

# The Driller's Digest

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*This newsletter is published as a service to Certified Well Contractors and others in the ground water industry. Suggestions for articles for publication in the newsletter are welcome.*

## Well Disinfection

by QuQi, DWQ, Central Office

Most of us are aware that disinfection of a water supply well is necessary if test results indicate bacterial contamination or the well is contaminated by floodwater. Disinfection may also be used to control iron and sulfur bacteria in a well. North Carolina Well Construction Standards Rule, 15A NCAC 02C .0111 requires that all water supply wells be disinfected upon completion of construction, maintenance, repairs, pump installation and testing. This rule also describes the specifics of the standard disinfection method including the chemicals, the chlorine concentration, and the details of the disinfection process.

If bacteria infection persists after the chlorination, then the well should be inspected to make sure that well-head is properly sealed at all entry points, no cracks are present in the well casing, and the pump is properly placed for the yield and the year round static water level. A down-hole camera may be used to see if any leaks are present in the casing or if there are any shallow fractures present below the casing. Using a packer and liner to seal off the leaky casing and shallow fractures may prevent bacteria from entering the well. After the repair, the well must be disinfected again. If the well is in serious disrepair, it may be a good idea to drill a new well in accordance with the current well construction standards.

If the traditional chlorination, well inspection and repair do not solve the problem, the Well Construction Standards rule allows other materials and methods of disinfection to be used upon prior approval by the Director.

Currently several alternative disinfection materials and methods are available on the market. For example, several different formulas (blends of acid, chlorine, and surfactants) are used to treat wells with biofouling problems. The concentrations of the chemicals in the well water are controlled by estimating the volume of the well water and adding the proper amount of chemicals into the well. The well water must be effectively agitated and contact time is usually twenty-four hours. After that, the well is purged. This disinfection process is very similar to the regular chlorination described in the rule.

Several continuous in-well disinfection devices are also available on the market. These devices deliver chemicals directly into a well on a daily basis to control bacteria in the well water and associated equipment. **However, at present none of these formulas and devices are approved by the Division of Water Quality.** Using these formulas or installing these devices on a well to control bacteria infection without prior approval by the director is a violation of North Carolina Well Construction Standards Rule, 15A NCAC 02C .0111 and may result in enforcement action.

Anyone wanting to use one of these other materials or methods to disinfect a water supply well, must submit documentation to the Division of Water Quality, Aquifer Protection Section, to demonstrate:

- (1) The proposed material and method are at least as effective as the method described in the rule.

*(Continued on page 3)*

## Summary of Civil Penalty Assessments

*Penalties for violations of NCGS Chapter 87, Article 7A and NCAC Title 15A, Chapter 27 vary depending upon the particular facts and circumstances present in each case. Note: only finalized uncontested cases or cases not seeking remission and at the collection stage are included in this list (payment of fines and corrections of violations may already have occurred).*

### ANDREW WILEY

Guilford County, NC. Allegations of contracting without the benefit of certification in violation of 15A NCAC 27. Assessed a civil penalty of one-thousand dollars (\$1,000.00). **Effective Date 7/5/06 Case #WCCC 012-06.**

### CHRIS GORDON

Guilford County, NC. Allegations of contracting without the benefit of certification in violation of 15A NCAC 27. Assessed a civil penalty of one-thousand dollars (\$1,000.00). **Effective Date 7/5/06 Case #WCCC 013-06.**

### JIM FERGUSON

Currituck County, NC. Allegations of contracting without the benefit of certification in violation of 15A NCAC 27. Assessed a civil penalty of one-thousand five hundred dollars (\$1,500.00). **Effective Date 7/21/06 Case #s WCCC 014-06; WCCC 015-06., and WCCC 016-06.**

### CHARLES POOL

Currituck County, NC. Allegations of contracting without the benefit of certification in violation of 15A NCAC 27. Assessed a civil penalty of five hundred dollars (\$500.00). **Effective Date 7/28/06 Case #WCCC 017-06.**

## Temporary Monitor Wells

by Jay Zimmerman, RRO

Recent inspections of temporary monitor wells, conducted by the Division of Water Quality's Aquifer Protection Section, have resulted in the discovery of numerous violations of the state well construction rules. The inspections have resulted in the issuance of Notices of Violation and in some instances, civil penalties. In each case, the monitor wells had been installed weeks or months before the state's inspection and had incomplete grouting, no well ID tag, no lock-

ing well cap and no protection against damage, as required by the regulations. In all cases, the wells consisted of a 1"- 2" PVC pipe in an open field, grouted to land surface with bentonite and capped with a PVC slip cap.

Often, the reason given for the violations was that the wells were intended to be "temporary" and, as such, the well contractor did not believe the construction requirements were the same as for a "permanent" monitor well. Upon investigation, it was usually discovered that due to project delays and other reasons cited by the contractor or consultant, temporary monitor wells that were intended to remain for only a few days were forgotten, or that sufficient money had not been budgeted to convert the wells into permanent monitor wells.

The definition of a "temporary well" in 15A NCAC 2C .0100 in part means a well, other than a water supply well, constructed to determine aquifer characteristics, and which will be properly abandoned or converted to a permanent well within five days (or 120 hours) of completion of the borehole. It should be noted that there is very little difference between the construction methods associated with a temporary and a permanent monitor well. At a minimum, the temporary wells require a method of construction to preclude the vertical migration of contaminants along the borehole. Normally this is accomplished through the installation of a grout seal. Permanent wells (those that remain for a period beyond 5 days) must meet the construction requirements in 15A NCAC 2C .0108(c).

Standards for the construction of permanent monitor wells include, but are not limited to, a grout seal (the upper three feet of which must be a cement-type grout), a locking well cap, completed and securely affixed ID tag, and some sort of protection against damage. Any monitor well that remains in the ground for a period of more than 5 days or 120 hours from the completion of the borehole, **regardless of the originally intended length of time**, must be converted to a permanent monitor well, or be permanently abandoned. The Aquifer Protection Section encourages well contractors to discuss these well construction requirements with their clients to ensure they understand the limitations associated with temporary monitor wells. Remember, the well contractor is the person responsible for the proper construction of any well. Any agreement between the contractor and well owner that deviates from the regulations may not be a sufficient defense for improper construction.

*Well Disinfection*  
(Continued from page 1)

- (2) The use of the proposed material and method will not pose a health risk to the public. A health risk evaluation for the proposed material and method will be conducted by the Epidemiology Branch of the Division of Public Health, the Department of Human Health Services.
- (3) The use of the proposed material and method will not cause long-term degradation of ground-water quality.

The Division will evaluate all the information and either approve or disprove the method. The approved materials and methods will be posted on our web-page, [http://h2o.enr.state.nc.us/aps/gpu/well\\_construction.htm](http://h2o.enr.state.nc.us/aps/gpu/well_construction.htm)

The alternative disinfection materials and methods can be used only after final approval is given by the director of the Division of Water Quality. If you have any questions about well disinfection, please contact the Aquifer Protection Section at 919-733-3221.

**Regional Office Visits Contractors**

by Bill Todd, FRO

The Fayetteville Regional Office is now trying to schedule visits to each certified well drilling contractor working in the Fayetteville regional area. The purpose of the visits are to get to know these drillers and to do inspections at the shops and on site while drilling. Another benefit is an opportunity for well drillers and DWQ staff to discuss different methods of drilling and the numerous techniques that are applied through out the industry. Be aware that we have about a year and half before the North Carolina Department of Environmental Health begins their new program; there will be statewide county well programs and the requirement that all new private wells be sampled prior to being used.

During the visits to the contractors, I hope we can be of assistance with some answers to questions about program changes and how to ease transitions in the future. We may not be able to answer all questions, but we should be able to help to get answers to some of the contractor's concerns. If any of the contractors need to get in contact with me, just call me at (910) 433-3341 and I'll try to help if I can.

**North Carolina Well Contractors Certification Commission**

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**Commission Members**

- Mike Floyd, Chairman** - Charlotte, North Carolina
- Elmer Newman, Vice Chairman**- Elkin, North Carolina
- Greg Bright**- Louisburg, North Carolina
- Balinda Ferree**- Asheboro, North Carolina
- Bill Hamlin**- Dobson, North Carolina
- David Hutson**- Durham, North Carolina
- Bill Magette** - Ahoskie, North Carolina

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**Certification Numbers Update**

Total number certified.....	987
Total number of applicants for certification.....	51
Approved to take exam.....	28
Applications pending.....	23
Certifications currently suspended.....	5

**NC Division of Water Quality  
Aquifer Protection Section (APS)**

*For assistance with well construction problems, or questions about well construction rules, contact your regional office- Aquifer Protection Section at:*

<u>Asheville</u>	828-296-4500
<u>Fayetteville</u>	910-433-3300
<u>Mooresville</u>	704-663-1699
<u>Raleigh</u>	919-791-4200
<u>Washington</u>	252-946-6481
<u>Wilmington</u>	910-796-7215
<u>Winston-Salem</u>	336-771-5000

APS website: <http://h2o.enr.state.nc.us/aps>

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## **Drillers Day Workshop**

by Joanne Rutkofske, WCC Staff

Well Contractor Certification (WCC) staff is currently planning a Drillers Day Workshop to be held March 2 at the Wake County Commons Building in Raleigh. The registration form for this workshop is enclosed. Space is limited so reservations will be taken on a first come, first served basis. Cost to attend is \$20 per person with lunch and snacks to be provided. Topics will tentatively include: driller field safety, geotechnical drilling, aquifer test requirements/ pump tests / determining well yield, proposed certification rule changes, update on county programs legislation, geothermal wells...

## **PDH Reminder**

by Joanne Rutkofske, WCC Staff

In an effort to refocus limited staff resources, we will not be sending out a continuing education reminder in January. Contractors may look up their Professional Development Hours (PDH) total online at [www.NCwelldriller.org](http://www.NCwelldriller.org) Eight PDH are required by the June 30th deadline each year.

## **Childrens Water Festival**

by Wilson Mize, WCCC Staff

The Commission would like to thank everyone who volunteered for the October Children's Water Festival in Salisbury, North Carolina. More than 1,600 Rowan-Salisbury public and private school fifth-graders participated in the exciting, educational water festival. Major funding for the festival was provided by the NC Well Contractors Certification Commission, the NC Groundwater Association, and the Washington, DC-based Water Systems Council. We would also like to thank additional sponsors, including the South Atlantic Well Drillers Jubilee and the City of Salisbury.

Many well contractors from the area volunteered their time to make this a successful festival. We also appreciate the use of well drilling equipment from Corriher Well Drilling, DL Mullis Well Drilling, Gopher Utilities, and Rowan Well Drilling. The Water System's Council is currently looking at the possibility of providing a similar festival in the fall of 2007 in the eastern portion of North Carolina. We hope some of you again will be able to volunteer.

To Report Violations or Uncertified Well Contractors Call (919) 733-0026 x302