WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NR 845 Level 5

Well Filling and Sealing

March 6, 2024 | DNR.WI.GOV

County Responsibilities

- Adopt a filling and sealing ordinance
- Follow-up on filling and sealing (f/s) unsafe, hazardous, noncomplying and unused wells
- Follow-up with enforcement as needed
- Municipalities within counties may also have f/s and cross-connection ordinances

Definitions

- **Well** or **Drillhole**?

- Well: Deeper than wide, >10’ deep, to obtain groundwater
- Drillhole: Deeper than wide, > 10’ deep

Definitions

- **Dug Well:** a large diameter hole, side walls are supported by curbing

Definitions

- **Pit:** Below ground structure that may contain the well, pump, pressure tank, valves, etc.

Includes pumprooms and alcoves adjoining a basement

Definitions

- **Filling and sealing:** filling a well, drillhole, pit, or reservoir with material so it will not act as a vertical conduit to contaminate another well, groundwater or an aquifer.

Why is Filling and Sealing Important?

- Prevention of groundwater contamination
- Unused wells provide a direct path for contaminants
- Often forgotten

When to fill and seal?

- Bacteriological contamination
- Hazard to health or human safety

When to fill and seal?

- Non-complying wells
- 90 days after well has been removed from service
- Contaminated wells
- Unsuccessful well or drillhole
- Exploratory drillholes/Geologic boreholes

How to find wells/drillholes that should be f/s?

- **Counties can be the first line of education and communication**
  - Ask about unused wells when issuing permits
  - Counties have perfect opportunity to educate

How to find wells/drillholes that should be f/s?

- F/s of exploratory drillholes regulated under NR 812
- Does your ordinance include drillholes?
- Sand mining?
  - Include in permitting

How to find wells/drillholes that should be f/s?

- Look for indicators of unused wells

How to find wells/drillholes that should be f/s?

- Look for wells in use that aren’t code-compliant
- Measure separation distances…compliance can change
- Well construction issues
  - Can be difficult to ID – ask DNR for help

How to find wells/drillholes that should be f/s?

- Review WCRs and follow-up on replacement wells
- Search Well Abandonment Report (WAR) database for verification

Who can fill/seal a well or drillhole?

- Licensed well driller or pump installer
- Well owners shall hire a licensed individual/business complete the filling and sealing.

Well Driller/Pump Installer Responsibilities

- Educate replacement well owners
- Report non-complying and unsealed/unused wells to DNR
- WD/PI must report whether or not they filled and sealed wells removed from service

Temporary Filling and Sealing

No Longer allowed

- Does not apply to seasonal systems or hi-capacity systems
- Well needs to be functional – pump, power, etc.

Preparation for Filling and Sealing

- Gather information
- Remove all obstructions
- Casing usually left in place

Materials allowed to fill and seal wells

- Dependent on:
  - Size of well or drillhole
  - Formation (unconsolidated vs bedrock)
  - NR812.26(6)

Materials allowed to fill and seal wells

- Neat cement grout
- Sand cement grout
- Concrete
- Bentonite Chips
- Bentonite Pellets
- Granular Bentonite (Drillholes < 3” in diameter and not extending below the water table)
- Drilling mud and cuttings (Drillholes ≥ 3” in diameter in unconsolidated formations and only up to 10 feet bgs.)
- Chlorinated sand-free pea gravel (Bedrock wells > 250 feet, only up to the 250’ depth or 20’ below casing whichever is greater)
- Native soil, clean clay or silt (Dug wells in unconsolidated formations only)
- Only neat cement grout or bentonite pellets may be used to fill and seal wells ≤3” in diameter

Filling and sealing material placement

- Poured or pumped down well or drillhole - <3” diameter
- Gravity tremie
- Pumped tremie
- Screen for bentonite chips

Other Requirements

Driven-point wells

- Pulling casing and pipe no longer allowed
- Neat cement or Bentonite Pellets for ≤ 3” in diameter

Dug Wells

- Top five feet of curbing removed or caved into the well
- Fill with clean clay or native soil, bentonite chips, concrete, or neat cement grout
- In bedrock, required to fill to 2’ above bedrock with neat cement, concrete, or bentonite chips/pellets

Other Requirements

Ungrouted casing or Liner pipe

- Remove or if unable
  - Casing or liner shall be ripped or perforated every 5’
  - Procedures outlined in NR 812.26(5)(g)

Other Requirements

Artesian/flowing wells

- Reduce flow as much as possible before starting
  - Inflatable packer
  - Extending well casing

Other Requirements

Well Pits

- Code requires filling the pit when a well is filled or extended out of the pit
- All equipment shall be removed
- Valve pits still exempt

Other Requirements

Non-pressure conduits

- Basement end of NPC must be permanently sealed with a watertight cap or seal when well is filled and sealed

Heat exchange drillholes

- Loops should be removed prior to filling and sealing
  - If not possible all fluid needs to be removed and the loops filled with grout

Cutting off casing

- Casing pipe and filling and sealing material may be terminated as much as 3’ bgs or future building foundation

How much material is needed?

Calculating Volume

- If no WCR, depth and diameter measurements needed
- Utilize available tables
- MiSwaco, Baroid IDP (phone apps)
- Back of bag calculations

What to watch for?

- Pump, piping, and other obstructions removed
- Using appropriate type/volume of sealing material
- Ensure proper placement of filling/sealing material
- Ensure casing not removed

Common Issues/Problems

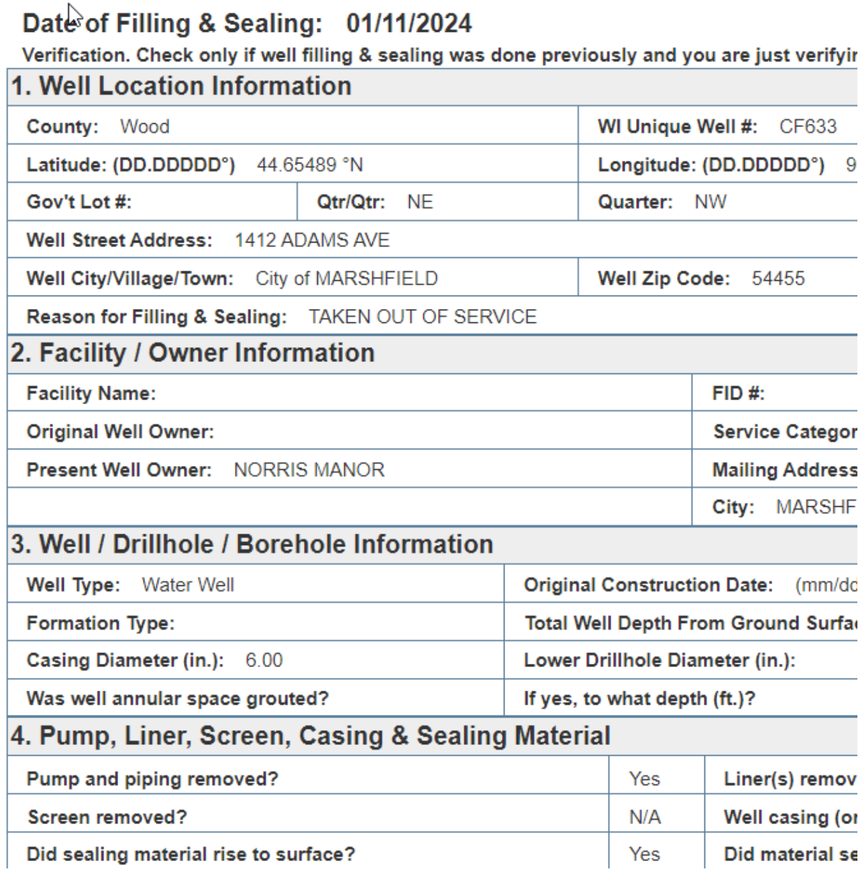
- Blockages in well – stuck pumps are common
  - Entomb pump in neat cement
- Inadequate volume of sealing material
- Bridging occurred
- Tremie pipe not used

Stuck Pumps

- Procedures now included in code
  - NR812.26(5)(b)
- Reasonable attempt using best available technology
- Entomb pump and seal entire well with neat cement

Filling and Sealing Forms

- Reporting within 30 days of filling/sealing
  - All reports submitted electronically
- Form completeness
  - Location…GPS coordinates
  - Well Owner name and address
  - Well Formation
  - Depth (casing and total)
  - Casing diameter
  - Volume and type of sealing material
  - Person performing work/license numbers



Date of Filling & Sealing: 01/11/2024

Verification. Check only if well filling & sealing was done previously and you are just verifyir

1. Well Location Information

County: Wood		**WI Unique Well #:** CF633
Latitude: (DD.DDDDD°) 44.65489 °N		**Longitude: (DD.DDDDD°)** 9
Gov't Lot #:	**Qtr/Qtr:** NE	**Quarter:** NW
Well Street Address: 1412 ADAMS AVE		
Well City/Village/Town: City of MARSHFIELD		**Well Zip Code:** 54455
Reason for Filling & Sealing: TAKEN OUT OF SERVICE		

2. Facility / Owner Information

Facility Name:	**FID #:**
Original Well Owner:	**Service Categor**
Present Well Owner: NORRIS MANOR	**Mailing Address**
	City: MARSHF

3. Well / Drillhole / Borehole Information

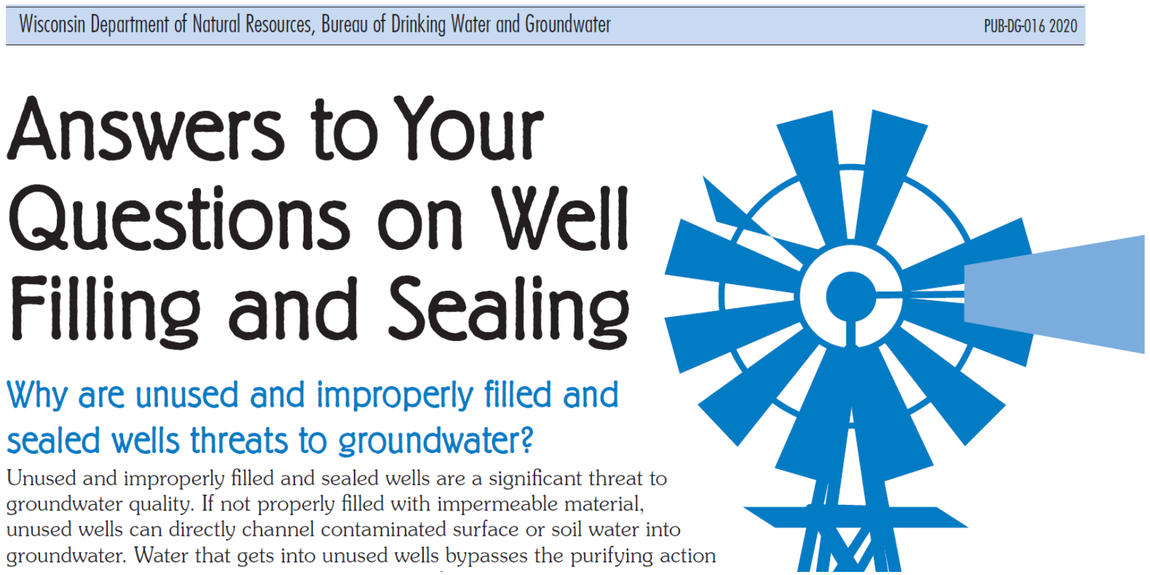
Well Type: Water Well	**Original Construction Date:** (mm/dc
Formation Type:	**Total Well Depth From Ground Surfa**
Casing Diameter (in.): 6.00	**Lower Drillhole Diameter (in.):**
Was well annular space grouted?	**If yes, to what depth (ft.)?**

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	Yes	**Liner(s) remov**
Screen removed?	N/A	**Well casing (or**
Did sealing material rise to surface?	Yes	**Did material se**

Information and Education

- Critical for a successful filling and sealing program
- Resources
  - DNR brochures
  - DNR website

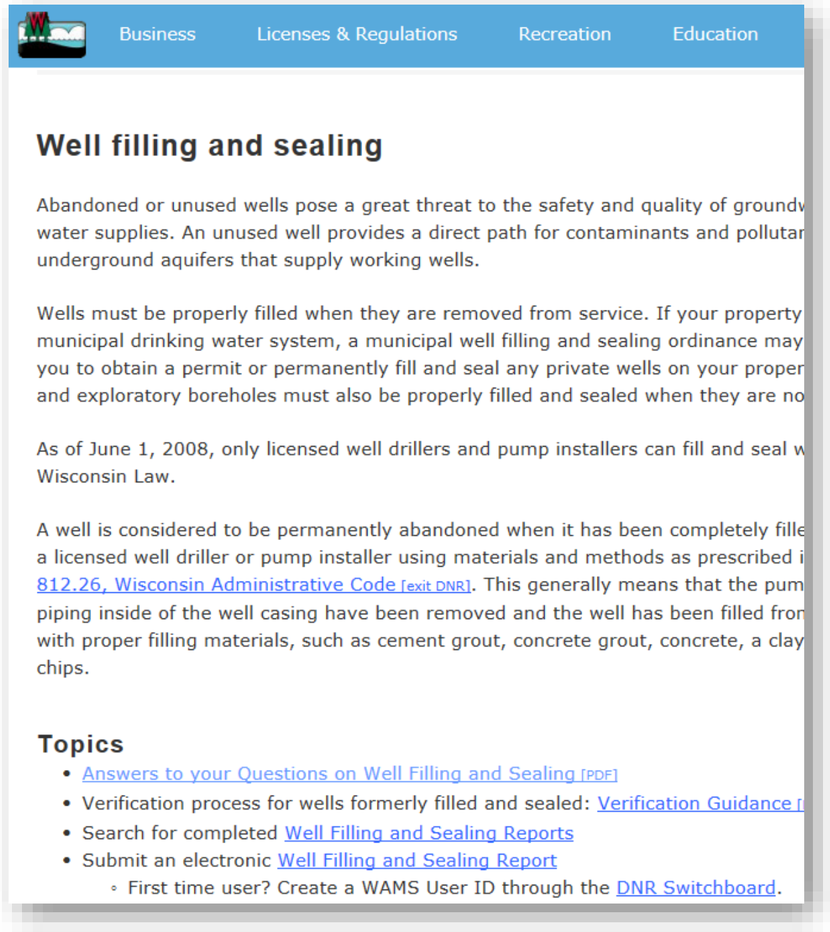


Wisconsin Department of Natural Resources, Bureau of Drinking Water and Groundwater PUB-DG-016 2020

Answers to Your Questions on Well Filling and Sealing

Why are unused and improperly filled and sealed wells threats to groundwater?

Unused and improperly filled and sealed wells are a significant threat to groundwater quality. If not properly filled with impermeable material, unused wells can directly channel contaminated surface or soil water into groundwater. Water that gets into unused wells bypasses the purifying action



Business Licenses & Regulations Recreation Education

Well filling and sealing

Abandoned or unused wells pose a great threat to the safety and quality of groundv water supplies. An unused well provides a direct path for contaminants and pollutar underground aquifers that supply working wells.

Wells must be properly filled when they are removed from service. If your property municipal drinking water system, a municipal well filling and sealing ordinance may you to obtain a permit or permanently fill and seal any private wells on your proper and exploratory boreholes must also be properly filled and sealed when they are no

As of June 1, 2008, only licensed well drillers and pump installers can fill and seal w Wisconsin Law.

A well is considered to be permanently abandoned when it has been completely fille a licensed well driller or pump installer using materials and methods as prescribed i 812.26, Wisconsin Administrative Code [exit DNR]. This generally means that the pum piping inside of the well casing have been removed and the well has been filled fron with proper filling materials, such as cement grout, concrete grout, concrete, a clay chips.

Topics

- Answers to your Questions on Well Filling and Sealing [PDF]
- Verification process for wells formerly filled and sealed: Verification Guidance [
- Search for completed Well Filling and Sealing Reports
- Submit an electronic Well Filling and Sealing Report
  - First time user? Create a WAMS User ID through the DNR Switchboard.

Well Filling and Sealing Grants

- Funded through DNR Well Compensation Program
- Provide up to 75% cost-sharing for well filling and sealing services for families earning less than $65,000
- Work completed prior to grant application will not be reimbursed

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