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# ENVIRONMENTAL Fact Sheet

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## Maintenance and Decommissioning Requirements for Monitoring Wells Associated with Hydrogeologic Investigations

Monitoring wells are typically installed at commercial and industrial properties when properties are sold or if contamination is suspected. Monitoring wells are also frequently installed near public water supply wells. An improperly maintained monitoring well can have serious consequences because it can serve as a direct conduit for the vertical movement of point and non-point pollution into the groundwater from the land surface. A property owner having an improperly maintained or abandoned well that is determined to be the source of subsurface contamination may be liable for costs associated with remediating contamination.

Data obtained from improperly maintained monitoring wells can be incorrect and/or misleading, resulting in erroneous interpretations and conclusions concerning potentiometric head conditions, the extent of contamination, contaminant concentrations and the potential source(s) or receptor(s) of contamination. Proper maintenance and abandonment of monitoring wells prevents the migration of contaminants to water-bearing geologic formations and the introduction of pollutants into the groundwater.

Recognizing the importance of proper well maintenance, state law (RSA 482-B:15) states that “All wells shall be maintained in a proper condition to conserve and protect groundwater resources and shall not be a source or cause of contamination or pollution of the water supply of any aquifer.”

NHDES has authority to enforce the law under RSA 482-B:16 and may seek legal action where it is determined that monitoring wells are not maintained and pose a threat to groundwater quality. NHDES personnel will investigate complaints of improperly maintained wells and inspect the condition of monitoring wells encountered during routine site visits to ensure that wells are properly maintained and not potentially impacting groundwater quality.

### **Monitoring Well Maintenance Requirement**

The structural integrity of the monitoring well casing, seals and well cap must be maintained in such a way as to prevent surface water and contaminants from entering the well. To avoid problems with surface runoff or contaminants from the surface entering the subsurface through the top of the well casing and unauthorized access or entry into the well, exterior maintenance checks are necessary. A visual inspection of the exterior of the well should identify such problems as: 1) cracked or corroded well casing; 2) broken or missing well cap or lock; 3) damage to protective casing; and 4) settling and cracking of surface seals. If any of these problems is found, the well should immediately be repaired or abandoned in accordance with the regulations of the New Hampshire Water Well Board (We 603 and 604) and DES (Env-Or 610.04). If repairs to a monitoring well

require more than just the replacement of a well cap or lock, then a well driller licensed by the New Hampshire Water Well Board must complete the repair work.

All monitoring wells must be fitted with a locking well cap to prevent tampering and introduction of foreign objects and substances into the well.

Monitoring wells that are no longer in use and are not or will not be maintained must be decommissioned in accordance with regulations of DES and the New Hampshire Water Well Board cited above.

### **How to Decommission a Well**

State regulation We 604 establishes the criteria for the abandonment of all wells, including monitoring wells. Decommissioning must be performed by a licensed New Hampshire Water Well Contractor. Prior to decommissioning, all wells should be investigated to determine their condition, the details of construction, whether any obstructions are present and the appropriate procedure for decommissioning. The decommissioning procedure must prevent the decommissioned well from becoming a conduit for contamination into or within the subsurface. All monitoring wells shall be sealed by grouting the entire length of the well.

State regulations We 602.36 and Env-Or 610.04 incorporate by reference the ASTM standards that provide additional guidance and practices that must be considered and implemented when abandoning monitoring wells, including (1) "Standards Relating to Environmental Site Characterization" Second Edition, document identification number ASTM ENVSIT-10, dated 2010; (2) ASTM ENVSAM14; and (3) Standard Guide for the Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities" D5299-99, 2012.

### **Overview of Monitoring Well Abandonment Procedure**

Prior to decommissioning, all wells should be investigated to determine their condition, the details of construction and whether or not any obstructions exist that will interfere with the filling and sealing process. Any obstructions should be removed by cleaning out the hole, if possible.

Abandoned monitoring wells should be sealed from the bottom to the top by pressure grouting the well through a tremie line. If possible, the casing should be removed prior to sealing. Some monitoring wells are constructed with a filter pack which is an artificial gravel pack placed in the annular space between the borehole and the well screen and used to create a better hydraulic connection with the aquifer. In order to properly seal this type of well, the casing should first be removed and the filter pack should be drilled out. The well should then be filled by the pressure grout method from the bottom of the well to the top using a tremie pipe.

There are a variety of acceptable grout and fill materials used for sealing wells. These include:

- 1) Portland cement, otherwise known as neat cement.
- 2) Cement-bentonite grout, which is a mixture of Portland cement with 2 to 10 percent bentonite clay. This sealant is the recommended material to use when decommissioning a contaminated well because, unlike neat cement that shrinks and can crack upon curing, cement-bentonite grout swells and remains plastic when cured, which in turn creates a superior seal.
- 3) Bentonite chips: When hydrated, bentonite chips will swell up to 12 to 13 times their dry volume and effectively seal the well. If the chips are applied at a rate greater than three minutes per bag, bridging can occur within the well and the well will not be filled.

NHDES requires that the decommissioning of wells be performed by a licensed New Hampshire Water Well Contractor. Licensed water well contractors have the necessary equipment and experience to complete the job

safely and properly. Contact the Water Well Board at (603) 271-1974 for more information regarding well abandonment requirements and techniques.

Reports of improperly maintained monitoring wells associated with petroleum, for example, gas stations, fuel storage areas, should be reported to Todd Piskovitz, NHDES Oil Remediation and Compliance Bureau, at (603) 271-0652 or [Todd.Piskovitz@des.nh.gov](mailto:Todd.Piskovitz@des.nh.gov). Reports of improperly maintained wells at all other sites may be submitted to Brandon Kernan at (603) 271-0660 or [brandon.kernan@des.nh.gov](mailto:brandon.kernan@des.nh.gov).

**For More Information**

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or [dwgbinfo@des.nh.gov](mailto:dwgbinfo@des.nh.gov) or visit our website at [www.des.nh.gov](http://www.des.nh.gov).

Note: This fact sheet is accurate as of August 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.