CHATHAM COUNTY
WELL PROGRAM

Carl Kivett, REHS, LSS
Well Program Specialist
Private Wells

- Installing new wells
- Inspections
- Protecting wells
- Water Sampling
Installing a New Well

- Obtain a permit from the Chatham County Environmental Health Division
- Hire a “competent”, certified well-driller
  - Consult with neighbors
  - Consult with professionals
  - Ask for two or three references
Well Permits

• The property owner must submit:
  – a completed application
  – the fee (currently $340)
  – a site plan

• A representative of the owner can submit these items as long as a Legal Representation Document is completed and submitted.

• A site visit will be scheduled.
PERMIT APPLICATION FORM

CHATHAM COUNTY PUBLIC HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
80 EAST ST, P.O. BOX 130 • PITTSBORO, NC 27312-0130
PHONE 919-542-8208 • FAX 919-542-8208
www.chathamnc.gov/environmentalhealth

NOTE: Do not fill in amounts, just check type of permit.

☐ Improvement Permit $ ___
Valid for 60 months from date of issue

☐ Improvement Permit $ ___
Perpetual plat 1’=60” required within 30 days of site approval

☐ OP Revision $ ___

☐ Construction Authorization $ ___

☐ Well Permit $ ___
Valid for 60 months from date issued

☐ Well Re-Site Permit $ ___

☐ Well Repair/Abandonment $ ___

☐ Septic Repair Permit $ ___

Applicant:

Owner:

Mailing Address:

Mailing Address:

City: ______ State: ___ Zip: ______

City: ______ State: ___ Zip: ______

Cell Phone: __________ Home Phone: __________

Cell Phone: __________ Home Phone: __________

E-Mail Address: __________________________

E-Mail Address: __________________________

Property Address: ________________________

City: ______ State: NC Zip: ______

Tax Parcel#: ______ Acres (Existing): ______ Acres (Proposed): ______ Subdivision: ______ Lot#: ______

Directions to Property: __________________________

☐ New Single Family Residence

☐ Expand or Alter Existing Septic System

☐ Repair to Existing Septic System

☐ New Residential

☐ Maximum number of bedrooms ______

☐ Basement with plumbing fixtures? Yes ☐ No ☐

☐ Other structures with plumbing fixtures? Yes ☐ No ☐

☐ Garage ☐ Shop ☐ Barn ☐ Other

List fixtures in basement & other structures: __________________________

☐ Non-Residential

Please describe the business, its plumbing fixtures, number of employees, square footage, number of seats etc. Use attachment if needed.

☐ New Well ☐ Existing Well ☐ Community Well ☐ Public Water

WATER SUPPLY: ☐ New Well ☐ Existing Well ☐ Community Well ☐ Public Water

For New Construction: If served by Chatham County Water, that department requires connection to the County Water System

Construction Authorization

Type of septic system requested: ☐ Type listed on IP ☐ Other __________________________

The Applicant shall notify the local health department upon submittal of this application if any of the following apply to the property in question.

☐ Are there any easements or right of ways on this property? Yes ☐ No ☐

☐ Is the site located in any designated wetlands? Yes ☐ No ☐

☐ Is any wastewater going to be generated on the site other than domestic sewage? Yes ☐ No ☐

☐ Is the site subject to approval by any other public agency? Yes ☐ No ☐

I have read the application and certify that the information provided therein is true, complete and correct. I authorize county and state officials right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. If the information in the application is falsified, changed or the site is altered then the Permit shall be invalid. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed.

The issuance of a permit in no way guarantees the approval of other permits (i.e. Building Permits, etc.)

SIGNATURE: __________________________

Property owner’s or owner’s legal representative** signature (Required)

DATE: __________________________

** Must provide documentation to support claim as owner’s legal representative

Revised 4/10
Incomplete site plans will be returned to you for completion. Remember: Your property will not be scheduled for an evaluation until we have received a completed application, site plan, and all proposed items are marked on the property. Submit a site plan on a copy of the surveyed and/or recorded plat showing:

- The dimensions of the property.
- The proposed location of all existing and proposed structures (e.g., facilty, wells, water lines, outbuildings, workshops, garages, pools). Show the distances from the road and the side property line to all structures. Indicate the dimensions for all the structures. If you are unsure as to the structure size, please show the dimensions of the MAXIMUM area of the lot that you anticipate the structure will cover.
- The site you would prefer your septic system to go in.
- The preferred driveway location and any parking areas.
- The proposed well location.
- A north arrow or other sufficient directional indicator.
- The location of any existing septic tank systems and wells on your property and on the adjoining property within 100' of your property line.
- The location of any easements or rights of way on the property.
- The location of any designated wetlands on the property.

Example of a properly prepared site plan:
Site Visit

• An Environmental Health Specialist will come to the site to approve the well area based on the required setbacks.

• Once the site is approved, the permit will be issued.

• The permit is good for 5 years.
Locate wells in areas not subject to flooding and at least:

- 100 feet from any septic system, including those on adjacent property
- 50 feet from any watertight sewer line
- 100 feet from any source of potential groundwater contamination, including animal feedlots or barns, fertilizer or other chemical storage areas, etc.
- 25 feet from any building foundation or structure subject to termite treatment
- 10 feet from all property lines
- 50 feet from lakes, ponds or reservoirs
- 25 feet from all other surface waters, such as brooks, creeks, streams, and rivers
Inspections

- Grout placement
- Well head
- Repairs
- Abandonments
Well Grouting Inspection
ELECTRICAL CONDUIT

APPROVED SANITARY WELL SEAL

GROMMET

CASING EXTENDING 6" OR MORE ABOVE SLAB OR FLOOR

CONCRETE SLAB 4" THICK, EXTENDING 2' FROM OUTER CASING, SLOPED TO DRAIN

SLOPED AND WELL DRAINED LAND SURFACE

CONCRETE GROUT AROUND CASING EXTENDING AT LEAST 20' DOWN FROM SURFACE

CASING EXTENDING INTO IMPERVIOUS SOIL OR ROCK WITH TIGHTLY
Well Head

- Screened or slotted pipe vent
- Sanitary seal
- Rubber gasket
- Well casing
- Pipe to house
- Electrical connection for pump
- Wire to water pump
- Concrete slab
- Pipe down to well pump
Geology Determines Well Casing

Galvanized Steel Well Casing Required In this Area
• Represent rock unit at or near land surface. Actual contact may be covered by soil.
• Chatham County is composed of several different geologic units.
• Provides insight into subsurface geologic structures and units.
• Can be used to determine needed drilling equipment.
North Carolina Triassic Basins

Major Geologic Belt
- Dan River Basin
- Davie Basin
- Durham-Sanford Subbasins
- Wadesboro Subbasin

For more information contact:
Clean Water for NC
Ph: 919-401-9600
www.cwfnc.org

Source: North Carolina Geology, 2007
North Carolina Geological Survey
Well Repairs

- Well repairs may be necessary if your well yields muddy or discolored water or is found to have bacteria present.
- Well repairs require a permit from the local Health Department and must be done by a certified well contractor.
- An EHS will inspect the well repair to verify that the materials and methods used by the contractor meet state and county rules.
Down-hole Well Camera
Pulling a Pump
Pulling a Pump
Well Repair: Liner with Packer
Well Repair: Liner with Packer
Well Repairs
Well Abandonments - Definitions

• **Abandoned Well** means a well whose use or construction has been discontinued, or which is in such a state of disrepair that continued use for obtaining ground water or other useful purpose is impracticable.

• **Permanently Abandoned Well** is a well that has been filled in using approved materials and by approved means.
Well Abandonments

• Any well that is a source or channel of contamination shall be repaired or permanently abandoned within 30 days of receipt of an order from the Health Director.

• The local Health Department must issue a permit for any well abandonment.

• An EHS will inspect the well abandonment in order to verify the materials and methods used.
Protecting Wells

• Store and mix chemicals safely
• Store fuel safely
• Keep out animal or human waste
• Eliminate other potential sources of contamination
• Check well seal
• Disinfect well as needed
Your well head should not be in a hole!
Look out for critters when checking your well head!
Well Disinfection & Water Sampling
Well Disinfection

- New well
- Repaired well
- Repaired/replaced well pump
- Well tests positive for bacteria
- Well seal is opened for any reason
Water Testing: Who?

- Health Department
  - Environmental Health Division
  - Well owner, or their legal representative, needs to complete & submit an application

- Certified Laboratory
  - Can search list of state certified labs at http://slphreporting.ncpublichealth.com/EnvironmentalSciences/Certification/CertifiedLaboratory.asp
Tests Offered By Environmental Health:

- Bacteriologic (Coliform)
- Inorganic (Mineral)
- Nitrate/Nitrite
- Sulfur Bacteria
- Iron Bacteria
- Pesticide
- Petroleum
What Tests Should You Request?
Bacteriologic

- Tests for Total & Fecal Coliform Bacteria
Bacteriologic

- **Total Coliform**
  - Large group of several different gram-negative facultative bacteria
  - Ubiquitous - found in air, soil, vegetation, decaying matter, sewage, etc.

- **Fecal Coliform**
  - Subgroup of Total Coliform bacteria
  - Found in intestines and feces of warm-blooded animals, including humans
  - If total coliform result is positive, the lab tests further to see if fecal coliform is positive
Bacteriologic

- Indicator organism
  - If present, may indicate that other potential disease causing organisms are present (e.g., Giardia, Cryptosporidium, Hepatitis, Vibrio cholerae, Salmonella Typhi, etc.)
  - Relatively easy & inexpensive test
  - Complex, expensive, time-consuming to test for all possible pathogens
- If present, water should not be used for drinking or cooking
Bacteriologic

- Bacteriologic testing should be done if:
  - Your well is newly drilled
  - Your well has been repaired or pump replaced
  - A flood has occurred near or around your well
  - Any household member suffers from recurring bouts of gastrointestinal illness
  - An infant lives in the home
  - A person with a chronic illness that compromises the immune system lives in the home
  - Your well has never been tested

- Recommended to test for once a year
Inorganic

Parameters included in Inorganic testing:

- Arsenic
- Barium
- Cadmium
- Calcium
- Chloride
- Chromium
- Copper
- Fluoride
- Iron
- Lead
- Magnesium
- Manganese
- Mercury
- pH
- Selenium
- Silver
- Sodium
- Sulfate
- Alkalinity
- Hardness
- Zinc
Inorganic

Inorganic testing should be done if:

- Your well is newly drilled
- Your water has an objectionable or metallic taste
- Your water is cloudy or discolored
- Your plumbing fixtures or pipes have a scaly residue or corrosion
- You notice stained plumbing fixtures or laundry
Nitrate/nitrites

- Nitrogen-oxygen chemical units which combine with various organic and inorganic compounds
- Once taken into the body, nitrates are converted into nitrites.
- Can be very dangerous
- Can cause methemoglobinemia (“Blue Baby Syndrome”)
- Boiling the water can increase concentration
Nitrate/nitrites

- Possible sources of nitrates are fertilizer, sewage, and animal waste.
Nitrate/nitrites

Nitrate/Nitrite testing should be done if:

- A household member is pregnant
- An infant lives in or spends time in the household
- A household member suffers from severe heart or lung disease
- Your well is located near a farm field, animal barn (including chicken house) or feed lot
- Your well is located within 100 feet of a septic system, particularly an old system or one that has failed
Sulfur Bacteria

This test is recommended if:

- Your water has a “rotten eggs” or sulfur odor
- However, if this odor is present, the test is probably not necessary because the odor indicates that treatment (e.g., super chlorination) is needed
- Your water has a bitter taste
- Your plumbing has pipe corrosion problems and yellow or black stains on fixtures
Iron Bacteria

This test is recommended if:

- You notice a slimy build-up in the toilet tank
- Your water has a reddish-brown tinge or an oil-like sheen on the surface
- Your water has a musty, oily, or “cucumber” odor
Pesticide

- This test is recommended if:
  - Your well is near areas of intensive agriculture
  - Your well is located within 25 feet of a termite-treated building foundation

- Requires prior authorization from the EH Director
Petroleum

This test is recommended if:

- Your well is located near an underground storage tank (UST)
- Your well is located near a business that has an UST or is industrial in nature
- Your well is located near a landfill

Requires prior authorization from the EH Director
Sampling Requirements for New Wells as of July 1, 2008

- 15A NCAC 18A .3802 – Samples shall be obtained by the LHD within 30 days after issuance of a well certificate of completion
- Well needs to be chlorinated and chlorine flushed out prior to sampling
- Well owner is responsible for providing access and a source of power
- Need adequate tap to collect sample
Sampling Requirements (cont’d)

- Samples shall be collected from sample tap at, or as close as possible to, the well (i.e., before any treatment devices)

- Sample tests required:
  - Total Coliform/ Fecal Coliform
  - Arsenic, Barium, Cadmium, Calcium, Chloride, Chromium, Copper, Fluoride, Lead, Iron, Magnesium, Manganese, Mercury, Nitrate, Nitrite, Selenium, Silver, Sodium, Sulfate, Zinc, Total Alkalinity, Total Hardness and pH
Home Water Treatment

✓ Carefully select treatment systems
  – Understand options
  – Match equipment to treatment needs
✓ Operate and maintain equipment properly
✓ Protect from consumer fraud
Home Water Treatment

 Helpful Websites:

- NC Cooperative Extension

- NSF.org (National Sanitation Foundation)

- EPA.gov
Want to know more?

- EPA Ground Water and Drinking Water: [http://www.epa.gov/safewater/index.html](http://www.epa.gov/safewater/index.html)
Contact Information

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