Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins Director
Division of Water Quality

August 15, 2007

MEMORANDUM

TO: All Permittees, Consultants, Laboratories, and Interested Parties

FROM: Ted L. Bush, Jr., Chief
Aquifer Protection Section

SUBJECT: Policy on Recommended Well Purge Volumes

Groundwater monitoring wells must be purged prior to sampling to remove stagnant water from the well casing. During recent years, various new purging and sampling methods have been introduced. For Aquifer Protection Section applications, the following policy, clarified previously February 21, 2001 by the former Groundwater Section, addresses standard procedures for purging specific well volumes using a bailer or pump.

First, calculate the volume of water standing in the well in order to determine the purge volume. Lower the pump or bailer into the water column slowly, to minimize turbulence. Remove three well volumes of water from the well, or pump or bail until pH, temperature, and conductivity vary no more than plus or minus 10% for successive volumes. Avoid excessive purging to prevent the accelerated movement of water into the well from the surrounding aquifer. For low yielding wells, which are slow to recover, remove at least one well volume. If a well is pumped or bailed to dryness, samples may be collected as soon as the well recovers to a point where enough water is available to collect samples. Wells with high turbidity or sediment may be allowed to settle up to 24 hours after purging before samples are collected. Pumping is the preferred method for purging since bailing stirs up sediment in the well and tends to increase turbidity.

Dedicated systems using permanently installed bladder pumps, and low-flow purging/sampling systems are new technologies that are acceptable. These systems utilize pumps that are placed in a stationary position within the screened interval of wells and are pumped at a low rate, generally 0.3-0.5 liters/minute, to match natural groundwater flow. Based on the site hydrogeology and the pump system used, smaller purge volumes are required based on a stabilization of parameters. Use purging techniques appropriate for site conditions and the specific system used as directed by the manufacturer.

cc: Environmental Regional Supervisors
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