location shall be given in the form of a legal land description (section, township and range) to the nearest quarter of a quarter of a quarter of a section, or as a latitude and longitude in degrees to four decimal accuracy. The list of wells to be registered shall include but is not limited to abandoned wells, inactive wells, agricultural drainage wells, irrigation wells, domestic wells and livestock wells.

**567—38.5(455B) Fees.**

**38.5(1) Fee payment.** This paragraph is in effect through June 30, 2003. Each application shall be accompanied by a nonrefundable fee of \$25 in the form of a check or money order payable to the Department of Natural Resources, unless a county board of supervisors or the board's designee is authorized to issue private well construction permits pursuant to rule 38.15(455B). In cases where the permitting authority is delegated to the county, the county board of supervisors may set a different fee and shall designate the terms for fee payment. More than one proposed well for the same use on one contiguous piece of property of less than ten acres may be listed on one application and only one fee need be paid irrespective of the number of wells listed on the application form. Additional wells on the same property at a later time require another permit. A proper application shall consist of a fully and properly completed form and nonrefundable fee.

Effective July 1, 2003, each application shall be accompanied by a nonrefundable fee of \$125 in the form of a check or money order payable to the Department of Natural Resources, unless a county board of supervisors or the board's designee is authorized to issue private well construction permits pursuant to rule 38.15(455B). In cases where the permitting authority is delegated to the county, the county board of supervisors may set a different fee, shall designate the terms for fee payment, and shall submit to the department a permit fee of \$25 per application. More than one proposed well for the same use on one contiguous piece of property of less than ten acres may be listed on one application and only one fee need be paid irrespective of the number of wells listed on the application form. Additional wells on the same property at a later time require another permit. A proper application shall consist of a fully and properly completed form and nonrefundable fee. The \$25 fee collected by the counties for each permitted well shall be submitted quarterly by the counties to the department on forms and in a manner as provided by the department.



**38.5(2) Exemption.** The department is exempt from the fee payment requirements to the counties. The department shall remit fees directly to the department's private well permit program fund.

**567—38.6(455B) Well maintenance and reconstruction.** A private well construction permit is required for all replacement wells. A private well construction permit is required for modification to a well such as changes in physical dimensions including, but not limited to, deepening the well and changing the diameter or length of the casing or the screen. A private well construction permit is not required for the repair, maintenance, or rehabilitation of an existing well that does not change its physical dimensions.

**567—38.7(455B) Emergency permits.** Contracting counties must have policies and procedures in place to accommodate the issuance of permits on an emergency basis for the immediate replacement or reconstruction of water wells in response to the sudden and unforeseen loss or serious impairment of a well for its intended use.

**38.7(1) to 38.7(3) Rescinded IAB 11/13/02, effective 12/18/02.**

**567—38.8(455B) Permit issuance and conditions.**

**38.8(1) When issued.** Upon receipt of a complete application, the department or contracting county shall issue a permit to the landowner or landowner's agent except as provided in rule 38.12(455B).

**38.8(2) Not a water withdrawal permit.** Each permit shall include notification that a private well construction permit is not a water withdrawal permit and does not eliminate the necessity of obtaining any water withdrawal permits required in 567—Chapters 50 through 54. A water withdrawal permit is required before an applicant can withdraw more than 25,000 gallons of water per day from any source or combination of sources in the state of Iowa.

**38.8(3) Construction by certified well contractor.** Each well construction permit shall require that each well be constructed by a certified well contractor in compliance with 567—Chapters 49 and 82. However, temporary dewatering wells at construction sites shall be exempt from the construction standards of 567—Chapter 49.

**567—38.9(455B) Noncompliance.** Violations of any of the provisions of this chapter may be addressed by the department pursuant to Iowa Code sections 455B.109, 455B.110, 455B.175 and 455B.191.

**567—38.10(455B) Expiration of a permit.** A private well construction permit shall expire one calendar year from the date of issuance. If construction of the proposed well is not started prior to the expiration date, a new application plus a new nonrefundable fee must be filed with the department or the county board of supervisors pursuant to rule 38.15(455B).

**567—38.11(455B) Transferability.** A private well construction permit is not transferable.

**567—38.12(455B) Denial of a permit.** The department or contracting county may deny a private well construction permit if granting the permit would lead to the violation of state law, could result in groundwater contamination, would lead to withdrawal from a protected source, or the well could threaten public health or the environment. Examples of wells that could threaten public health or the environment and, therefore, may be denied construction permits include, but are not limited to: in situ mining wells, wells which may result in a negative impact on an identified point source of groundwater contamination and cause leachate plume to spread or migrate, underground injection wells except as provided in 567—subrule 50.6(4) and 567—62.9(455B).

**567—38.13(455B) Appeal of a permit denial.** Any applicant aggrieved by a decision issued under the provisions of this chapter may file a notice of appeal with the director. The notice of appeal must be filed within 30 days of the date of the permit decision. The form of the notice of appeal and appeal procedures are governed by 567—Chapter 13. Appeal of a permit denied by a county which has been delegated authority to issue private water well permits shall be administered by the county in accordance

with the county's appeal or judiciary review process. Appeal to the department is possible only when the appeal involves well design or construction variances or if delegation to the county is suspended, rescinded or revoked.

**567—38.14(455B) Effective date.** Rescinded IAB 11/13/02, effective 12/18/02.

**567—38.15(455B) Delegation of authority to county board of supervisors.**

**38.15(1) Application by board.** A county board of supervisors requesting the authority to issue private well construction permits shall apply to the department in accordance with Iowa Code chapter 28E. The application shall include statements of agreement to comply with 567—Chapter 38. Additional information may be requested by the department. The department may contract for all or part of the private well permitting services in those counties that do not receive or maintain delegation authority or for permit authorities retained by the department.

**38.15(2) County standards.** The county board of supervisors may impose additional standards as local conditions dictate, but the standards cannot be less stringent than those required by the provisions of this chapter.

**38.15(3) Information to department.** The delegation agreement shall provide for the method, format and frequency of reporting all permit application information and remission of fees to the department.

**38.15(4) Board authority.** After delegation of authority to a county board of supervisors, all applications in that county shall be made to the board or its designee except that all new private well permit applications by state or federal agencies shall be made to the department.

**38.15(5) Term of delegation.** The delegation of authority may be for up to five years and may be redelegated at the discretion of the department.

**38.15(6) Permit number.** Each permit shall be given a unique number as prescribed by the department. This numbering system shall be consistent throughout the state.

**38.15(7) Well tag.** The department may require that an identification tag be applied to each well. Counties with delegated permitting authority and certified water well contractors are responsible for ensuring that the tags are properly attached to the wells. The department may supply the numbered tags.

**567—38.16(455B) Concurrent authority of the department.** Notwithstanding the delegation of permit granting authority pursuant to rule 38.15(455B), the department reserves the right to exercise concurrent authority. In cases where the board or its designee fails to act on an application, or the director determines that a particular application cannot be appropriately evaluated by the board or its designee, the department may review such an application without invoking the provisions of rule 38.17(455B).

**567—38.17(455B) Revocation of delegation agreement.** The department may revoke the delegation to issue private well construction permits if the board of supervisors or its designee: failed or refused to carry out the provisions of this chapter in a timely manner; or violated any of the provisions of the delegation of authority agreement with the department.

These rules are intended to implement Iowa Code sections 455B.105(11), 455B.172, and 455B.187.

[Filed 4/29/88, Notice 1/13/88—published 5/18/88, effective 7/1/88]

[Filed without Notice 4/23/93—published 5/12/93, effective 7/1/93]

[Filed 10/25/02, Notice 5/15/02—published 11/13/02, effective 12/18/02]



CHAPTER 39  
REQUIREMENTS FOR PROPERLY PLUGGING ABANDONED WELLS

**567—39.1(455B) Purpose.** The purpose of this chapter is to implement Iowa Code section 455B.190 by providing a schedule and required procedures for the proper plugging of abandoned wells to protect the groundwater by permanently sealing off contamination to individual aquifers.

**567—39.2(455B) Applicability.** These rules govern the proper plugging of abandoned wells. Some examples of types of wells covered by these rules are those accessing groundwater (withdrawing water from or injecting water into the groundwater) and can include, but are not limited to: public and nonpublic water wells, test wells, observation wells, monitoring wells, agricultural drainage wells, heat pump recirculation wells, and cooling water wells. Some examples of types of wells or subsurface structures not covered by these rules include: small diameter (2" or less) test holes, observation wells or monitoring wells installed for a limited time which can be sealed by withdrawal of the casing and allowing the hole to collapse; soil borings; septic tanks; underground storage tanks; and cisterns if not used for accessing groundwater. For additional guidance and background information, refer to "Guidelines for Plugging Abandoned Water Wells," Technical Information Series 15, Geological Survey Bureau, Iowa Department of Natural Resources, 1987.

**567—39.3(455B) Definitions.**

"*Abandoned well*" means a water well which is no longer in use or which is in such a state of disrepair that continued use for the purpose of accessing water is unsafe or impractical.

"*Agricultural lime*" means all calcium and magnesium products sold for agricultural purposes in the carbonate form, not including quicklime or hydrated lime, of a size comparable with that of crushed stone, gravel or pea gravel.

"*Approved*" means accepted or acceptable under an applicable specification stated or cited in these rules.

"*Aquifer*" means a water-bearing geologic formation capable of yielding a usable quantity of water to a well or spring.

"*Bentonite*" means a naturally occurring highly plastic, colloidal clay composed largely of the mineral montmorillonite which expands upon wetting.

"*Bentonite grout (or slurry)*" means a mixture of 10 percent processed bentonite (by weight) and water which is free of contaminants, turbidity and settleable solids.

"*Bentonite pellets*" means a form of processed bentonite which can be used directly for sealing applications in well plugging operations.

"*Bentonite products*" means the forms of bentonite which can be used for sealing material in wells, including graded bentonite, bentonite pellets and bentonite grout.

"*Capped*" means the application of a layer of sealing material at the top of the well casing.

"*Casing*" means a tubular retaining structure installed in an excavated hole to maintain the well opening.

"*Certified well contractor*" means a well contractor certified by the department in accordance with 567—Chapter 82.

"*Class 1 well*" means a well 100 feet or less in depth and 18 inches or more in diameter.

"*Class 2 well*" means a well more than 100 feet in depth or less than 18 inches in diameter or a bedrock well. Bedrock wells include:

1. Wells completed in a single confined aquifer;
2. Wells completed in a single unconfined aquifer; and
3. Wells completed in multiple aquifers.

"*Class 3 well*" means a sandpoint well or a well 50 feet or less in depth constructed by joining a screened drive point with lengths of pipe and driving the assembly into a shallow sand and gravel aquifer.

"*Concrete*" means a mixture of one sack (94 pounds) of Portland cement, up to but not exceeding an equal amount by volume of sand and up to but not exceeding an equal amount by volume of gravel

or crushed stone and not more than six gallons of water which is free of contaminants, turbidity and settleable solids.

*"Confined aquifer"* means an aquifer in which the groundwater is under pressure greater than atmospheric pressure. The static water level in a well tapping a confined aquifer rises to a level above the top of the aquifer.

*"Crushed stone"* means stone (predominantly limestone), crushed and well graded, with 100 percent passing a 1-inch sieve, in accordance with the 1984 edition of Iowa department of transportation specification No. 4120.04 for Class A crushed stone.

*"Department"* means the department of natural resources created under Iowa Code section 455A.2.

*"Designated agent"* means a person other than the state, designated by a county board of supervisors to review and confirm that a well has been properly plugged.

*"Director"* means the director of the department.

*"Filling materials"* means agricultural lime, soil, sand, gravel, crushed stone, rock and pea gravel used to occupy space between and below sealing materials in abandoned wells being plugged.

*"Frost pit"* means a sunken area located directly over or within 4 feet of a well and used to house the equipment for discharging water from a well into the water system.

*"Graded bentonite"* means bentonite which is crushed and sized for pouring and easy handling. Like processed bentonite, it swells when hydrated with water and will form a plastic, essentially impermeable mass.

*"Gravel"* means stone screened from river sand or quarried, with 100 percent passing a ¾-inch sieve, in accordance with the 1984 edition of the Iowa department of transportation specification No. 4120.02 for Class B gravel.

*"Groundwater"* means any water beneath the surface of the earth.

*"Grout"* means, for the purposes of this chapter, a fluid mixture of cement and water (neat cement); sand, cement and water (sand cement grout); or bentonite and water (bentonite grout or slurry) of a consistency that can be forced through a pipe and placed as required.

*"Limestone"* means sedimentary rock which contains greater than 50 percent calcium carbonate and has a strong reaction with hydrochloric acid (HCL).

*"Neat cement"* means a mixture of one sack (94 pounds) of Portland cement to not more than six gallons of water which is free from contaminants, turbidity or settleable solids. Bentonite up to 2 percent by weight of cement may be added to reduce shrinkage.

*"Owner"* means the titleholder of the land where an abandoned well is located.

*"Pea gravel"* means gravel sized from 1/8 inch to 3/8 inch in diameter.

*"Plug"* means the closure of an abandoned well with plugging materials by procedures which will permanently seal the well from contamination by surface drainage and permanently seal off the well from contamination into an aquifer. This involves the proper application of filling and sealing materials.

*"Processed bentonite"* means bentonite which has been kiln dried and processed into pellets for direct use in well sealing applications or into powder or coarse granules for use in bentonite grout for sealing.

*"Rock"* means stone screened from river sand or quarried, free of debris, foreign matter and any toxic or agricultural chemical residue, up to 2½ inches in diameter.

*"Sand"* means clean, medium-textured quartz (concrete sand) and shall be at least 25 percent with diameters between 2.0 and 0.25 mm, less than 35 percent with diameters between 0.25 and 0.05 mm and less than 5 percent with diameters between 0.002 and 0.05 mm.

*"Sand cement grout"* means a mixture of one sack (94 pounds) of Portland cement, an equal amount by volume of sand and not more than six gallons of water which is free from contaminants, turbidity and settleable solids.

*"Sandpoint well"* means a small diameter water well constructed by joining a screened drive point with lengths of pipe and driving the assembly into a shallow sand and gravel aquifer.

*"Sealing"* means the proper placement of sealing materials into an abandoned well to seal off flow into, out of or between aquifers.



*"Sealing materials"* means bentonite products. Sealing materials may also include neat cement, sand cement grout and concrete.

*"Standby well"* means a water well which is temporarily taken out of service with the expectation of being returned to service at a future date.

*"Static water level"* means the water level in a water well or aquifer when the well is not flowing or being pumped; sometimes referred to as the water line. The static water level for an abandoned well is determined just prior to commencing plugging operations.

*"Tremie pipe"* means a device, usually a small diameter pipe, that carries grouting materials to the bottom of the hole and which allows pressure grouting from the bottom up without introduction of air pockets.

*"Unconfined aquifer"* means an aquifer in which the static water level does not rise above the top of the aquifer, i.e., the pressure of the water in the aquifer is approximately equal to that of the atmosphere.

*"Water well"* means an excavation that is drilled, cored, bored, augered, washed, driven, dug, jetted or otherwise constructed for accessing groundwater.

**567—39.4(455B) Forms.** The following form is currently in use: Abandoned Water Well Plugging Record. 542-1226.

**567—39.5(455B) Abandoned well plugging schedule.**

**39.5(1)** Class 1 wells abandoned prior to April 25, 1990, must be properly plugged by July 1, 1995.

**39.5(2)** Class 2 and 3 wells abandoned prior to April 25, 1990, must be properly plugged by July 1, 2000.

**39.5(3)** Wells near contamination sources. All classes of wells abandoned prior to April 25, 1990, and located less than 200 feet from an active well supplying potable water or located less than 660 feet from a point source of potential contamination which may include, but is not limited to, industrial waste sites; uncontrolled hazardous waste sites; petroleum storage areas; hazardous waste treatment, storage, or disposal areas; agricultural chemical storage areas; animal feedlots; and wastewater treatment facilities must be properly plugged by July 1, 1993.

**39.5(4)** Wells abandoned after April 25, 1990. All classes of wells which are abandoned on or after April 25, 1990, must be properly plugged within 90 days of the date of abandonment.

**567—39.6(455B) Abandoned well owner responsibilities.**

**39.6(1) *Plugging requirements.*** The owner is responsible for ensuring the abandoned well is plugged pursuant to this chapter.

**39.6(2) *Record.*** It is the responsibility of the owner to certify, on DNR Form 542-1226 "Abandoned Water Well Plugging Record," that an abandoned well has been plugged in accordance with the requirements and time schedule contained in this chapter. This report must include confirmation of the well plugging by the designated agent for the county or a certified well contractor. Within 30 calendar days of the date the plugging was completed, the owner shall submit to the department a copy of DNR Form 542-1226.

**567—39.7(455B) Abandoned well plugging materials.**

**39.7(1) *Sealing materials.*** Approved sealing materials are bentonite products (graded bentonite, bentonite pellets and bentonite grout), neat cement, sand cement grout and concrete.

**39.7(2) *Filling materials.*** Approved filling materials include agricultural lime, soil, sand, pea gravel, gravel and crushed stone. The filling materials shall be free of debris, foreign matter and any toxic or agricultural chemical residue. Filling materials are not required for well plugging.

**567—39.8(455B) Abandoned well plugging procedures.**

**39.8(1) *Freedom from obstructions.*** Abandoned wells must be checked before they are plugged in order to ensure there are no obstructions that may interfere with plugging operations. Drop pipes, check valves, pumps, and other obstructions shall be removed if practical.

**39.8(2) Class 1 wells.** These wells may be plugged by pouring filling and sealing materials from the top of the well or by using tremie pipes, except for sand cement grout or concrete placed below the static water level, which must be placed by tremie pipe or dump bailer.

Filling materials of sand, gravel, crushed stone, rock, pea gravel or agricultural lime shall be placed up to 1 foot below the static water level; soils are not permitted below the static water level due to naturally occurring bacteriological, organic and inorganic contaminants. A minimum of 1 foot of bentonite pellets, graded bentonite or neat cement shall be placed on top of the filling material up to the static water level as a seal. Sand cement grout or concrete applied with a tremie pipe or dump bailer also may be used on top of the filling material up to the static water level and in standing water above the static water level to act as a seal. Filling material may then be added up to 4 feet below the ground surface.

It is preferable that the filling materials be omitted and that sealing materials be used to fill the entire well up to 4 feet below the ground surface. Sand cement grout or concrete shall be placed with a tremie pipe or dump bailer when used below the static water level.

The casing pipe and any curbing, frost pipe or pump house structure shall be removed to a depth of 4 feet below the ground surface and shall be capped by a minimum of 1 foot of bentonite pellets, graded bentonite, neat cement, sand cement grout or concrete. The cap shall extend 6 or more inches beyond the outside diameter of the top of the remaining well casing and shall terminate 3 feet below the ground surface. The remaining 3 feet (below the ground surface) shall then be backfilled with soil and graded so that surface water is directed away from the abandoned well location.

**39.8(3) Class 2 wells other than bedrock wells.** If the details of well construction are unknown or obstructions that may interfere with well plugging cannot be removed, the well shall be tremied full of neat cement or bentonite grout up to 4 feet below the ground surface. If bentonite grout is used from the static water level to the top of the well, it should be capped by neat cement, sand cement grout or concrete terminating 4 feet below the ground surface.

Filling material consisting of sand, gravel, crushed stone, pea gravel or agricultural lime shall be placed in the bottom of the well up to 4 feet below the static water level. A minimum of 4 feet of sealing materials consisting of any bentonite products or neat cement shall be added above the filling material up to the original static water level. If bentonite grout or neat cement is used, it shall be placed by tremie pipe. If graded bentonite or bentonite pellets are used, they may be added by pouring in place and agitating to avoid bridging. Sealing materials shall be added above the static water level up to 4 feet below the ground surface. If bentonite grout is used from the static water level to the top of the well, it should be capped by neat cement, sand cement grout or concrete terminating 4 feet below the ground surface.

It is preferable that the filling materials be omitted and that sealing materials be used to fill the entire well up to 4 feet below the ground surface.

Casing pipe and any curbing, frost pit or pump house structure shall be removed to a depth of 4 feet below the ground surface. The remaining 4 feet shall then be backfilled with soil and graded so that surface water is directed away from the abandoned well location.

**39.8(4) Class 2 bedrock wells.** If the details of well construction are unknown or obstructions that may interfere with well plugging cannot be removed, the well shall be tremied full of neat cement or bentonite grout up to 4 feet below the ground surface. If bentonite grout is used from the static water level to the top of the well, it should be capped by neat cement, sand cement grout or concrete terminating 4 feet below the ground surface.

The casing pipe and any curbing, frost pit or pump house structure shall be removed to a depth of 4 feet below the ground surface. The remaining 4 feet shall then be backfilled with soil and the surface shall then be graded to divert water away from the abandoned well location.

*a. Bedrock wells completed in a single confined aquifer.* Before proceeding to plug the well, a bridge plug or packer shall be placed at or below the bottom of the casing to stop the flow of water where the pressure in the confined aquifer causes the water to flow from the well to the surface. In such cases, filling materials shall be placed in the lower portion of the well before the bridge plug or packer is set.



Filling material consisting of pea gravel, crushed stone, gravel or agricultural lime shall be placed from the bottom of the well up to 10 feet below the bottom of the casing or confining layer, whichever is lower. Sealing materials consisting of any bentonite products, sand cement grout or neat cement shall be placed from the top of the filling material to at least 10 feet above the bottom of the casing or confining layer or to the static water level, whichever is higher. If bentonite grout, neat cement or sand cement grout is used, it shall be placed by tremie pipe. If graded bentonite or bentonite pellets are used, they shall be added by pouring in place and agitating to avoid bridging. The casing shall then be filled up to 4 feet below the ground surface with sealing materials. If bentonite grout is used from the static water level to the top of the well, it should be capped by neat cement, sand cement grout or concrete terminating 4 feet below the ground surface.

It is preferable that the filling materials be omitted and that approved sealing materials be used to fill the entire well up to 4 feet below the ground surface.

The casing pipe and any curbing, frost pit or pump house structure shall be removed to a depth of 4 feet below the ground surface. The remaining 4 feet shall then be backfilled with soil and graded so that surface water is directed away from the abandoned well location.

*b. Bedrock wells completed in a single unconfined aquifer.* The plugging procedure for these wells is the same as for bedrock wells completed in a single confined aquifer except that a bridge plug or packer is not required to stop the flow of water since this problem will not exist in this type of well.

*c. Bedrock wells completed in multiple aquifers.* For the lowest aquifer, filling material consisting of pea gravel, crushed stone, gravel or agricultural lime shall be placed from the bottom of the well up to 10 feet below the bottom of the casing or confining layer, whichever is lower. Neat cement tremied in place shall then be placed as a sealing material on top of the fill and extend upward at least 20 feet. Sealing materials shall then be placed in at least the top 10 feet of each subsequent aquifer and extend at least 10 feet into the confining layer or casing above. The same type of filling materials and sealing procedures shall apply for each subsequent aquifer. Filling material may be placed from the top of the uppermost aquifer seal up to the static water level of the well. The casing shall then be filled with approved sealing or filling materials to 4 feet below the ground surface. If bentonite grout is used from the static water level to the top of the well, it should be capped by neat cement, sand cement grout, or concrete terminating 4 feet below the ground surface.

It is preferable that the filling materials be omitted and approved sealing materials be used to fill the entire well up to 4 feet below the ground surface. Sand cement grout or concrete shall be applied with a tremie pipe or dump bailer when applied below the static water level.

The casing pipe and any curbing, frost pit or pump house structure shall be removed to a depth of 4 feet below the ground surface. The remaining 4 feet shall then be backfilled with soil and graded so that surface water is directed away from the abandoned well location.

**39.8(5) Class 3 wells.** The preferred method of plugging a sandpoint well is to pull the casing and sandpoint out of the ground, allowing the hole to collapse and fill. If the sandpoint and casing cannot be extracted, they shall be tremied full of neat cement or completely sealed with bentonite products.

The casing pipe and any curbing, frost pit or pump house structure shall be removed to a depth of 4 feet below the ground surface. The remaining 4 feet shall then be backfilled with soil and graded so that surface water is directed away from the abandoned well location.

**567—39.9(455B) Designated agent.** A county's board of supervisors shall appoint an individual to be responsible to review and confirm an abandoned well to be properly plugged as required by 567—39.8(455B) and authorized by Iowa Code section 455B.190. The designation is effective upon notification to the department by the chairperson of the board of supervisors. This notification will include the identity of the designated agent and the length of appointment. Changes in a designated agent will require new notification by the chairperson to the department.

**567—39.10(455B) Designation of standby wells.**

**39.10(1) Standby wells.** A standby well must be disinfected prior to being taken out of use for a long period of time and must be disinfected and, as a minimum, checked for bacteria and nitrates when placed

back in service. Disinfection of standby wells shall be done in accordance with AWWA (American Water Works Association) Standard A100. The well must not be subject to contamination by surface drainage or from other causes, and the well casing must be provided with an airtight cover when the well is not in use. A well must be repaired so that there is no degradation of groundwater and it is suitable for use prior to being classified as a standby well.

**39.10(2) *Caveat.*** Nothing in these rules shall be construed as exempting public water supply wells from requirements set forth in the environmental protection commission rules, 567—Iowa Administrative Code.

**567—39.11(455B) Variances.** In accordance with Iowa Code section 455B.181, a variance to these rules may be granted by the department provided sufficient information is submitted in writing to the department to substantiate the need for a variance and to ensure the protection of all aquifers penetrated by the affected well. When satisfactory justification has been submitted to the director demonstrating that a variance to these rules will result in equivalent effectiveness or improved effectiveness, a variance to these rules may be granted by the director. A denial of a variance may be appealed to the environmental protection commission pursuant to 567—Chapter 7.

These rules are intended to implement Iowa Code sections 455B.171 and 455B.190.

[Filed 9/29/88, Notice 4/20/88—published 10/19/88, effective 11/23/88]<sup>1</sup>

[Filed 3/2/90, Notice 11/15/89—published 3/21/90, effective 4/25/90]<sup>2</sup>

[Filed 8/31/90, Notice 7/11/90—published 9/19/90, effective 10/24/90]

[Filed without Notice 4/23/93—published 5/12/93, effective 7/1/93]

<sup>1</sup> Effective date (11/23/88) delayed until adjournment of the 1989 Session of the General Assembly pursuant to Iowa Code section 17A.8(9) by the Administrative Rules Review Committee at its November 15, 1988 meeting.

<sup>2</sup> Effective date of 39.8(3), second paragraph, first sentence, and 39.8(4) "a," second paragraph, first sentence, delayed 70 days from 4/25/90 by the Administrative Rules Review Committee at its 4/12/90 meeting.



CHAPTER 49  
NONPUBLIC WATER SUPPLY WELLS

[Prior to 7/1/83, Health Dept. Ch 45]

[Prior to 12/3/86, Water, Air and Waste Management[900]]

**567—49.1(455B) Purpose.** The purpose of this chapter is to protect the public health by protecting groundwater supplies from contamination by establishing uniform minimum standards and methods for well construction and reconstruction for nonpublic water supply wells. This chapter also provides minimum standards for installation of water well pumps or equipment employed in withdrawing or obtaining water from a well for any use, except monitoring wells, including such seals and safeguards as may be necessary to protect from contamination the water in the aquifer and water being pumped from the well.

**567—49.2(455B) Definitions.**

*“Abandoned well”* means a well whose use has been permanently discontinued. A well shall be considered abandoned when its condition is such that continued use is impractical or no longer desired.

*“Administrative authority”* means the local boards of health.

*“Anaerobic lagoon”* means an impoundment, the primary function of which is to store and stabilize organic wastes. The impoundment is designed to receive wastes on a regular basis, and the design waste loading rates are such that the predominant biological activity in the impoundment will be anaerobic. An anaerobic lagoon does not include:

1. A runoff control basin which collects and stores only precipitation-induced runoff from an open feedlot feeding operation; or
2. A waste slurry storage basin which receives waste discharges from confinement feeding operations and which is designed for complete removal of accumulated wastes from the basin at least semiannually; or
3. Any anaerobic treatment system which includes collection and treatment facilities for all off-gases.

*“Annular space”* means the open space between the well hole excavation and the well casing.

*“Backflow prevention device”* means any device, method or type of construction to prevent backflow of water, liquids, mixtures, or substances into a well or into the distribution pipes of a potable supply of water from any source other than its intended source.

*“Cesspool”* means a covered excavation, lined or unlined, into which wastes from toilets or urinals are discharged for disposal. Cesspools are not an approved method of sewage disposal.

*“Class 1 well”* means a well 100 feet or less in depth and 18 inches or more in diameter.

*“Class 2 well”* means a well more than 100 feet in depth or less than 18 inches in diameter or a bedrock well. Bedrock wells include:

1. Wells completed in a single confined aquifer;
2. Wells completed in a single unconfined aquifer; and
3. Wells completed in multiple aquifers.

*“Class 3 well”* means a sandpoint well 50 feet or less in depth and having a casing inside diameter of 2 inches or less constructed by joining a screened drive point with lengths of pipe and driving the assembly into a shallow sand and gravel aquifer.

*“Compensation for well interference”* means payment to the owner of a nonregulated well for damages caused by a lowered water level in the well due to withdrawal of water for a permitted use.

*“Confinement building”* means a building used in conjunction with a confinement feeding operation to house animals.

*“Conforming well”* means a well that complies with the standards of this chapter, including wells properly plugged according to 567—Chapter 39.

*“Deep well”* means a well located and constructed in such a manner that there is a continuous layer of low permeability soil or rock at least 5 feet thick located at least 25 feet below the normal ground surface and above the aquifer from which water is to be drawn.

*“Earthen manure storage basin”* means an earthen cavity, either covered or uncovered, which, on a regular basis, receives waste discharges from a confinement feeding operation if accumulated wastes from the basin are completely removed at least once each year.

*“Established grade”* means the permanent point of contact of the ground to artificial surface with the casing or curbing of the well.

*“Formed manure storage structure”* means a structure, either covered or uncovered, used to store manure from a confinement feeding operation, which has walls and a floor constructed of concrete, concrete block, wood, steel, or similar materials. Similar materials may include, but are not limited to, plastic, rubber, fiberglass, or other synthetic materials. Materials used in a formed manure storage structure shall have the structural integrity to withstand expected internal and external load pressures.

*“Grout”* means a material used to seal the annular space between the casing and the borehole and shall consist of neat cement, concrete, high solids bentonite slurry, or hydrated bentonite chips.

*“Health-related problem”* means well water that contains any contaminant at a level that exceeds MCLs (maximum contaminant levels), or HALs (health advisory levels) as adopted by the department of natural resources.

*“Heavy drilling fluid”* means water used for drilling which because of the natural clay content of the borehole or by addition of bentonite grout has a solids density of at least 10 percent by weight or a mud weight of at least 9.25 lb/gal.

*“Low permeability material”* means a geological unit of unconsolidated material (usually clay or till) or bedrock (usually shale) that is all or partially saturated, and having permeability low enough ( $10^{-7}$  cm/sec) to give water in the aquifer artesian head.

*“Nonpublic water supply well”* means a well that does not supply a public water supply system.

*“Nonregulated well”* means a well used to supply water for a nonregulated use (a use of water less than 25,000 gallons per day which is not required to have a water use permit).

*“Open feedlot”* means an unroofed or partially roofed animal feeding operation in which no crop, vegetation, or forage growth or residue cover is maintained during the period that animals are confined in the operation.

*“Permitted use”* means a use of water in excess of 25,000 gallons per day which requires a water use permit pursuant to 567—Chapters 50 through 52 and Iowa Code chapter 455B, division III, part 4.

*“Pitless adapter”* means a device designed for attachment to one or more openings through a well casing. It shall be constructed so as to prevent the entrance of contaminants into the well through such openings, conduct water from the well, protect the water from freezing or extremes of temperature, and provide access to water system parts within the well.

*“Pitless unit”* means an assembly which extends the upper end of the well casing to above grade. It shall be constructed so as to prevent the entrance of contaminants into the well, conduct water from the well, and protect the water from freezing or extremes of temperature, and shall provide full access to the well and to water system parts within the well. It shall provide a pitless well cap for the top terminal of the well.

*“Public water supply”* means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. The term includes (1) any collection, treatment, storage, and distribution facilities under control of the supplier of water and used primarily in connection with the system; and (2) any collection (including wells) or pretreatment storage facilities not under the control of the supplier which are used primarily in connection with the system.

*“Pump installer”* means a person certified by the department to perform pump services.

*“Pumps and pumping equipment”* means any equipment or materials, including seals, tanks, fittings and controls utilized or intended for use in withdrawing or obtaining water for any use.

*“Pump services”* means the installation, repair, and maintenance of water systems; modification of the upper terminus of a well; well plugging; well rehabilitation; or the construction of Class 3 wells.

*“Runoff control basin”* means an impoundment designed and operated to collect and store runoff from an open feedlot.



*"Shallow well"* means a well located and constructed in such a manner that there is not a continuous layer of low permeability soil or rock (or equivalent retarding mechanism acceptable to the department) at least 5 feet thick, the top of which is located at least 25 feet below the normal ground surface and above the aquifer from which water is to be drawn.

*"Stuffing box"* means an approved receptacle in which packing may be compressed to form a watertight or airtight junction between two objects.

*"Upper terminus"* means the upper ten feet of the well casing as measured from the finished surface grade.

*"Water systems"* means any part of the mechanical portion of a water well that delivers water from the well to a valve that separates the well from the plumbing system. "Water systems" includes the pump, drop pipe to the well, electrical wire from the pump to the first electrical panel or connection outside the casing, piping from the well to the pressure tank or first valve outside the casing, pitless unit or adapter, and all related miscellaneous fittings necessary to operate the pump. "Water systems" does not include any outside piping to other buildings and does not include the piping that carries the water in the remainder of the distribution system.

*"Well"* means any excavation that is drilled, cored, driven, dug, bored, augered, jetted, washed or is otherwise constructed for the purpose of exploring for groundwater, monitoring groundwater, utilizing the geothermal properties of the ground, or extracting water from or injecting water into the aquifer. "Well" does not include an open ditch, drain tiles, an excavation made for obtaining or prospecting for oil, natural gas, minerals, or products mined or quarried, lateral geothermal heat exchange systems less than 20 feet deep, nor temporary dewatering wells such as those used during the construction of subsurface facilities only for the duration of the construction.

*"Well construction"* means constructing a water well and installing necessary casing, screen, liners, grout, seals, and other appurtenances.

*"Well driller"* means a person certified by the department to perform well drilling services.

*"Well drilling services"* means new well construction, well reconstruction, well repair, well rehabilitation, installation of pitless equipment, or well plugging.

*"Well liner"* means a pipe used to line the inside of a well hole but not designed to hold hydraulic or structural loading. Liners must be installed within a casing or in an ungrouted open borehole.

*"Well plugging"* means the closure of an abandoned well with plugging materials by procedures which will permanently seal the well from contamination by surface drainage and permanently seal off the well from contamination into an aquifer. "Well plugging" includes the proper application of filling and sealing materials.

*"Well reconstruction"* means modification of the original construction of a well. "Well reconstruction" includes, but is not limited to, deepening the well, installing a liner, installing or replacing a screen with one of a different diameter or length, installing a pitless adapter, extending the casing, or hydrofracturing a well. Replacing a screen with one of identical diameter and length or replacing a pitless adapter is considered repair, not reconstruction.

*"Well rehabilitation"* means the physical or chemical cleaning of a well.

*"Well seal"* means a device used to cover or seal a well that establishes or maintains a junction between the casing of the well and the piping, electric conduit or equipment installed, so as to prevent water or other foreign material from entering the well at the uppermost terminal.

1. "Well cap" means a snug-fitting, watertight device used above flood level that excludes dust and vermin and allows for screened venting.

2. "Sanitary seal" means a watertight fitting which uses mechanical compression that is installed on wells that terminate in a wellhouse.

*"Well services"* means both well drilling services and pump services.

**567—49.3(455B) Applicability.** The provisions contained herein apply to all nonpublic water supply wells constructed for the purpose of domestic, livestock, irrigation, recreation, and commercial or industrial use. They shall also apply to existing water wells undergoing reconstruction.

Ponds and surface water supplies are not covered by these standards. Information regarding use of these sources of water should be sought from the administrative authority prior to the development of the sources.

**49.3(1) *Nonconforming well construction installations.*** Certified well drilling contractors shall ensure that the reconstruction of nonconforming wells adheres to all applicable provisions of this chapter or to comparable construction or installation requirements approved by the administrative authority.

When any construction or reconstruction is done on a nonconforming feature of a well, that feature shall be upgraded and brought into compliance with the material and installation standards contained in this chapter.

**49.3(2) *Nonconforming water system installations.*** Certified pump installers shall ensure that the reconstruction or repair of nonconforming water systems adheres to all applicable provisions of this chapter or to construction or installation requirements approved by the administrative authority. When pump services are to be performed on a well that has a contamination problem, the well shall be upgraded and shall be brought into compliance with installation standards contained in this chapter. When pump services are to be performed on a well that does not have a contamination problem, the well may be put back into service with nonconforming features. However, the certified installer shall notify the owner of the well in writing of the defects with recommendations as to what should be done to correct these deficiencies.

**49.3(3) *Exemptions.*** This chapter shall not apply to public water supply wells, horizontal heat pump installations, elevator shafts, underground storage tank monitoring wells as covered under 567—Chapter 135, or monitoring wells for solid waste disposal facilities as covered in 567—Chapter 110.

**567—49.4(455B) General.** The administrative authority shall have the authority to visit well sites during any phase of the work without prior notice. The administrative authority shall by rule require the issuance of permits and the submission of water well logs. No well construction or reconstruction shall be initiated until a permit has been issued by the proper authority. The administrative authority may also require posting of performance bonds and collection and submission of other data. The issuance of permits is covered in 567—Chapter 38 and shall be coordinated with the water withdrawal permits issued by the Iowa department of natural resources as covered in 567—Chapters 51 and 52. All well services shall be performed by a certified well contractor or the property owner as specified in 567—Chapter 82.

It shall be the responsibility of the certified well contractor to ensure that a well construction permit has been issued prior to initiation of well construction or reconstruction. It shall also be the responsibility of the certified well contractor to ensure that all well services are performed in accordance with the provisions of this chapter.

**567—49.5(455B) Variances.** Variances to these rules may be granted by the administrative authority if sufficient information is provided to substantiate equal protection and the need for such action. Variance requests and reasoning shall be in writing. Variance approvals or rejections shall also be in writing. Where permitting authority has not been delegated to the county, the department will review and grant or deny any variance requests within that jurisdiction.

**567—49.6(455B) Location of wells.** Wells shall be located with consideration given to the lot size, contour, porosity and absorbency of the soil, local groundwater conditions, flooding, and other factors necessary to implement the rules. The lack of specific distances to other possible sources of contamination, such as refuse disposal sites and high-pressure gas lines, does not minimize their potential hazard. These must be evaluated in each particular situation and a distance arrived at that is based on pertinent facts. The well contractor shall consult the administrative authority for assistance in determining a proper distance in such cases.

**49.6(1) *Minimum distances.*** The following minimum lateral distances shall apply for the common sources of contamination listed in the following table.



Table 49.6(1) Minimum Lateral Distances

Sources of Contamination	Minimum Lateral Distance (feet)	
	Shallow Well	Deep Well
Formed manure storage structure, confinement building, feedlot solids settling facility, open feedlot	200	100
Public water supply well	400	200
		All Wells
Earthen manure storage basin, runoff control basins and anaerobic lagoons (see subrule 49.6(2) below)		1000
Domestic wastewater lagoon		400
Sanitary landfills		1000
Preparation or storage area for spray materials, commercial fertilizers or chemicals that may result in groundwater contamination		100
Drainage wells		1000
Conforming wells		10
Nonconforming wells		100
Soil absorption field, any sewage treatment system with an open discharge, pit privy or septic tank discharge line (not conforming to 567—Chapter 69)		100
Septic tank, concrete vault privy, sewer of tightly joined tile or equivalent material, sewer-connected foundation drain, or sewers under pressure		50
Sewer of cast iron with leaded or mechanical joints, sewer of plastic pipe with glued or compression joints, independent clear water drains, cisterns, well pits, or pump house floor drains		10
Hydrants		10
Property lines (unless a mutual easement is signed and recorded by both parties)		4
Liquid hydrocarbon storage tanks		100
Ditches, streams, ponds, or lakes		25
Frost pit		10

**49.6(2) Exception to minimum lateral distances.** The minimum separation distance between a well and an anaerobic lagoon, earthen manure slurry storage basin, earthen manure storage basin, or runoff control basin shall be 400 feet if the lagoon or basin was permitted by the department after January 1, 1989, or if the applicant demonstrates through percolation testing that the seepage loss through the lagoon or basin does not exceed 1/16 inch per day (0.0625 inch/day). The percolation test shall meet the requirements of ASTM-1587 and 567—subrule 65.15(11).

**49.6(3) Frost pits.** Wells are not permitted to be located within frost pits. Frost pits that do not contain wells are permitted for the purpose of housing pressure tanks and valves, for example, provided the frost pits are not located closer than ten feet from any well.

**49.6(4) Relation to buildings.** The well shall be located so that no building interferes with reasonable access for cleaning, treatment, repair, testing, inspection and other maintenance. Wells shall not be located in basements.

**49.6(5) Easements.** No well shall be located on a property not owned by the well owner unless an easement allowing such placement is reviewed and approved by the administrative authority and the easement is legally recorded.

**567—49.7(455B) General construction requirements.** Wells shall be planned and constructed to adapt to the geologic and groundwater conditions of the proposed well site to ensure reasonable utilization of every natural protection against contamination of the water-bearing formation(s) and the exclusion of possible sources of contamination, to attempt to produce bacterially safe water which is free of health-related problems.

**49.7(1) *Water used in construction.*** Water used in the construction process shall be obtained from a potable water source that will not result in contamination of the well. Water used for drilling shall be treated with 3 pints of 5.25 percent sodium hypochlorite solution per 100 gallons of water or 0.25 pounds of 65 percent calcium hypochlorite per 100 gallons of water or other additives to produce an equivalent concentration of chlorine residual (50 ppm).

**49.7(2) *Wellhead.*** The upper terminal casing of all wells shall extend at least 12 inches above established grade or pump house floor, or the 100-year flood level, whichever is higher. A well cap or sanitary seal shall be installed immediately following well completion. A well cap shall be used on an exposed well, a sanitary seal only on a well terminating within a wellhouse. Any openings in the cap or seal, such as for pump wiring or water depth measurement, shall be properly grommeted or sealed except properly screened and oriented vent openings.

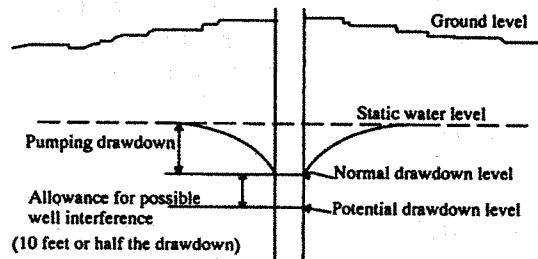
The ground surface immediately adjacent to the well casing shall be compacted and graded so that surface water is diverted away from the casing. Well platforms are not recommended other than those used as pump house floors as indicated in 49.12(2).

**49.7(3) *Criteria for well interference protection.*** 567—Chapter 54 provides an administrative process for owners of nonregulated wells to receive compensation for well interference caused by permitted uses. To be eligible for compensation due to well interference, nonregulated wells constructed after July 1, 1986, must be constructed to allow for some potential well interference.

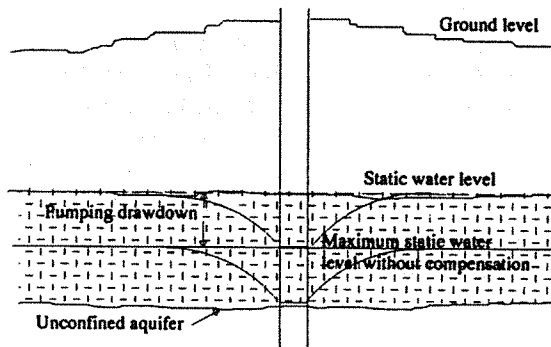
Allowance for potential well interference is accomplished by constructing a nonregulated well to anticipate a lowering of the static head of the well which may be caused by interference from a nearby permitted use well.



a. The well must be drilled deep enough to allow for setting the pump at least 10 feet or half the normal pumping drawdown, whichever is greater, below the initial recommended setting depth.

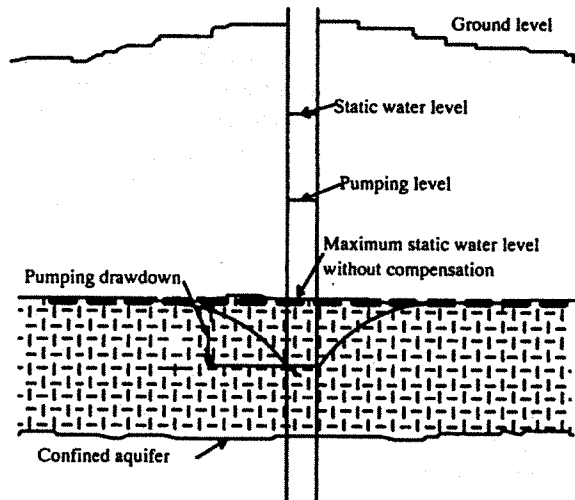


b. If the well draws from an unconfined aquifer, the static water level may drop to half the saturated thickness of the aquifer before well interference is considered, if the calculation in "a" above should indicate a shallower depth. Shallow aquifers that are only slightly confined may be classified as unconfined aquifers for this purpose.



c. Where a well penetrates a confined aquifer, the static water level is protected only to the top of the aquifer if the calculation in "a" above should indicate a deeper level.

d. Protected levels for flowing wells will be considered the top of the confined aquifer or 100 feet below the surface, whichever is higher. Flowing wells must be constructed to accommodate a pump capable of supplying a sufficient water supply at protected levels.



The well design also needs to consider drought and reduced well efficiency. (Additional information is contained in 567—Chapter 54.)

A well that is used to withdraw more than 25,000 gallons of water per day requires a water use permit from the Iowa department of natural resources. Upon obtaining such a permit, the well is called

a permitted use. If a permitted use exists prior to the construction of a well without a water use permit, no compensation for well interference will be allowed unless a significant change in the permitted use occurs. A physical change to withdrawal facilities may be considered a significant change to a permitted use (e.g., moving the withdrawal location, installing a new well, or installing a higher capacity pump). A person desiring to construct a well not requiring a water use permit should first obtain information concerning nearby permitted use wells. The department of natural resources will provide information on permitted use wells upon request.

**49.7(4) Access port for measurement of water levels.** Permitted use wells shall be equipped with an access port having a minimum diameter of  $\frac{3}{4}$  inch. The access port shall be fitted with a threaded cap or plug and be located to allow insertion of a steel tape or electric probe into the well for measurement of water levels. When a spool type of pitless adapter is used which obstructs clear access to the water, a  $\frac{3}{4}$ -inch pipe shall be attached to the spool and brought to the surface below the well cap to allow water level measurements. Wells not requiring a water use permit should be constructed with an access port for water level measurement for possible future well interference concerns.

**49.7(5) Interconnection of aquifers.** There may be local confining beds that serve an important protective function. Permitted use wells shall use casing and grouting to maintain a hydraulic separation between distinct aquifers separated by confining intervals. Extreme caution should be exercised in the construction of non-permitted use wells if allowing the well to connect aquifers across confining intervals, particularly in areas where that would open the aquifer to surficial contamination, i.e., in areas where the upper rock unit is unconfined or contains less than 40 feet of unconsolidated materials. The administrative authority shall be consulted for possible local regulations when interconnection of aquifers across confining intervals is anticipated.

#### **567—49.8(455B) Types of well construction.**

##### **49.8(1) Drilled wells.**

###### *a. Drilled wells in unconsolidated materials.*

(1) Depth. In no case shall less than 20 feet of permanent casing be installed in wells drilled in unconsolidated materials. If the alluvial aquifer where the water is to be drawn from is covered by less than 40 feet of low permeability materials, the well screen shall be set at the bottom of the water-bearing aquifer or at least 60 feet from the surface. (Deeper depths may be required if nitrate contamination is excessive.) If more than 40 feet of low permeability materials are present above the aquifer, the casing shall extend down at least to the top of the aquifer.

(2) Grouting. Grout shall be placed to a minimum depth of 40 feet or along the full length of the casing where less than 40 feet of casing is set. Grouting the full length of the casing below 40 feet may be necessary to isolate any contaminated water lenses or aquifers. If a layer of low permeability material at least 5 feet thick is encountered less than 40 feet from the surface, the grout may be terminated no less than 5 feet below the top of this low permeability material, but in no case less than 20 feet from the ground surface. Grout must be placed in accordance with 49.9(3), except when driving casing. When driving casing a #8 mesh bentonite or bentonite grout must be maintained around the outside of the casing. The bottom of driven casing must be equipped with a drive shoe.

(3) Annular space. The diameter of the borehole shall be at least 3 inches greater than the outside diameter of the well casing to the minimum grouting depth. When steel well casing pipe is installed using percussion methods, the annular space shall be at least 5 inches greater than the outside diameter of the well casing to a minimum depth of 25 feet.

(4) If the depth of casing is greater than 40 feet, the annular space below 40 feet may be filled with heavy drilling fluid taken from the borehole as long as the top 40 feet of annular space is properly grouted. In this case, the annular space below 40 feet shall be kept as small as possible to avoid settling.

###### *b. Drilled wells in consolidated material.*

(1) Minimum casing depth. Casing shall extend to a depth of at least 40 feet and be seated in firm rock. When the uppermost bedrock consists of creviced limestone or dolomite that does not produce water, the casing shall extend through the creviced formation, be seated in firm rock and be properly grouted.

(2) Grouting. For bedrock wells, full-length grouting of the casing is strongly recommended. Grout shall be placed to a minimum depth of 40 feet in accordance with 49.9(3), except when driving casing using percussion or casing-hammer/rotary drilling. When driving casing, #8 mesh bentonite or bentonite grout must be maintained around the outside of the casing. The bottom of driven casing must be equipped with a drive shoe. If a layer of low permeability material at least 5 feet thick is encountered less than 40 feet from the surface, the grout may be terminated no less than 5 feet below the top of this low permeability material, but in no case less than 20 feet from the ground surface. Where local conditions warrant, the administrative authority may require more extensive grouting to protect any aquifer(s) that are penetrated.

(3) Annular space. The borehole shall be at least 3 inches greater than the outside diameter of the well casing for the upper 40 feet or the minimum grouting depth. When steel casing pipe is installed using percussion, or casing-hammer/rotary methods, the annular space shall be at least 5 inches greater than the outside diameter of the well casing to a minimum depth of 25 feet. When bedrock wells are full-length pressure-grouted through the casing, the borehole diameter shall be 3 inches larger than the outside diameter of the casing for the minimum depth of at least 25 feet.

(4) If the depth of casing is greater than 40 feet, the annular space below 40 feet may be filled with heavy drilling fluid taken from the borehole as long as the top 40 feet of annular space is properly grouted. In this case, the annular space below 40 feet shall be kept as small as possible to avoid settling.

(5) In fractured rock, where circulation of slurry cannot be maintained, grouting may be done with bentonite chips. The chips shall be hydrated with one gallon of water per bag of bentonite.

**49.8(2) Bored and augered wells in unconsolidated materials.** For bored or augered wells with concrete or clay tile casings at least 18 inches in diameter, buried-slab construction is required.

*a. Casing.* The concrete or vitrified clay pipe casing shall be terminated not less than 10 feet below ground surface and extend to a minimum depth of 20 feet. The casing shall be fitted with a reinforced concrete or steel plate into which a watertight steel or thermoplastic casing is firmly imbedded in or connected to a pipe cast or welded into the plate. This casing shall be at least 5 inches in diameter and shall extend from the plate to not less than 12 inches above established grade or the 100-year flood level, whichever is higher. A pitless adapter shall be installed below frost depth on the newly installed plastic or steel casing.

*b. Backfilling annular space.* A 12-inch grout seal shall be poured over and around the plate. The annular space between the steel or thermoplastic casing and the borehole shall be backfilled with clean compacted soil free of debris or large organic material. During the backfilling process, the earth shall be thoroughly tamped to minimize settling. Grading around the well shall then be accomplished in accordance with subrule 49.7(2).

**49.8(3) Driven and direct push wells.** Sandpoint wells are typically constructed in sandy areas with a high water table. Groundwater in these areas is often susceptible to contamination. This type of construction is not recommended for potable water supply. Sandpoint wells shall meet the requirements of this chapter except for casing depth and grouting requirements.

**49.8(4) Flowing artesian wells.** Drilling operations shall extend into but not through the formation confining the water. The casing shall then be installed and the annular space full-length pressure-grouted and allowed to set. After the grout is set, the drill hole shall be extended into the confined water-bearing formation. Flow control from the well shall be provided by valved pipe connections or a receiving tank set at an altitude corresponding to that of the artesian head. Under no circumstances shall the water flow uncontrolled to waste. A direct connection between the discharge pipe and a receiving tank, sewer, or other source of contamination is prohibited.

**567—49.9(455B) Material standards.** All materials utilized in well water construction shall conform to the standards of the American Water Works Association (AWWA), the American Petroleum Institute (API), the American Society for Testing and Materials (ASTM), and the National Ground Water Association (NGWA) except as modified by these standards.

**49.9(1) Water well casing.**

*a. Steel well casing and couplings.*



(1) Steel well casing pipe shall have the dimensions and weights specified in Table 49.9(1) "a"(4). Well casing pipe shall be new steel pipe meeting one of the following standards:

1. ASTM A 53-96,
2. ASTM A 106-95,
3. ASTM A 589-95a - Type I, II or III,
4. API 5CT (5th Edition, 4/1/95),
5. API 5D (3rd Edition, 8/1/92), or
6. API 5L (41st Edition, 4/1/95).

(Copies of these standards are available for inspection at the Des Moines office of the department of natural resources records center or may be obtained for personal use from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428-2959, or the American Petroleum Institute, 1220 L Street NW, Washington, DC 20005.)

(2) Each length of casing shall be legibly marked in accordance with API or ASTM marking specifications showing the manufacturer's or processor's name or trademark, size in inches, weight in pounds per foot, whether seamless or welded (type of weld) and the API or ASTM specification or trade monogram.

(3) All casing pipe joints shall be watertight welded construction or threaded couplings.

(4) Minimum casing pipe and coupling weights and dimensions are as follows:

Table 49.9(1) "a"(4)  
Minimum Casing Pipe and Coupling Weights and Dimensions

Size (inches)	Weight (lbs/ft)		Pipe				Couplings	
	Threads & Coupling	Plain End	Thickness (inches)	External Diameter (inches)	Internal Diameter (inches)	Threads per inch	External Diameter (inches)	Length (inches)
1	1.70	1.68	.133	1.315	1.049	11-1/2	1.576	2-5/8
1-1/4	2.30	2.27	.140	1.660	1.380	11-1/2	1.900	2-3/4
1-1/2	2.75	2.72	.145	1.900	1.610	11-1/2	2.200	2-3/4
2	3.75	3.65	.154	2.375	2.067	11-1/2	2.750	2-7/8
2-1/2	5.90	5.79	.203	2.875	2.469	8	3.250	3-15/16
3	7.70	7.58	.216	3.500	3.068	8	4.000	4-1/16
3-1/2	9.25	9.11	.226	4.000	3.548	8	4.625	4-3/16
4	11.00	10.79	.237	4.500	4.026	8	5.200	4-5/16
5	15.00	14.62	.258	5.563	5.047	8	6.296	4-1/2
6	19.46	18.97	.280	6.625	6.065	8	7.390	4-11/16
6-5/8 OD	20.00	19.49	.288	6.625	6.049	8	7.390	4-11/16
7 OD	20.00	19.54	.272	7.000	6.366	8 R	7.657	4-11/16
8	29.35	28.55	.322	8.625	8.071	8	9.625	5-1/16
10	41.85	40.48	.365	10.750	10.136	8	11.750	5-9/16
12	51.15	49.56	.375	12.750	12.090	8	14.000	5-15/16
14 OD	57.00	54.57	.375	14.000	13.250	8	15.000	6-3/8
16 OD	65.30	62.58	.375	16.000	15.250	8	17.000	6-3/4
18 OD	73.00	70.59	.375	18.000	17.250	8	19.000	7-1/8
20 OD	81.00	78.60	.375	20.000	19.250	8	21.000	7-5/8

R = Round Threads

b. *Thermoplastic casing and couplings.*

(1) Materials. Thermoplastic well casing pipe and couplings shall be new polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS) material produced to and meeting the ASTM F 480 standard and shall have a standard dimension ratio (SDR) of 21, 17, or 13.5, a dimension ratio (DR) of 18 or 14, or a schedule 40 or 80 rating depending upon the specification. Styrene-rubber thermoplastic well casing pipe, including ASTM F 480, may not be used.

(2) Potable water standards. The thermoplastic well casing pipe, pipe couplings, cement, primer and other components used shall be approved for well casing pipe in potable water supplies by the NSF Standard Number 61 or the health effects portion of Standard Number 14 as they relate to well casing pipe, or an approved equivalent organization.

(3) Markings. Each length of casing shall be legibly marked showing the manufacturer's or processor's name or trademark, size in inches, and the ASTM F 480 specification or trade monogram.

(4) Casing joints. The thermoplastic pipe shall be assembled with either flush-threaded joints, integral-bell, solvent-cemented joints, one-piece solvent-cemented couplings or nonmetallic restrained joint system in a manner according to the specifications in ASTM F 480.

(5) Hydraulic collapse pressure for plastic casing. The following table provides specifications for maximum hydraulic collapse pressure (in feet of water head) to which PVC well casing of different strengths can be installed.

Table 49.9(1) "b"(5)

## PVC WELL CASING

Maximum Hydraulic Loading (in feet of water head) <sup>(1)</sup>

SIZE	ASTM F 480 or ASTM 2241			C-900		ASTM 1785	
	SDR <u>21</u>	SDR <u>17</u>	SDR <u>13.5</u>	DR <u>18</u>	DR <u>14</u>	SCH. <u>40</u>	SCH. <u>80</u>
4"	257'	496'	1,024'	—	—	353'	1,055'
4½"	257'	496'	1,024'	—	—	—	—
5"	257'	496'	1,024'	—	—	236'	758'
6"	257'	496'	1,024'	490'	956'	177'	678'
8"	257'	496'	1,024'	490'	956'	121'	471'
10"	257'	496'	1,024'	490'	956'	90'	404'
12"	257'	496'	1,024'	490'	956'	74'	376'
16"	257'	496'	1,024'	490'	956'	70'	350'

(1) Determined by formulae in ASTM F 480 with Poisson's ratio of .38

(6) When cement grout is used with thermoplastic casing, the manufacturer's specifications for use shall be followed except in the top 40 feet.

(7) Thermoplastic pipe extending above ground shall be protected from ultraviolet light exposure.

(8) Under no circumstances shall thermoplastic water well casing be driven.

**49.9(2) Grouting guides.** Casing that is to be grouted shall have a minimum of two sets of centering guides attached to the casing so as to permit the unobstructed flow and deposition of grout.

**49.9(3) Grouting.** Materials and procedures for grouting shall be as follows:

*a. Concrete grout.* The mixture, used with bored and augered wells, shall consist of cement, sand aggregate and water, in the proportion of one bag cement (94 lbs.) and an equal volume of aggregate to not more than six gallons of clean water. Concrete grout shall not be used below the water table. Admixtures to reduce permeability or control setting time must meet ASTM Standard C 494-92. Concrete grout may be used with permission of the administrative authority where large void spaces need to be filled.

b. *Neat cement grout.* The mixture shall consist of one bag of cement (94 lbs.) to not more than six gallons of clean water. Admixtures to reduce permeability or control setting time must meet ASTM Standard C 494-92.

c. *Bentonite grout.* This is a mixture of water and commercial sodium-bentonite clay manufactured for the purpose of water well grouting. Mixing shall be per manufacturer's specifications. Sodium-bentonite mixtures that have high viscosity but contain less than 10 percent solids are designed for drilling purposes and shall not be used as grout. Organic polymers used in grout mixtures must meet NSF Standard 60.

d. *Exclusion.* Drilling fluids and cuttings may not be used as grouting material to satisfy the minimum grouting requirements.

e. *Application.* Grouting shall be performed by pumping the mixture into the annular space from the bottom upward through the casing or through a tremie pipe until the annular space is filled. Grouting shall be done in one continuous operation, if possible. The bottom of the tremie pipe must remain submerged in grout while grouting.

f. *Exceptions.* The exceptions to this method of application are the use of buried-slab, percussion, or casing-hammer/rotary methods to construct a well. The proper grouting methods for these types of wells are specified in 49.8(1) and 49.8(2). Another exception is where dry bentonite is required because circulation cannot be maintained as described in 49.8(1)"b"(5).

**49.9(4) Pitless adapters and pitless units.** Rescinded IAB 7/21/04, effective 8/25/04.

<sup>1</sup> Effective date of 49.9(1)"a" delayed 70 days by the Administrative Rules Review Committee at its meeting held May 12, 1998.

**567—49.10(455B) Well reconstruction.** All well reconstruction must meet the requirements of this chapter. If the well feature in need of reconstruction cannot be brought into compliance with these rules, the well must be properly plugged.

**49.10(1) Installing a liner.** If the reconstruction will involve the placement of a liner, the certified well contractor must then determine whether the proposed reconstruction will be done in order to correct a health-related problem. The work to be performed must then be done in accordance with paragraph "a" or "b" below.

a. Standards for installation of a liner to correct a health-related problem.

(1) The liner shall have a minimum of two sets of centering guides to allow the proper placement of grout. In no case shall the liner be driven into place.

(2) The liner shall extend to the ground surface or top of the pitless adapter.

(3) The annular space between the old casing and the liner shall be pressure-grouted in place throughout its entire length using an approved grout.

b. Standards for installation of a liner to correct a problem that is not health-related.

(1) The liner shall extend at least ten feet above the static water level or, if a caving zone is present, shall extend above this region.

(2) The liner may be pressure-grouted in place if there is a sufficient annular space for proper application of the grout.

c. *Liner material standards.* Liners must meet well casing standards as defined in 49.9(1). Liners may be composed of either steel or thermoplastic with a minimum inside diameter of 4 inches. Steel liners must be new and have a minimum wall thickness of .188 inches. Plastic liners must have a standard dimension ratio of 26 or less or a schedule rating of SCH 40 or SCH 80. If the installation does not meet the definition of a liner, then casing material shall be used.

**49.10(2) Upper terminus.** All well reconstruction performed on the upper terminus of a well must meet the standards of this chapter.

**567—49.11(455B) Disposal of drilling mud.** Drilling fluid and mud remaining after construction of a well shall not be disposed of in a stream or storm sewer nor shall these materials be discharged into a sanitary sewer without permission of the owner and operator of the wastewater treatment facility.



**567—49.12(455B) Pumps and pumping equipment.**

**49.12(1) General pump installation requirements.** The installation of pumps shall be planned and carried out so the pump will be:

- a.* Installed so that it and its surroundings are not exposed to chemical or biological contamination;
- b.* Properly sized so as to provide the volume of water necessary, where obtainable, for an adequate water supply;
- c.* Designed to meet the well characteristics and not exceed the yield of the well except for low yield seepage/storage wells;
- d.* Installed for operation without repriming or breaking suction;
- e.* Installed in such a manner as to provide adequate protection against contamination of the water supply from any surface or subsurface sources;
- f.* Installed in a manner so that it is accessible for maintenance, repair, and removal.

**49.12(2) Lubrication.** Pump motor lubricant or coolant oil shall be United States Department of Agriculture- or United States Food and Drug Administration-approved food contact grade formulations.

**49.12(3) Other power pumps.** Other power pumps located over the well shall be mechanically joined to the casing or on a pump foundation or stand in such a manner as to effectively seal the top of the well. A sanitary seal shall be used where the pump is not located over the well, and the pump delivery or suction pipe emerges from the top.

**49.12(4) Hand pumps or similar devices.**

*a.* A hand pump, hand pump head, hand pump stand or similar device shall be constructed so that there are no openings into the interior of the pump or well casing where rain water, insects or vermin can enter. Hand pumps shall be provided with a casing vent as defined in 567—49.17(455B), and shall have a closed, downward-directed spout and a sealed pump rod packing assembly.

*b.* A hand pump shall be attached to a well casing by a sealed flange or other method approved by the administrative authority to adequately prevent the entrance of surface water, dirt, animals, insects, or other foreign matter. The flange shall not be less than 12 inches above a concrete slab or the ground surface.

*c.* Where a well casing functions as a hand pump cylinder wall, the plunger shall not be less than 25 feet below the ground surface. A casing wall weep hole is not permitted.

**567—49.13(455B) Drop pipe.**

**49.13(1) Discharge pipe.** Galvanized, black, or stainless steel drop pipe shall be minimum schedule 40 wall thickness. PVC drop pipe shall be minimum schedule 80 wall thickness. Schedule 80 machined PVC, brass, or stainless steel couplings shall be used with PVC pipe. Polyethylene drop pipe shall be minimum ASTM Standard PE3406 SDR9. Only brass or stainless steel fittings are permitted for use on polyethylene drop pipe. If polyethylene drop pipe is used, the outside diameter of the pump must be at least one inch smaller than the inside diameter of the well casing.

**49.13(2) Check valve.** For potable water installations, all pumps shall have a check valve within 20 feet of the pump for pump installations without drain-back aeration. For pump installations with drain-back aeration, the check valve shall be below the pitless adapter.

**567—49.14(455B) Pump wiring.** Pump wiring within the well shall be double-jacketed copper wire and shall meet the National Electrical Code specifications for wire sizing, unless the pump manufacturer requires a non-jacketed wire. Wire outside of the casing must meet, at a minimum, National Electrical Code specifications. Wire shall be secured to the drop pipe at a minimum of 20-foot intervals.

**567—49.15(455B) Pitless adapters and pitless units.**

**49.15(1) Pitless adapters and pitless units conforming to Pitless Adapter Standard—1997 (PAS-97)** as promulgated by the Water Systems Council are considered as complying with these rules. A copy of the standard is available for inspection at the Des Moines office of the department of natural resources records center or may be obtained for personal use from the Pitless Adapter Division, Water Systems Council, 1101 30th Street, NW, Suite 500, Washington, DC 20007.

**49.15(2)** No well casing shall be cut off or cut into below ground surface except to install a pitless well adapter below the frost level.

**49.15(3)** A pitless subsurface pipe connection to a well casing pipe shall be made with a weld-on, clamp-on, or bolt-on pitless adapter or weld-on or threaded pitless unit. Aboveground discharge pitless adapters with a drain-back into the well are prohibited on systems under continuous pressure.

**49.15(4)** If the pitless adapter is gasketed, the opening in the casing shall be sawed to the diameter recommended by the manufacturer with a hole saw and not cut with a torch. The pitless adapter used shall have the correct curvature to fit the diameter of the casing.

**567—49.16(455B) Well caps and seals.** A well cap shall be used on any well not protected by a wellhouse and must seal tightly against the casing to exclude surface water, dirt, insects or any foreign matter from entering the well. The well casing shall terminate at least one foot above the finished grade surface. A split-top sanitary seal may only be used on a well terminating within a wellhouse. Any openings in the cap or seal, such as for pump wiring, water depth measurement, or chemical feed, shall be properly grommeted or sealed, except properly screened and oriented vent openings. There shall be no openings through the well cap except for a factory installed vent, air line chemical feed, and power supply wiring, unless a proposal is submitted to and approved by the administrative authority. To be approved, the proposal must show that any entrance into the well cap is watertight and meets the following conditions: prevents surface water from entering the water supply, is secured in position, is removable with tools only, and is resistant to weathering and corrosion.

Well pump systems that are not under continuous pressure and have no pressure tank may discharge out of the top of the well if all connections are watertight welds or grommeted openings. Venting, heights and other cap requirements shall be met.

**567—49.17(455B) Vents.** A well cap used on a well that has a pitless adapter or pitless unit must have a screened vent hole, pointing downward, with not less than 24-mesh noncorrosive screen, and that is at least ½ inch in diameter. Vent openings shall terminate at least 12 inches above finished ground surface. Venting is required on all wells except Class 3 wells or flowing water wells.

**567—49.18(455B) Underground piping.** Underground piping from the well casing to the pressure tank shall be a minimum 100 psi pressure rating, NSF Standard 61, and meet ASTM standards for potable water.

**567—49.19(455B) Underground wiring.** Underground wiring from the well shall be enclosed in a watertight electrical conduit extending from the entrance of the conduit into the casing to a minimum of three feet below ground level, threaded into the well cap, or sealed into the cap or casing in a watertight manner. The internal passage of the conduit shall be sealed around the wire with a nonhardening, pliable sealing compound.

**567—49.20(455B) Sampling faucets.** In all pressure water systems, provision shall be made for collection of water samples directly from the well by installation of a sampling faucet before the pressure tank, and prior to encountering any water treatment equipment. The sampling faucet shall be installed at least 12 inches above the floor, have a downturned spout and be in an accessible location. All sample faucets shall be metal and have a smooth (nonthreaded) outlet.

**567—49.21(455B) Hydropneumatic (pressure) tanks.**

**49.21(1) Sizing.** The pressure tank shall have an effective water volume large enough to require the well pump to operate at least one minute between low-pressure activation and high-pressure shut off while no water is being used by the system. The minimum allowable pressure at the pressure tank shall be 30 psi.

**49.21(2) Constant pressure pump.** Constant pressure/variable speed pumps shall operate at a minimum pressure of 30 psi. Pressure tank size shall be according to manufacturer's recommendation.

**49.21(3) Pressure relief valve.** The tank shall have a pressure relief valve of a size based on the pump capacity if the pump is capable of developing pressure greater than the working pressure of any component of the system. The pressure relief valve shall be located prior to any shut-off valve on the distribution system side of the tank.

**49.21(4) Pressure gauge.** The pressure tank shall have a pressure gauge capable of reading at least 100 psi.

**49.21(5) Tank appurtenances.** If a non-bladder tank is used, it shall be equipped with a means of adding or venting air from the tank to maintain the proper air-water ratio.

**49.21(6) Tank location.** Buried pressure tanks shall not be permitted after July 1, 2009. If pressure tanks are not located in a residence or other heated structure, they should be housed in the following manner:

*a. Buried vault (frost pit).* The vault and vault opening shall be sized to allow ease of access for the installation and maintenance of necessary equipment. The vault shall be as watertight as possible. The outside of the vault should be completely tiled at the base and either drain to daylight or to a sump pit that is equipped with a sump pump. The trench should be backfilled with pea gravel to one foot above the tile. All wiring in the vault shall be in watertight conduit. No buried vault shall be allowed within a 100-year flood plain. Buried vaults are not recommended because of the hazard associated with confined space entry.

*b. Aboveground structure.* The structure and access opening shall be sized to allow the installation and maintenance of necessary equipment with a minimum of inconvenience. The structure shall be of an all-seasons design. It shall be insulated and heated to prevent freezing of the tank. If a poured concrete floor is provided, the top of the floor shall be at least four inches above the surrounding ground and be sloped to a drain or to the door to facilitate drainage of the room. It is recommended that the structure be located no closer than ten feet from the well. If the structure is located over the well, it must have a hinged roof or removable hatch over the well or have other provisions for pulling the well pump.

**567—49.22(455B) Electrical connections.** At a minimum, all electrical installation shall be performed and maintained in accordance with the current National Electrical Code. A certified pump installer may perform wiring from the pump to the electrical panel unless local ordinances require additional licensing.

**567—49.23(455B) Interconnections and cross connections.** No connection between a well or boring and another well, boring, water supply system, any chemical injection or contamination source is allowed unless the connection is:

1. Protected by an air gap;
2. Protected by a backflow prevention device; or
3. Between wells or borings that meet the construction standards of this chapter, are used for the same purpose, and have equivalent quality water supply.

**567—49.24(455B) Backflow prevention for chemical injection systems for nonpotable water wells.**

**49.24(1) Backflow protection for irrigation.** Where a chemical injection system is connected directly to a water well used for irrigation and that is not used as a potable water supply, a single-check spring-loaded backflow preventer shall be installed between the point of chemical injection on the pump discharge piping and the water well in accordance with the manufacturer's instructions. The check valve shall withstand a minimum hydraulic pressure of 150 psi without leaking. The backflow device shall be provided with the following:

- a.* Valving so that water can be drained from the system to prevent freezing.
- b.* A vacuum relief valve to prevent backsiphoning of chemicals into the well.
- c.* An automatic low-pressure drain at least  $\frac{3}{4}$  inches in diameter, positioned so that when draining occurs liquid will flow away from the well. The low-pressure drain shall be at least six inches above grade. The automatic low-pressure drain shall quickly drain the check valve body of water when operation of the water well pump is discontinued.
- d.* A watertight seal around the check valve.



e. An inspection port four inches in diameter to allow inspection of the operation of the check valve.

**49.24(2) Pump control interconnection.** The water well pump and the chemical injection pump shall be electrically connected so that, when the water well pump stops, the chemical pump will shut off automatically.

**567—49.25(455B) Filters and water treatment equipment.** Filters and water treatment equipment shall be installed and operated in accordance with manufacturers' directions.

**567—49.26(455B) Well disinfection.** All new, repaired or rehabilitated wells shall be pumped to waste until the water is free of drilling mud, drill cuttings and sand, and the water is clear. Wells and water systems shall be disinfected by the contractor following completion of construction and whenever any well services have been performed. A chlorine solution such as a sodium or calcium hypochlorite shall be used. Chlorine compounds used for well disinfection must meet NSF Standard 61 and have no additives.

**49.26(1)** The disinfectant shall be dispersed throughout the entire water column in the well. The disinfectant shall also be brought into contact with the inside of the well casing pipe above the static water level.

**49.26(2)** The disinfectant shall remain in the well for a minimum of 2 hours if a concentration of at least 100 mg/L chlorine is achieved, or a minimum of 24 hours if at least 50 mg/L is achieved.

**49.26(3)** For emergency situations, a contact time of a minimum of 30 minutes shall be provided at a chlorine concentration of at least 200 mg/L.

**49.26(4)** The amount of HTH or household bleach required for a chlorine concentration of 200 mg/L is given in the following table:

Table 49.26(4)

Amount of chlorine disinfectant required for every 25 feet of water in well

Well casing diameter (in inches)	4	6	8	12	18	24	30	36
Amount of pelleted HTH (in ounces containing approx. 70 percent $\text{Ca}(\text{OCl})_2$ )	0.7	1.5	2.6	5.6	13	23	36	52
Amount of chlorine bleach (in pints containing 5.25 percent $\text{NaOCl}$ )	0.5	1.2	2.1	4.7	10.6	18.8	29.3	42.2

**49.26(5)** Dry disinfectant shall be dissolved in a separate container of water before introduction into the well. The solution shall contain not more than eight ounces of pelleted HTH disinfectant per five gallons of water.

**567—49.27(455B) Water sampling and analysis.**

**49.27(1)** The owner of a new, reconstructed, or rehabilitated well shall be responsible for submitting a water sample to a certified laboratory for coliform bacteria and nitrate analysis. The water sample shall be collected at least 10 days and not more than 30 days after a well is put into service following the construction, reconstruction, or rehabilitation. The analysis results shall be submitted to the administrative authority.

**49.27(2)** If the water sample analysis detects presence of bacteria, the disinfection procedure described in rule 49.26(455B) shall be repeated.

**567—49.28(455B) Abandonment of wells.** Abandoned wells are a contamination hazard to the water bearing formation as well as a physical hazard for people.

**49.28(1) Plugging rules.** Abandoned wells shall be properly plugged as required in 567—Chapter 39.

**49.28(2) Waste disposal prohibition.** Under no circumstances shall abandoned wells be used for the disposal of debris, solid waste, septic tank sludge or effluents, or for any other type of unauthorized disposal of waste materials, or as a receptacle for field tile drainage.

**567—49.29(455B) Closed circuit vertical heat exchangers.** These provisions apply to closed circuit vertical heat exchanger construction.

**49.29(1)** Piping used must be 160 psi pressure-rated high-density polyethylene or polybutylene.

**49.29(2)** Connection to piping must use socket fusion or butt fusion joining methods.

**49.29(3)** Piping must be pressure-tested with air or potable water for 15 minutes at a pressure of 1.5 times the system operating pressure after installation in the borehole.

**49.29(4)** The annular space between the vertical heat exchanger piping and the borehole must be grouted as required in subrule 49.9(3) using an approved grouting method and material. Grout shall be placed at least in the top 40 feet. Any confining layers between aquifers shall be replaced with grout. Grouting must be performed within 24 hours of completion of the borehole.

**49.29(5)** Only food-grade or USP-grade propylene glycol or calcium chloride may be used as heat transfer fluid. Any other materials or additives must be NSF-approved for drinking water applications. A permanent sign must be attached to the heat pump specifying that only approved heat transfer fluids may be used.

**49.29(6)** A flow measurement device must be installed on each system.

**49.29(7)** Water make-up lines to the vertical heat exchanger must be protected with a backflow prevention device.

These rules are intended to implement Iowa Code chapter 455B.

[Filed 5/20/80, Notice 11/14/79—published 6/11/80, effective 10/1/80]<sup>1</sup>

[Filed emergency 2/20/81 after Notice 12/24/80—published 3/18/81, effective 2/28/81]

[Filed 11/19/82, Notice 7/7/82—published 12/8/82, effective 1/12/83]

[Filed emergency 6/3/83—published 6/22/83, effective 7/1/83]

[Filed 5/2/86, Notice 1/1/86—published 5/21/86, effective 6/25/86]

[Filed emergency 11/14/86—published 12/3/86, effective 12/3/86]

[Filed 4/29/88, Notice 1/13/88—published 5/18/88, effective 7/1/88]

[Filed 1/26/96, Notice 11/8/95—published 2/14/96, effective 3/20/96]

[Filed 3/19/98, Notice 11/19/97—published 4/8/98, effective 5/13/98]<sup>2</sup>

[Filed 7/1/04, Notice 3/17/04—published 7/21/04, effective 8/25/04]

<sup>1</sup> Effective date of Chapter 49 [Health Dept. Ch 45] delayed 70 days by the Administrative Rules Review Committee [Published 10/1/80]. Effective date of Chapter 49 [Health Dept. Ch 45] delayed by the Administrative Rules Review Committee 45 days after convening of the next General Assembly pursuant to §17A.8(9) [Published 11/26/80].

<sup>2</sup> Effective date of 49.9(1)“a” delayed 70 days by the Administrative Rules Review Committee at its meeting held May 12, 1998.



**455B.190 ABANDONED WELLS PROPERLY PLUGGED.**

1. As used in this section:
  - a. "Class 1 well" means a well one hundred feet or less in depth and eighteen inches or more in diameter.
  - b. "Class 2 well" means a well more than one hundred feet in depth or less than eighteen inches in diameter or a bedrock well.
  - c. "Class 3 well" means a sandpoint well or a well fifty feet or less in depth constructed by joining a screened drive point with lengths of pipe and driving the assembly into a shallow sand and gravel aquifer.
  - d. "Department" means the department of natural resources.
  - e. "Designated agent" means a person other than the state, designated by a county board of supervisors to review and confirm that a well has been properly plugged.
  - f. "Filling materials" means agricultural lime. Filling materials may also include other materials, including soil, sand, gravel, crushed stone, and pea gravel as approved by the department.
  - g. "Owner" means the titleholder of the land where a well is located.
  - h. "Plug" means the closure of an abandoned well with plugging materials which will permanently seal the well from contamination by surface drainage, or permanently seal off the well from contamination into an aquifer.
  - i. "Plugging materials" means filling and sealing materials.
  - j. "Sealing materials" means bentonite. Sealing materials may also include neat cement, sand cement grout, or concrete as approved by the department.
  - k. "Well" means an abandoned well as defined in section 455B.171.
2. All wells shall be properly plugged in accordance with the schedule established by the department. The department shall develop a prioritized closure program and a time frame for the completion of the program and shall adopt rules to implement the program. The schedule established by the department shall provide that to the fullest extent technically and economically feasible, all wells shall be properly plugged not later than July 1, 2000.
3. Wells shall be plugged as follows:
  - a. Class 1 wells shall be plugged by placing filling materials up to one foot below the static water level. At least one foot of sealing materials shall be placed on top of the filling materials up to the static water level, as a seal. Filling materials shall be added up to four feet below the ground surface. However, sealing materials may be used to fill the entire well up to four feet below the ground surface. The casing pipe shall be removed down to at least four feet below the ground surface and shall be capped with at least one foot of sealing materials. Obstructions shall be removed from the top four feet of the ground surface and the top four feet shall be backfilled with soil and graded.
  - b. Class 2 wells shall be plugged by placing filling materials at the bottom of the well up to four feet below the static water level. At least four feet of sealing material shall be added



on top of the filling material up to the original static water level. Filling materials shall be placed up to four feet below the ground surface and the well shall be capped with at least one foot of sealing material. However, sealing materials may be used to fill the entire well up to four feet below the ground surface. The upper four feet of the casing pipe below the ground surface shall be removed. The top four feet of the ground surface shall be removed of obstructions and backfilled with soil and graded.

c. Class 3 wells shall be plugged by pulling the casing and sandpoint out of the ground, and collapsing the hole. The well may also be plugged by placing sealing materials up to four feet below the ground surface and by removing the upper four feet of casing pipe below the ground surface. The top four feet of the ground surface shall be removed of obstructions and backfilled with soil and graded.

4. The department shall sponsor an advertising campaign directed to persons throughout the state by print and electronic media designed to notify owners of the deadline for plugging wells, penalties for noncompliance, and information about receiving assistance in plugging wells.

5. An owner may, independent of a contractor, plug a well pursuant to this section subject to review and confirmation by a designated agent of the county or a well driller registered with the department.

6. A person who fails to properly plug a well on property the person owns, in accordance with the program established by the department, or as reported by a designated agent or a registered or certified well contractor, is subject to a civil penalty of up to one hundred dollars per every five calendar days that the well remains unplugged or improperly plugged. However, the total civil penalty shall not exceed one thousand dollars. The penalty shall only be assessed after the one thousand dollar limit is reached. If the owner plugs the well in compliance with this section, including applicable departmental rules, before the date that the one thousand dollar limit is reached, the civil penalty shall not be assessed. The penalty shall not be imposed upon a person for improperly plugging a well until the department notifies the person of the improper plugging. The moneys collected shall be deposited in the financial incentive portion of the agriculture management account. The department of agriculture and land stewardship may provide by rule for financial incentive moneys, through expenditure of the moneys allocated to the financial-incentive-program portion of the agriculture management account, to reduce a person's cost in properly plugging wells abandoned prior to July 1, 1987.

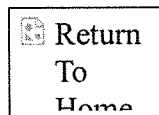
**Section History: Recent Form**

87 Acts, ch 225, § 305; 89 Acts, ch 286, § 1; 91 Acts, ch 224, §7  
Referred to in § 455B.183A, 558.69

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Previous Section [455B.189](#)    Next Section [455B.190A](#)

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CHAPTER 82  
WELL CONTRACTOR CERTIFICATION  
[Prior to 5/12/93, see also 567—Ch 37]

**567—82.1(455B) Definitions.** In addition to the definitions in Iowa Code sections 455B.171, 455B.190 and 455B.190A, which are hereby adopted by reference, the following definitions shall apply to this chapter:

*“Certified well contractor”* means a well contractor who has successfully passed an examination prescribed by the department to determine the applicant’s qualifications to perform well drilling or pump services or both.

*“Class 1 well”* means a well 100 feet or less in depth and 18 inches or more in diameter.

*“Class 2 well”* means a well more than 100 feet in depth or less than 18 inches in diameter or a bedrock well. Bedrock wells include:

1. Wells completed in a single confined aquifer;
2. Wells completed in a single unconfined aquifer; and
3. Wells completed in multiple aquifers.

*“Class 3 well”* means a sandpoint well 50 feet or less in depth and having a casing inside diameter of 2 inches or less constructed by joining a screened drive point with lengths of pipe and driving the assembly into a shallow sand and gravel aquifer.

*“Classification”* means one of three levels of well contractor certification, designated as certified well contractor, provisionally certified well contractor or well plugging contractor. All three are referred to as “certified well contractor” in the following rules unless specifically identified otherwise.

*“Continuing education unit (CEU)”* means ten contact hours of participation in an organized education experience under responsible sponsorship, capable direction, and qualified instruction.

*“Direct charge”* means the certified well contractor at the well site responsible for ensuring that the well services are performed as required in 567—Chapters 38, 39, 43, 49 and 110.

*“Director”* means the director of the department of natural resources or a designee.

*“Issuing agency”* means a professional, technical/educational organization authorized by the department to provide continuing education for certification renewal in accordance with the commitments and guidelines detailed in the written issuing agency agreement and procedures.

*“Pump installer”* means a person certified by the department to perform pump services.

*“Pump services”* means the installation, repair, and maintenance of water systems; modification of the upper terminus of a well; well plugging; well rehabilitation; or the construction of Class 3 wells.

*“Upper terminus”* means the upper ten feet of the well casing as measured from the finished surface grade.

*“Water systems”* means any part of the mechanical portion of a water well that delivers water from the well to a valve that separates the well from the plumbing system. “Water systems” includes the pump, drop pipe to the well, electrical wire from the pump to the first electrical panel or connection outside the casing, piping from the well to the pressure tank or first valve outside the casing, pitless unit or adapter, and all related miscellaneous fittings necessary to operate the pump. “Water systems” does not include any outside piping to other buildings and does not include the piping that carries the water in the remainder of the distribution system.

*“Water well”* means any excavation that is drilled, cored, bored, augered, washed, driven, dug, jetted, or otherwise constructed for the purpose of exploring for groundwater, monitoring groundwater, utilizing the geothermal properties of the ground, or extracting water from or injecting water into the aquifer. “Water well” does not include an open ditch or drain tiles or an excavation made for obtaining or prospecting for oil, natural gas, minerals, or products mined or quarried.

*“Well construction”* means constructing a water well and installing necessary casing, screen, liners, grout, seals, and other appurtenances.

*“Well driller”* means a person certified by the department to perform well drilling services.

*“Well drilling services”* means new well construction, well reconstruction, well rehabilitation, well repair, installation of pitless equipment, or well plugging.

“*Well plugging*” means the closure of an abandoned well with plugging materials by procedures which will permanently seal the well from contamination by surface drainage and permanently seal off the well from contamination into an aquifer. “*Well plugging*” involves the proper application of filling and sealing materials.

“*Well plugging contractor*” means a contractor certified to plug only Class 1 or Class 3 wells but not certified to abandon Class 2 wells or perform any other well services.

“*Well reconstruction*” means modifying the original construction of a well. “*Well reconstruction*” includes, but is not limited to, deepening the well, installing a liner, installing or replacing a screen with one of a different diameter or length, installing a pitless adapter, extending the casing, or hydrofracturing a well. Replacing a screen with one of identical diameter and length or replacing a pitless adapter is considered repair, not reconstruction.

“*Well rehabilitation*” means the physical or chemical cleaning of a well.

“*Well services*” means both well drilling services and pump services.

#### **567—82.2(455B) General.**

**82.2(1) *Certified well contractor requirement.*** All well services shall be performed by a certified well contractor pursuant to this chapter, except that a person may perform well services on the person’s own property without being certified. A certified well contractor shall notify the department or the county prior to performing well drilling services for a well that does not have the required construction permits. A certified well contractor shall notify the department prior to drilling a well if the use of the water requires a water use allocation and the owner has not applied for or been issued a water use allocation.

**82.2(2) *Certified well contractor present.*** A certified well contractor shall be present at the well site and in direct charge of the well services being performed or provided.

**82.2(3) *Applicability exception.*** These rules shall not apply to a water operator certified pursuant to Iowa Code section 455B.213, when the water operator is performing pump services on any well owned by a public water supply system as defined in Iowa Code section 455B.171. These rules shall not apply to a wastewater operator certified pursuant to Iowa Code section 455B.213, when the wastewater operator is performing pump services on a groundwater monitoring well, groundwater dewatering well, or other well not used to provide drinking water, owned by a sewer system as defined in Iowa Code section 455B.171. Pump installer certification requirements shall not apply to monitoring wells.

**82.2(4) *Change of address.*** Any certified well contractor who possesses a certificate must report to the department a change in address within 30 days after the change.

#### **567—82.3(455B) Classification of well contractors.**

**82.3(1) *Classifications.*** There shall be three classifications of certified well contractors:

- a. Certified well contractor.
  - (1) Well driller.
  - (2) Pump installer.
- b. Provisionally certified well contractor.
  - (1) Well driller.
  - (2) Pump installer.
- c. Well plugging contractor.

**82.3(2) *Certified well contractor.*** In order to be certified as a certified well contractor, an applicant shall have met the experience requirements, successfully completed the well contractor examination for well drilling services or pump services or both, been issued a certificate by the department, and renewed the certification in accordance with rules 82.10(455B) and 82.11(455B).

**82.3(3) *Provisionally certified well contractor.*** A provisionally certified well contractor does not meet all the experience requirements for a certified well contractor. In order to be a provisionally certified well contractor, an applicant shall:

- a. Sign a statement on the application form that there is a shortage of certified well contractors;

b. Complete and submit an application documenting at least one half of the work experience required for full certification in well services performed under the direct supervision of a certified well contractor;

c. Include on the application a signature of a certified well contractor who employs the applicant for provisional certification. By signing the application, the certified well contractor certifies to be jointly liable for any violation of the rules regarding well services provided by the provisionally certified well contractor and that the violation is grounds for suspension or revocation of the certification of the certified well contractor and the provisionally certified well contractor; and

d. Successfully complete, with a passing score, the well contractor certification examination for well drilling services or pump services or both.

**82.3(4) *Change from provisionally certified well contractor to certified well contractor.*** The provisionally certified well contractor shall become a certified well contractor after the submission of an application showing all requirements for certification have been met and submission of appropriate fees to the department. The certificate for a provisionally certified well contractor will be issued for one year. The department will issue a certified well contractor certificate after the one-year period and the receipt of appropriate fees.

**82.3(5) *Well plugging contractor.*** In order to be certified as a well plugging contractor, an applicant shall take a four-hour training course designated by the department, successfully complete a well plugging test, be issued a certificate by the department, and renew the certification in accordance with rules 82.10(455B) and 82.11(455B).

**567—82.4 and 82.5** Reserved.

**567—82.6(455B) Experience requirements.**

**82.6(1)** All applicants shall meet the experience requirements as shown below. Educational programming approved by the department may be substituted for up to one half of any experience requirement at the rate of one CEU for each 100 hours of required experience.

CLASSIFICATION	EXPERIENCE
Certified Well Contractor (well driller)	Two years' employment and 2000 hours work experience in Class 1 and Class 2 well construction
Certified Well Contractor (pump installer)	Two years' employment and 1000 hours work experience in the installation, repair, and maintenance of water systems
Provisionally Certified Well Contractor	One half of the employment and experience required for full certification
Well Plugging Contractor	None

**82.6(2)** Applicable experience review committee. The department may appoint a peer review committee to help evaluate relevant well services work experience submitted by applicants for certification. The committee should consist of three members recommended by the Iowa Water Well Association, two members recommended by the Iowa Environmental Health Association, one member recommended by the Iowa Groundwater Association and one member recommended by the Iowa Environmental Council. Committee recommendations shall be considered by the department, which shall make the final determination of eligibility.

**567—82.7(455B) Certification and examination fees.** The following fees are nonrefundable except as noted in 82.8(4).

**82.7(1) *Examination fee.*** The examination fee for each examination shall be \$50.

**82.7(2) *Oral examination fee.*** The oral examination fee for each oral examination shall be \$100.

**82.7(3) *Certification fees.*** The certification fee for well drilling contractors shall be \$75 for each one-half year of a two-year period from the date of issuance to June 30 of the next even-numbered year.



The certification fee for pump installation contractors and well plugging contractors shall be \$75 for each one-half year of the first year of certification and \$50 for each additional one-half year period to June 30 of the next even-numbered year.

**82.7(4) Provisionally certified well contractor fee.** The provisionally certified well contractor fee shall be \$150.

**82.7(5) Penalty fee.** The penalty fee shall be \$100 for each 30 days in delinquency. The penalty fee is for late payment of the initial certification fee or renewal fee.

**82.7(6) Certification renewal fees.** The certification renewal fee for certified well drilling contractors shall be \$300 for the two-year period. The certification renewal fee for pump installers and well plugging contractors shall be \$200 for the two-year period.

**82.7(7) Duplicate certificate fee.** A currently certified well contractor may obtain a duplicate certificate upon payment of a \$20 fee.

**82.7(8) Recertification fee.** Contractors who have not earned sufficient CEUs for certification renewal and who wish to recertify within two years after expiration of their certification must retake and pass the written examination and pay a certification fee of \$1000.

#### **567—82.8(455B) Examinations.**

**82.8(1) Type of examination.** There will be four examinations available:

- a. A general fundamentals examination for well drilling and pump installation contractors.
- b. An examination for well drillers.
- c. An examination for pump installers.
- d. An examination for well plugging contractors.

**82.8(2) Required examinations.** Well drilling contractors and pump installers must take and pass the general fundamentals examination and at least one of the specialty examinations. Examinations may be taken at the same time and place or at different times. Work shall be limited to the specialty in which proficiency has been demonstrated by written examination. Well plugging contractors must take and pass the well plugging examination only.

**82.8(3) Examination application.** A person wishing to take the examination required to become a certified well contractor shall complete the Well Contractor Certification Examination Application, Form 43970. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate educational background, training and past experience in providing well services. The completed application and the application fee shall be sent to the director and addressed to the Iowa Department of Natural Resources, Well Contractor Certification, 401 SW 7th Street, Suite M, Des Moines, Iowa 50309. Application for examination must be received by the department at least 60 days prior to the date of the examination.

The department may allow local county environmental health officials to take the written examination, even though they do not meet the work experience or training requirements, provided they pay the examination fee. If the officials receive a passing score on the examination, they will receive a letter of acknowledgement; however, they will not be certified and will not be allowed to perform any well services.

**82.8(4) Application evaluation.** The director may designate department personnel and the experience review committee to evaluate all applications for examination.

**82.8(5) Application expiration.** A properly completed application for the examinations will be valid for one year from the date the application is approved by the department. All required examinations must be completed within one year of application.

**82.8(6) Refund of examination application fee.** The department may refund a portion of the examination application or reexamination application fee for an applicant who does not qualify for examination within one year of making the application. If the applicant will qualify for a scheduled examination within one year, the applicant will be notified when the examination may be taken and the fee will not be refunded.

**82.8(7) Reexamination.** Upon failure of the first examination, the applicant may be reexamined at the next scheduled examination. Upon failure of the second examination, the applicant shall be required to wait a period of 180 days between each subsequent reexamination.

**82.8(8) Reexamination fee.** Upon each reexamination while a valid application is on file, the applicant shall submit to the department the examination fee at least ten days prior to the date of examination.

**82.8(9) Application invalidation.** Failure to successfully complete the necessary examinations within one year from the date of approval of the application shall invalidate the application.

**82.8(10) Retention of completed examinations.** Completed examinations shall be retained by the director for a period of one year, after which they may be destroyed.

**82.8(11) Oral examination.** Upon written request by an applicant for well contractor certification, the director will consider the administration of an oral examination on an individual basis when: the applicant has failed the written examination at least twice; the applicant has shown difficulty in reading or understanding written questions but may be able to respond to oral questioning; the applicant is capable of communicating in writing with regard to departmental requirements and inquiries; and the director has received a written recommendation for an oral examination from a department staff member attesting to the operational and performance capabilities of the applicant. The director shall designate department personnel to administer the appropriate examinations as defined in 82.8(1).

**82.8(12) Reasonable accommodation.** Upon request for certification by an applicant, the director will consider on an individual basis reasonable accommodation to allow administration of the examinations without discrimination on the basis of disability. The applicant shall request the accommodation 30 days prior to the date of the examination. The applicant must provide documentation of eligibility for the accommodation. Documentation shall be submitted with the completed examination application. Accommodations based on documentation may include site accessibility, oral examination, extended time, separate testing area, or other concerns. If a reasonable accommodation is considered to be an oral examination, the oral examination fee shall apply.

**567—82.9(455B) Certification by examination.**

**82.9(1) Examination requirement.** All applicants for certification shall successfully complete and pass the relevant examinations prior to receiving certification.

**82.9(2) Certification by registration without testing.** A well contractor who is engaged in performing pump services on or prior to June 30, 2004, and who registers as a pump installer with the department by June 30, 2004, shall be deemed to have met the certification requirements of this chapter without examination. The experience requirement will apply. Beginning July 1, 2004, a pump installer seeking an initial well contractor certification shall meet the testing requirements for certification established in this chapter.

**82.9(3) Certification application time line.** Application for certification must be received by the department within 30 days after the date the applicant receives notification of having passed the examinations. All applications for certification shall be made on a form provided by the department and shall be accompanied by the certification fee.

**82.9(4) Late certification application.** Applications for certification by examination which are received more than 30 days but less than 60 days after the applicant has received notification of having passed the examination shall be accompanied by the certification fee and the penalty fee. Applicants who do not apply for certification within 60 days' notice of having passed the examination will not be certified on the basis of that examination.

**82.9(5) Denial appeal.** Applicants may appeal a denial of certification within 30 days of receiving written notification, pursuant to 567—Chapter 7.

**567—82.10(455B) Certification renewal.**

**82.10(1) Renewal period.** All certificates shall expire on June 30 of even-numbered years and must be renewed every two years in order to maintain certification.

**82.10(2) Application for renewal.** Application for renewal will be mailed to all certified well contractors 60 days prior to the expiration date of their certificates. Application for renewal must be made in accordance with this rule and the instructions on the form in order for the applicant to renew the certificate for the next two-year period. Application for renewal of a certificate without penalty must be received by the director or postmarked prior to the expiration of the certificate, and shall be accompanied by the certification renewal fee.

**82.10(3) Late application.** Late application for renewal of a certificate may be made provided that such late application shall be received by the director or postmarked within 60 days of the expiration of the certificate on forms provided by the department. Such late application shall be accompanied by the penalty fee and the certification renewal fee.

**82.10(4) Failure to renew.** If a certificate holder fails to renew within 60 days following expiration of the certificate, the right to renew the certificate automatically terminates. Certification may be allowed at any time following such termination provided that the applicant passes the appropriate examinations. The applicant must then apply for certification in accordance with subrule 82.7(8) and rule 82.9(455B).

**82.10(5) Expired certificate.** A certified well contractor may not continue to provide well services after expiration of a certificate without renewal thereof.

**567—82.11(455B) Continuing education.**

**82.11(1) CEU requirements.** Continuing education must be earned during two-year periods between April 1 and March 31 of even-numbered years. A certified well contractor holding well driller certification or both well driller and pump installer certifications must earn 1.6 units or 16 contact hours during each two-year period. A certified well contractor holding only pump installer certification must earn 1.0 units or 10 contact hours during each two-year period. A well plugging contractor may be required to earn 0.2 units or 2 contact hours during each two-year period as determined by the department, provided the well plugging contractor is notified of the requirement at the beginning of the renewal period. Newly certified (previously uncertified) well contractors who are certified after April 1 of even-numbered years will not be required to earn CEUs until the next two-year period.

**82.11(2) Certificate renewal.** Only those certified well contractors fulfilling the continuing education requirements before the end of each two-year period (March 31) will be allowed to renew their certificates. The certificates of certified well contractors not fulfilling the continuing education requirements shall expire on June 30 of every even-numbered year.

**82.11(3) CEU approval.** All activities for which continuing education credit will be granted must be approved by an accredited college or university, an issuing agency, or by the department, and shall be related to well services, relevant aspects of Iowa groundwater law, well construction, well maintenance, well abandonment practices, well contractor safety (no more than 0.2 CEU per renewal), water system maintenance, and Iowa hydrogeologic conditions which protect groundwater and water supplies.

**82.11(4) CEU extensions.** The director may, in individual cases involving hardship or extenuating circumstances, grant an extension of time of up to six months within which to fulfill the minimum continuing education requirements. Hardship or extenuating circumstances include documented health-related confinement or other circumstances beyond the control of the certified well contractor which prevent attendance at the required activities. All requests for extensions must be made prior to March 31 of each even-numbered year.

**82.11(5) CEU reporting.** It is the certified well contractor's personal responsibility to maintain a written record and to notify the department of the continuing education credit earned during the period. The continuing education credits earned during the period shall be shown on the application for renewal.

**82.11(6) Alternative CEU requirements.** A certified well contractor shall be deemed to have complied with the continuing education requirements of this rule during periods that the certified well contractor serves honorably on active duty in the military services, or for periods that the person is a government employee working as a well contractor and assigned to duty outside of the United States, or for other periods of active practice and absence from the state approved by the director.

**567—82.12(455B) Certified well contractor obligations.**

**82.12(1) Submission of records and samples.** Each certified well contractor shall submit drilling records and drill cutting samples, when required, to the Iowa Geological Survey, Department of Natural Resources, Oakdale Campus, University of Iowa, Iowa City, Iowa 52242, telephone (319)338-1575, or as otherwise directed by the department, as follows:

*a.* Within 30 days of completion of any water well used as part of a public water supply, a well used for withdrawal of water for which a permit is required by rule 567—50.1(455B), or wells used to monitor groundwater quantity or quality required by the department if so directed by the Iowa geological survey (IGS), department of natural resources. The certified well contractor must submit the drilling records and samples required by subrules 82.12(2) and 82.12(3).

*b.* Within 30 days of the completion of any water well used as part of a nonpublic water supply or other water wells used to access groundwater. The certified well contractor must submit the drilling records and samples required by subrules 82.12(2) and 82.12(3).

*c.* Prior to constructing a water well to be used as part of a nonpublic water supply or other water well used to access groundwater, the certified well contractor must contact the local health department in the county in which the water well is to be located to determine if submittal of drill cutting samples is required.

**82.12(2) Drilling records.** Drilling records must be submitted on the water well driller's log form provided by the Iowa geological survey, department of natural resources.

**82.12(3) Water well log.** The water well driller's log shall include the following:

- a.* Location and legal description (quarter section, section number, township, range and county).
- b.* Reference point for all depth measurements.
- c.* Depth at which each significant change of formation occurs.
- d.* Depth at which pump is set, the nonpumping and pumping water levels in the well measured from the land surface, and the rate and duration the well was pumped.
- e.* Identification of the material of which each significant stratum is composed.
- f.* Depth at which hole diameters (bit sizes) change.
- g.* Normal hole diameter of the well bore.
- h.* Total depth of the completed hole.
- i.* Depth or location of any lost drilling fluids, drilling materials, or tools.
- j.* Casing depth, grouting schedule, including materials used and method of placement, and description of the well casing and liner pipe.
- k.* Description of well screens including diameter, length, material slot sizes, amount of open area, and location in well.
- l.* Description of physical and chemical well development activities.

**82.12(4) Cutting samples.** Drill cutting samples shall be collected at intervals of 5 feet and at each pronounced change in geological formation. The Iowa geological survey, department of natural resources, will provide drill cutting bags.

**82.12(5) Test pumping.** Certified well contractors shall provide the requested test pumping data for water wells used as part of a public water supply pursuant to 567—subrule 41.12(2) and for water wells utilized as part of a regulated water use pursuant to 567—subrule 50.6(1).

**567—82.13(455B) Disciplinary actions.**

**82.13(1) Reasons for disciplinary action.** Disciplinary action may be taken against a certified well contractor or well plugging contractor on any of the grounds specified in Iowa Code section 455B.190A and the following more specific grounds: (Iowa Code section 455B.109 authorizes the assessment of administrative penalties for violations of Iowa Code chapter 455B or rules, permits, and orders promulgated or issued pursuant to Iowa Code chapter 455B. The department will follow the provisions of 567—Chapter 10 for assessing such penalties.)

*a.* Knowingly making any false statement, representation, or certification on any application, record, report or document required to be maintained or submitted under any applicable permit or rule of the department.



- b. Failure to renew certification.
- c. Failure to obtain required continuing education units.
- d. Failure to submit, within the time required, drill cutting samples, records or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.
- e. Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified well contractor or well plugging contractor.
- f. Violation of well construction, plugging or pump installation standards or other requirements contained in 567—Chapters 38, 39, 43, 49 and 110.
- g. Failure to advise a person for whom well services are being provided that a hazardous or potentially hazardous condition, as defined in Iowa Code section 455B.381(2), has been encountered.
- h. Knowingly causing or allowing a hazardous or potentially hazardous condition due to well construction to exist.
- i. Drilling or reconstructing a well without a construction permit.

**82.13(2)** Disciplinary sanctions allowable are:

- a. *Revocation of a certificate.* Revocation of a certificate may be permanent without chance of recertification or it may be for a specified period of time.
- b. *Partial revocation or suspension.* Revocation or suspension of the practice of a particular aspect of the contractor's responsibility.
- c. *Probation.* Probation under specified conditions relevant to the specific grounds for disciplinary action. Additional education or training or reexamination may be required as a condition of probation. Reexamination may include written and oral examinations.
- d. *Fees.* The department shall determine which fees in rule 82.7(455B) apply.

**82.13(3)** Procedure.

- a. The director shall initiate disciplinary action. The director may investigate any alleged factual situation that may be grounds for disciplinary action under subrule 82.13(1) and report the results of the investigation to the commission.
- b. The director may issue an administrative order that may assess a penalty or refer a case to the attorney general for prosecution for any disciplinary action.
- c. Written notice by certified mail shall be provided to a certified well or well plugging contractor against whom disciplinary action is being considered. The certified well or well plugging contractor will be given 20 days' advance notice that an informal hearing has been scheduled before the commission. The notice will provide the specific date, time, and place, at which time the commission will hold the informal hearing to determine whether a formal hearing is warranted or whether informal resolution can be reached. The certified well or well plugging contractor may present any relevant facts and indicate the certified well or well plugging contractor's position in the matter.
- d. A certified well or well plugging contractor who receives notice of an informal hearing shall communicate orally or in writing with the director, and efforts shall be made to clarify the respective positions of the certified well or well plugging contractor and the director. The staff may present a recommendation concerning disciplinary sanctions to the commission at the informal hearing.
- e. Failure to attend the informal hearing or otherwise to communicate facts and position relevant to the matter by the scheduled date will be considered by the commission when determining whether a formal hearing is warranted.
- f. If agreement as to appropriate disciplinary sanction, if any, can be reached with the certified well or well plugging contractor and the commission concurs, a written stipulation and settlement between the department and the certified well or well plugging contractor shall be entered. The stipulation and settlement shall recite the basic facts and violations alleged, any facts presented by the certified well or well plugging contractor and the reasons for the particular sanctions imposed.
- g. If the commission determines that no disciplinary action is warranted on the facts asserted, the certified well or well plugging contractor shall be notified of the decision in writing.

*h.* If the commission determines that an opportunity for formal hearing is required to impose any disciplinary sanction specified in subrule 82.13(2), the director shall proceed in accordance with 567—Chapter 7.

**567—82.14(455B,272C) Revocation of certificates.** Upon revocation of a certificate in accordance with the authority provided in Iowa Code section 455B.190A, application for certification may be allowed after two years from the date of revocation. Any such applicant must pass an examination and be certified in the same manner as other applicants. The department may require the applicant to take and pass a written and oral examination in order to become recertified. The department will decide which fees in rule 82.7(455B) will apply.

These rules are intended to implement Iowa Code sections 455B.187 and 455B.190A.

[Filed 11/20/92, Notice 9/16/92—published 12/9/92, effective 1/13/93]<sup>1</sup>

[Filed emergency 3/26/93—published 4/14/93, effective 3/26/93]

[Filed 10/25/02, Notice 5/15/02—published 11/13/02, effective 12/18/02]

[Filed 7/1/04, Notice 3/17/04—published 7/21/04, effective 8/25/04]

<sup>1</sup> Effective date of 567—82.1(455B), 82.2(2), 82.3(455B), and 82.6(455B) (published 12/9/92 IAB) delayed until adjournment of the 1993 General Assembly by the Administrative Rules Review Committee at its meeting held January 5, 1993.



CHAPTER 24  
PRIVATE WELL TESTING, RECONSTRUCTION, AND  
PLUGGING—GRANTS TO COUNTIES

[Prior to 3/29/06, see 567—Ch 47]

**641—24.1(135) Applicability.** These rules apply to administration of the grants to counties program by the department in accordance with Iowa Code sections 135.11(29) and 455E.11, subsection 2, paragraph “b,” subparagraph (3), subdivision (b), for the purpose of testing private water wells, reconstructing private water wells, and the proper plugging of abandoned private water wells (including cisterns that present a contamination risk to groundwater), within the jurisdiction of each county board of health.

**641—24.2(135) Definitions.**

“*Abandoned private water well*” means a private water well which is no longer in use or which is in such a state of disrepair that continued use for the purpose of accessing groundwater is unsafe or impractical.

“*Administrative authority*” means the county board of health or the county board of health’s designee.

“*Administrative expenses*” means salary, transportation and other associated costs for conducting the private well testing, reconstruction, and plugging program.

“*Certified laboratory*” means a laboratory certified by the Iowa department of natural resources in accordance with 567 IAC 83.1(3) “a.”

“*Cistern*” means an artificial reservoir or tank constructed underground in which rainwater or private well water is stored.

“*County board of health*” means the board of health of a county as established in accordance with Iowa Code chapter 137.

“*Department*” means the Iowa department of public health.

“*Plugging*” means the closure of an abandoned well with plugging materials by procedures which will permanently seal the well from contamination by surface drainage and permanently seal off the well from contamination into an aquifer. “Well plugging” includes the proper application of filling and sealing materials.

“*Private water well*” means any excavation that is drilled, cored, driven, dug, bored, augered, jetted, washed or otherwise constructed for the purpose of supplying water for human consumption which has fewer than 15 service connections and regularly serves fewer than 25 individuals daily at least 60 days out of the year and agricultural use wells.

“*Reconstruction*” means modification of the original construction of a well. “Reconstruction” includes, but is not limited to, deepening the well, installing a liner, installing or replacing a screen with one of a different diameter or length, installing a pitless adapter, extending the casing, or hydrofracturing a well. Replacing a screen with one of identical diameter and length or replacing a pitless adapter is considered repair, not reconstruction.

“*Total funds available*” means the sum of the pesticide/fertilizer taxes allocated within Iowa Code section 455E.11(2) “b” (agricultural management account), within a specific state fiscal year, plus any carryover funds remaining from the previous fiscal year, which are returned to the section 455E.11(2) “b” (agricultural management account) grants to counties fund.

**641—24.3(135) Eligibility.** Grant applications must be submitted by a county board of health. Only counties which have adopted standards for private water supply and private sewage disposal facilities (on-site wastewater treatment systems) at least as stringent as and consistent with 567 IAC 49 and 567 IAC 69 and demonstrate an effort to enforce such standards will be eligible to receive grant funds. A county is eligible to submit only one application, either as an individual applicant or as a member of a multicounty application.



**641—24.4(135) Goal and objectives.**

**24.4(1)** The goal of the program is to protect groundwater quality by providing assistance in testing all private water supply wells and to use the test information to improve the quality of water in these supplies; to assist in reconstructing eligible private wells; and to assist in plugging all abandoned private water wells (including cisterns that present a contamination risk to groundwater).

**24.4(2)** During each fiscal year, the amount granted each eligible applicant shall be the total funds available as defined in Iowa Code section 455E.11 divided by the number of eligible counties applying.

**24.4(3)** Specific program objectives for each county.

*a.* The specific objectives of the well testing program are:

(1) To provide for regular and periodic testing of private water supply wells using proper sampling, handling and analytical techniques.

(2) To provide for timely responses and corrective action in instances of contamination of private water supply wells.

(3) To establish a reliable and accurate database of information on the location and construction of private water supply wells and water quality of private water supply wells.

*b.* The specific objectives of the well reconstruction program are:

(1) To identify all private wells eligible for reconstruction cost assistance and to administer private well reconstruction programs.

(2) To ensure the proper reconstruction of all eligible private wells.

(3) To provide cost-sharing grants to owners to assist in the costs of properly reconstructing private wells.

*c.* The specific objectives of the abandoned private water well plugging program are:

(1) To identify all abandoned private water wells and administer abandoned private water well plugging programs.

(2) To develop abandoned private water well plugging plans in accordance with administrative rules relating to the priority order and the proper plugging of abandoned wells (including cisterns that present a contamination risk to groundwater).

(3) To ensure the proper plugging of all abandoned private water wells (including cisterns that present a contamination risk to groundwater).

(4) To provide cost-sharing grants to owners to assist in the costs of properly plugging abandoned private water wells (including cisterns that present a contamination risk to groundwater).

**641—24.5(135) Eligible grant costs.** The following are annual eligible costs for which the department will reimburse participating counties:

**24.5(1)** Up to \$500 for private water well-related training expenses, including registration, mileage, and per diem for employees attending department-approved trainings. Training approval is granted to water well-related training sponsored by the department, Iowa Water Well Association, Iowa department of natural resources, and the Iowa Ground Water Association. Other trainings must receive approval of the department prior to submitting a voucher for expenses.

**24.5(2)** Up to \$250 for equipment expenses related to the grants to counties program. Eligible equipment includes, but is not limited to, Global Positioning System (GPS) units, private water well data software, inspection equipment, cameras, and sampling equipment.

**24.5(3)** Up to \$250 for advertising and promotional expenses to educate county residents about the availability of funds for private water well testing, abandoned well plugging, and private water well reconstruction.

**24.5(4)** \$75 will be paid for each private water well test conducted under the program, including \$45 for administrative expenses. At a minimum, well sampling shall include analyses for total nitrate (including nitrite) and total coliform bacteria.

**24.5(5)** \$475 will be paid for each abandoned private water well plugging conducted in accordance with 567 IAC 39, including \$75 for administrative expenses. Private water well plugging must be conducted by a certified individual as defined in 567 IAC 82 or by the well owner under direct supervision by the county.

**24.5(6)** \$375 will be paid for each cistern plugging but only for those cisterns deemed by the administrative authority to impact groundwater, including \$75 for administrative expenses. Cistern plugging must be conducted by a certified individual as defined in 567 IAC 82 or by the well owner under direct supervision by the county.

**24.5(7)** Up to \$600 in reconstruction costs plus 33 percent of actual reconstruction costs for administrative purposes will be paid for each private water well reconstruction. Grant funds may be used to conduct reconstruction intended to preclude contamination due to surface water intrusion by coliform or other infectious bacteria. Examples include repairs of casing, well caps, or pitless adapters, and elimination of well pits.

**641—24.6(135) Ineligible grant costs.** Grant funds shall not be used for the following:

**24.6(1)** Conducting environmental health programs other than those related to the private well testing, reconstruction, and plugging program.

**24.6(2)** Conducting activities outlined in rule 24.5(135) prior to or after the grant period specified.

**24.6(3)** Analytical services performed by other than a certified laboratory.

**24.6(4)** Sampling and analytical costs for testing public water supply wells.

**24.6(5)** Cost of laboratory analytical equipment.

**24.6(6)** Sampling and analytical costs for testing of wells other than private water supply wells.

**24.6(7)** Sampling and analytical costs for testing of parameters which have not had either a maximum contaminant level or an Environmental Protection Agency (EPA) health advisory level established.

**24.6(8)** Reconstructing a well which does not meet separation distances as established in 567 IAC 49. Grant moneys cannot be used for reconstruction of a well which, in the judgment of the administrative authority, will remain a hazard to groundwater quality.

**641—24.7(135) Performance requirements.** The following minimum standards must be met by all grantees:

**24.7(1) Sample collection.** Private water supply well samples are to be collected using proper sample collection and handling techniques as specified by the department. Samples shall be collected by a qualified staff person pursuant to 24.7(3) who is employed by or under contract with the local board of health.

**24.7(2) Background information.** For each well tested, reconstructed, or plugged, all appropriate information must be verified by a qualified staff person pursuant to 24.7(3) who is employed by or under contract with the local board of health and must be entered into the private well tracking system (PWTS) managed by the Iowa department of natural resources. Information shall include at a minimum:

*a.* The name and address of the private water well owner or abandoned private water well owner.

*b.* Private water well or abandoned private water well location to the quarter, quarter, quarter section or latitude and longitude coordinates.

*c.* Records of dates for reconstructing private water wells or plugging abandoned private water wells (including cisterns).

*d.* The name and the license number of the water well contractor conducting the private water well reconstruction or the abandoned private water well plugging.

**24.7(3) Qualified staff.** Staff performing services under this agreement shall complete a minimum of 12 hours of continuing education every year as approved by the Iowa Environmental Health Association Environmental Health Registry Program.

**24.7(4) Laboratory analyses.** All analyses must be performed by a laboratory certified by the department of natural resources in accordance with 567 IAC 83.1(3) "a" and shall conform with the following:

*a.* The total coliform bacteria analyses must be performed using an EPA-approved reference method suitable for producing accurate results considering the conditions of the water being tested.

*b.* Copies of test results must be retained by the grantee and be provided to the owner and user and to the board of health of the county in which the well is located. Copies of the test results will be provided to the department upon request.

**24.7(5) Follow-up.** The grantee will be responsible for follow-up and response to requests from the well owner or well user for assistance relative to well test results, the well testing program, and satisfactory well construction and location.

**24.7(6) Adopted standards.** All counties participating in the program must have adopted standards for private water supplies and private sewage disposal facilities which are at least as stringent as and consistent with the standards adopted by the commission in 567 IAC 49 for nonpublic water wells and 567 IAC 69 for on-site wastewater treatment and disposal systems.

**24.7(7) Quarterly reports.** All counties participating in the program shall submit quarterly reports to claim expenses incurred under this program on a claim voucher provided by the department.

**24.7(8) Workplan.** A detailed workplan including, but not limited to, the following:

- a. The names and qualifications of personnel responsible for carrying out the program.
- b. The name and address of the certified laboratory(ies) which will be providing analytical services.
- c. A description of any proposed environmental health and public information programs related to the private well testing, abandoned well plugging, or private well reconstruction programs.
- d. Methods to be used by the applicant for selecting private water wells for testing, abandoned private water wells for plugging, or private water wells for reconstruction.
- e. The duties to be performed by any subcontractor for any part of the grant.
- f. A description of the follow-up activities to be performed by staff in responding to test results.
- g. A record-keeping and reporting policy.
- h. Methods of notifying participating well owners.

**641—24.8(135) Contents of grant application.** The application shall include:

**24.8(1)** The name, address, and telephone number of the chairperson of the county board of health. For applications representing more than one county, the applicant is the chairperson of the county board of health of the lead county responsible for administering the grant.

**24.8(2)** The name of each county represented in the grant application.

**24.8(3)** Upon request from the department, a copy of the adopted standards outlined in subrule 24.7(6) for each county represented in the application.

**24.8(4)** For multicounty applications, signed Iowa Code chapter 28E agreements between each participating county and the applicant.

**24.8(5)** If applicable, an identification of any subcontractor who will participate in the private water well testing, abandoned private water well plugging program, or private water well reconstruction program, including mailing address and telephone number.

**641—24.9(135) Grant application submission.**

**24.9(1) Application form.** Participating counties shall complete an application form provided by the department.

**24.9(2) Submission.** The department will notify each county board of health at least 60 days prior to the grant application due date. Completed applications must be received by the Iowa Department of Public Health, Division of Environmental Health, 321 E. 12th Street, Des Moines, Iowa 50319, by the close of business on the application due date. Applications not received by the application due date will be considered ineligible to receive funding during the appropriate fiscal year.

**641—24.10(135) Multicounty grant applications.** Two or more counties may join together to apply for a grant. However, for the purposes of multicounty grant programs, the department will accept only one application from the counties involved. The application shall identify the lead county responsible for administering the grant. For multicounty programs, the department will make one grant to the lead county and not to each individual participating county. However, each county represented in the grant application will receive an equal distribution of dollars.

**641—24.11(135) Grant period.** Grants will be awarded to successful applicants on an annual basis concurrent with the state fiscal year beginning on July 1 and ending on June 30 of the following calendar year.

**641—24.12(135) Record keeping and retention.** A grantee shall retain all records and supporting documents related to the administration of the grant for a period of three years. Representatives of the state auditor's office and the department or the department's designee shall have access to all files, accounts and documents pertaining to the grant.

**641—24.13(135) Grant amendments.** Grant agreements which have been approved may be amended, if funds are available, to increase or decrease the program scope or to increase or decrease the program costs.

**641—24.14(135) Termination or forfeiture of grant funds.**

**24.14(1)** The grant will be forfeited if the grant was obtained by fraud or misrepresentation regardless of whether grant moneys have already been given to the grantee. Any grant moneys received or spent shall be repaid to the department.

**24.14(2)** If the department determines that activities agreed upon in the grant agreement have not been satisfactorily completed, forfeiture of a portion of or the entire grant may result.

**24.14(3)** The continuation or renewal of a grant shall be contingent upon the county's acceptable performance in carrying out its responsibilities described in the workplan and in meeting the grant program goals and objectives. All grants will be issued for not more than a period of one year concurrent with a state fiscal year. Applicants must reapply to continue or renew any grant within the specified grant application acceptance period. The department may deny awarding of a grant extension or withdraw a grant if it is determined that the county has not carried out the grant responsibilities.

**24.14(4)** An applicant may appeal the denial of a properly submitted grant application. Appeals shall be governed by rule 641 IAC 176.8(135,17A).

These rules are intended to implement Iowa Code sections 455E.11 and 135.11(29).

[Filed 3/9/06, Notice 2/1/06—published 3/29/06, effective 7/1/06]







**IOWA DEPARTMENT OF NATURAL RESOURCES  
PRIVATE WELL WATER TESTING  
BACKGROUND INFORMATION**

**1. Well User: (contact person)**

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**2. Location of Well:**

\_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, Section \_\_\_\_\_, T \_\_\_\_\_ N, R \_\_\_\_\_  East  West  
 County: \_\_\_\_\_

**3. Well Identification:**

- a. Only well on property:  Yes  No (if no, fill in "b")  
 b. Identify well tested: \_\_\_\_\_

**4. Well Description:**

Well depth: \_\_\_\_\_ ft  
 Casing depth: \_\_\_\_\_ ft. Casing Material:  Steel  Plastic  Concrete  Clay  Brick  Stone  
 Casing diameter: \_\_\_\_\_ in.  
 Year or decade constructed: \_\_\_\_\_ Type of Construction:  Drilled  Driven  Bored  Augured  Dug  
 Years used by present user: \_\_\_\_\_

**5. Well Assessment:**

Is wellhead sealed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<50' from septic tank?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Is wellhead covered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<100' from absorption field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Is wellhead in pit?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<100' from any livestock?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Is visible casing intact?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<100' from fuel tanks?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Is casing >1' above grade?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<300' from chemical storage?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Is cistern in use?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<100' from abandoned well?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Other adverse conditions?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	Other potential contaminants?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Describe: _____		Describe: _____	

> means "greater than"

< means "less than"

**6. List water treatment systems used:** \_\_\_\_\_

**7. Where was sample taken?** \_\_\_\_\_  Before OR  After Treatment?

**8. Mention any historical contamination of which the owners are aware:**  
 \_\_\_\_\_

**9. Form filled out by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**10. Water Testing Record:**

Date Sampled:					
Sample Collector:					
Laboratory:					
Coliform: (present/absent)					
Nitrate: (as N or NO3?)					
Other Constituents?:					





IOWA DEPARTMENT OF NATURAL RESOURCES  
**Abandoned Water Well  
 Plugging Record**

**1. Owner:**

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

If this was a Public Water Supply Well, please provide:

PWSID Name: \_\_\_\_\_ PWSID Number: \_\_\_\_\_

**2. Location of Well (Cistern):**

\_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, Section \_\_\_\_\_, T \_\_\_\_\_ N, R \_\_\_\_\_  East  West  
 County: \_\_\_\_\_ Describe well location on property: \_\_\_\_\_  
 GPS Well Location: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**3. Well Description:**

Well depth: \_\_\_\_\_ ft.  
 Depth to water: \_\_\_\_\_ ft.  
 Casing depth: \_\_\_\_\_ ft. Casing Material:  Steel  Plastic  Concrete  Clay  Brick  Stone  
 Casing diameter: \_\_\_\_\_ in.  
 Year or decade constructed: \_\_\_\_\_ Type of Construction:  Drilled  Driven  Bored  Augured  Dug  
 Is this a Monitoring Well?  Yes  No Well ID: \_\_\_\_\_

Check if Cistern  Depth: \_\_\_\_\_ ft. Diameter: \_\_\_\_\_ ft.

I certify this well has been plugged as required by rule 567-39.8 of the Iowa Administrative Code (IAC). I agree to provide any additional information the county or department may need concerning this well.

**Signature of Owner** \_\_\_\_\_ **Date Plugged:** \_\_\_\_\_

If plugged by certified well contractor, complete this box:

I have plugged this well as required by rule 567-39.8 of the Iowa Administrative Code (IAC).  
**Signature of Contractor:** \_\_\_\_\_ **Cert No:** \_\_\_\_\_

OR, If plugged by well owner, complete this box:

The property owner has plugged this well following requirements in rule 567-39.8 of the Iowa Administrative Code (IAC) with the oversight and assistance of the designated county agent.  
**Signature of County Agent:** \_\_\_\_\_ **Date Approved:** \_\_\_\_\_

Eligible for Grants-to-Counties cost share:  Yes  No (Determined by County Agent)

Complete one form for each well plugged and submit within 30 days to the local county agent:

OR, only if no county agent is available, to:

**Water Supply Section**  
**Iowa Department of Natural Resources**  
 502 E 9<sup>th</sup> St  
 Des Moines IA 50319-0034







# Iowa Department of Natural Resources Private Water Well Reconstruction Record

## 1. Owner

Name: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_  
Address: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

## 2. Well Location

\_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, \_\_\_\_\_ ¼ of, Section \_\_\_\_\_, Twp \_\_\_\_\_ N, Range \_\_\_\_\_  E  W  
(Check One)

County: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Describe well location on property: \_\_\_\_\_  
\_\_\_\_\_

## 3. Well Details

Well Depth: \_\_\_\_\_ ft  
Depth to Water: \_\_\_\_\_ ft Casing Material:  steel  plastic  concrete  
 clay  brick  stone  
Casing Diameter: \_\_\_\_\_ in  
Yr or Decade Constructed: \_\_\_\_\_ Type of Construction:  drilled  driven  bored  
 dug  augered  
Depth of Casing: \_\_\_\_\_ ft

Briefly describe the well reconstruction: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Any work that will be claimed under the Iowa Department of Public Health Grants-to-Counties Well Program grant must be approved by the local County Agent before any work is performed on the well.**

This well will be submitted for cost share assistance payment under the Grants-to-Counties Well Program.  
 Yes  No

If yes, the reconstruction of this well was performed with the oversight and assistance of the designated county agent and conforms to the requirements stated in Iowa Administrative Code 567 Chapter 49.10.

\_\_\_\_\_  
**Signature of County Agent**

\_\_\_\_\_  
**Date Approved**

I have reconstructed this well in a manner defined by Iowa Administrative Code 567.49.10.

\_\_\_\_\_  
**Signature of Contractor**

\_\_\_\_\_  
**Cert. No.**

\_\_\_\_\_  
**Or Well Owner**

\_\_\_\_\_  
**Date Renovated**

Complete one form for each well and submit within 30 days to the local county agent

Yes  No This well qualifies for Grants-to-Counties grant payment

Amount eligible for Grants-to-Counties payment: \$ \_\_\_\_\_





Iowa Department of Natural Resources
Application for Non-Public Water Well Construction Permit
All wells in Iowa must be constructed by an Iowa DNR Certified Well Contractor or the property owner.

CASHIER'S USE ONLY
0376-542-W300-WC-0597
Applicant's Name
IDNR Cert No.

A Private Water Well Construction Permit cannot be issued for a well that will provide water for 15 or more service connections or serve 25 or more people per day, 60 or more days per year regardless if the well will be privately or publicly owner.

Examples of facilities that CAN NOT be permitted and constructed by this application are: towns, subdivisions, churches, recreational facilities, business parks, bars, taverns or adult entertainment establishments, food preparation/restaurants, theaters, and day care centers.

Any proposed well owner(s) who seek to have a water supply well constructed for any of the above categories must call the Water Supply Engineering Department of the Iowa Department of Natural Resources for consultation. Please call (515) 725-0282 for more information.

REQUIRED INFORMATION Note: Incomplete applications cannot be processed and will be returned.

Applicant's Name: Phone Number:

Mailing Address:

City: State: Zip:

Well Contractors Name: IDNR Cert No.:

Property Owner Name: Address: City: State: Zip: Phone: PWTS Information Permit #: Well #: Permit Issue Date: By:

Well Construction Information for Proposed Well

Location by GPS (dd.dddd) Latitude: Longitude: COUNTY DEPTH PURPOSE (check uses)
1. household 2. livestock
3. irrigation 4. commercial
5. heat pump 6. monitoring
911 Address of well site: Construction Date:

Well Location Information for Existing Wells

List all existing wells on owner's contiguous property.

Location by GPS (dd.dddd) Latitude: Longitude: COUNTY DEPTH PURPOSE (USE # as above) IN USE Y or N Date Built
Location by GPS (dd.dddd) Latitude: Longitude: COUNTY DEPTH PURPOSE (USE # as above) IN USE Y or N Date Built

CERTIFICATION OF APPLICATION

I Certify that I am not applying for a permit to construct a Public Water Supply well and that all information listed above is correct to the best of my knowledge. I have listed all existing wells. Any well not in use must be sealed as standby wells or properly plugged within 90 days and DNR for 542-1226 filed with the Department of Natural Resources.

Applicant Signature: Date:

Submit this Application with a plat map/aerial photo (with location of listed wells clearly marked) and a non-refundable fee

to: (Delegated County) or Department of Natural Resources Water Supply Section PO Box 14573 Des Moines IA 50306-3573 FEE: \$125.00





# State Hygienic Laboratory

at The University of Iowa

## **Container # 32 and/or #20**

#32- Chlorine Neutralizer Present in Bottle  
DO NOT RINSE OUT

## **Total Coliform, *E.coli* and/or Nitrate for Drinking Water**

### **Collection and Handling**

- Fill out the sample collection form provided; especially COLLECTED DATE and COLLECTED TIME or the sample may not be tested.
- Use the sample bottle(s) supplied by the laboratory. At a minimum write on the bottle label your name and collection date and time. One bottle is necessary for total coliform and *E.coli* testing and one bottle for nitrate testing.
- To assess overall drinking water quality, collect sample from the drinking tap, avoid leaking faucets and outside hydrants.
- Remove aeration screens from the faucet before collecting sample. If unable to remove, select another tap.
- Open cold water tap to obtain smooth-flowing stream at moderate pressure without splashing. If water flow is not steady, select another tap.
- Run water for at least 2-3 minutes to flush the line. Note: For an outside collection site, special tap disinfection (flame or chlorine) and longer flushing (10-15 minutes) is usually required to obtain valid bacterial results.
- Reduce water flow slightly (to pencil width) to fill container without splashing.
- Fill container slowly to the **shoulder** of the bottle (within 3/4 inch from top but above the 100mL line) and replace cap tightly. Caution: Inside sample bottle is sterile-avoid placing fingers inside bottle or cap. Do not place cap down. Do not overflow or rinse out bottle(s) (the bacterial bottle contains a chlorine neutralizer in the form of a white powder or small amount of liquid; this will not interfere for those waters that are not disinfected).
- Enclose check payable to the Hygienic Laboratory for the tests requested as instructed on the form. If you have an account with the laboratory, no payment with sample is necessary.
- Sign the "relinquished by" line (and record date/time) in the chain of custody/tracking area

### **Shipping Instructions**

- Mail or ship sample bottles **immediately** after collection (same day collected). Samples must be received within 48 hours after collection. Avoid Friday, weekend or holiday mailings unless prior arrangements have been made. First class postage, UPS and Fed Ex (ground) or other carrier service may be necessary to ensure rapid delivery from your area.
- Samples may be brought directly to the Iowa City, Ankeny or Lakeside Laboratories during business hours.

### **Contact Information**

- Client Services: questions, orders, etc., 800-421-4692 or 319-335-4500
- Environmental Microbiology section(s) for technical questions: 319-335-4366 (Iowa City) or 515-725-1600 (Ankeny) or 712-337-3669 ext 6 (Lakeside).

2/2/2012

Page 1 of 1



