



To Give Brownfields a Boost, NJDEP Should Consider Ground Water Use When Developing Cleanup Standards

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THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL Protection (DEP) has long resisted the idea that cleanup standards for ground water located beneath historically contaminated sites should take into account whether or not the ground water is actually used. Instead, through its recently re-adopted *Technical Requirements for Site Remediation*, DEP requires ground water beneath essentially every contaminated site to be cleaned up to drinking water standards, regardless of whether anyone ever will drink the water or use it for any other purpose.

Using drinking water standards makes sense for cleanups where ground water is withdrawn for potable supply. DEP's approach defies logic, however, for ground water beneath

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many industrial and commercial areas of the state, often referred to as "brownfields," where the likelihood that anyone will drink the ground water is slim to none.

Although remediation technology has improved dramatically since the early years of site remediation, cleaning up ground water that has been contaminated as a result of the state's industrial legacy has remained a complex, costly task. Achieving drinking water standards at these sites is extremely expensive because of the difficulty in removing "the last molecule" of contamination.

DEP conservatively estimates an average cost to achieve these standards at between \$100,000 to \$250,000 per site. These are significant sums and they even underestimate the cost of ground water cleanup at many sites that can amount to millions of dollars. The DEP's costly approach has contributed to the warehousing or abandonment of these formerly productive industrial sites. Allowing cleanup standards to take into account ground water use would provide a cost-effective incentive to the redevelopment of these brownfields

and still protect public health and the environment.

Developing Cleanup Standards

DEP has many tools available to develop cleanup standards that consider ground water use. In fact, the New Jersey Brownfield and Contaminated Site Remediation Act established a legal framework for DEP to develop cleanup standards for ground water. The Brownfields Act requires, among other things, that the location, surroundings and intended use of a site be considered in developing cleanup standards. It also requires DEP to consider various scientific principles and "exposure scenarios" in developing the standards. At most brownfield sites, the public will not be exposed to the ground water under any scenario, much less drink the water.

Other industrial states in the northeast and the federal Environmental Protection Agency (EPA) have developed cleanup standards and methods that take into account ground water use. Several states with comprehensive ground water protection programs (Illinois, Michigan, Massachusetts, and Pennsylvania) have developed flexible cleanup programs that apply drinking water standards where ground water is consumed and less-stringent cleanup standards where it is not.

These states use a variety of mechanisms to ensure that public health and the environment are protected from residual contamination, including ground water ordinances and mapping, deed notices and other restrictions on use. Each of these states and the EPA also allow cleanup standards to be developed for a brownfield site based on a site-specific risk assessment, which is state-of-the-art for developing cleanup standards. Unfortunately, DEP specifically prohibits the use of risk assessment to develop site-specific cleanup standards for ground water.

The Massachusetts DEP (MADEP), for example, takes into account regional factors to develop cleanup standards. MADEP has mapped all of that state's groundwater into one of three classifications: GW-1 is groundwater that may be used for drinking water; contaminants in GW-2 ground water may volatilize and migrate into buildings (often in industrial or urban areas), which may affect indoor air qual-

ity; and GW-3 ground water may discharge into surface water.

To illustrate how this system works, MADEP has developed risk-based cleanup standards for benzene, a common contaminant at many sites: The GW-1 cleanup standard for benzene is the same as the federal drinking water standard of 5 parts per billion (ppb); the GW-2 and GW-3 cleanup standards are three orders of magnitude higher, 2,000 ppb and 7,000 ppb, respectively, because in GW-2 and GW-3 areas there is much less risk of harm to public health or the environment. Massachusetts' GW-2 and GW-3 standards are protective of public health and the environment, but they can be achieved at a lower cost of cleanup, thus providing an incentive to brownfields redevelopment.

Although New Jersey also uses a ground water classification system, DEP acknowledges that its system does not take into account site-specific risk. As well, DEP applies its drinking water classification (Class II-A) by default, rather than accurately mapping the state's ground water or applying differential standards in different areas. In practice then, drinking water standards are applied as cleanup standards in virtually all of the state. DEP's standard for benzene at brownfield sites is 1 ppb, or five times more stringent than even the federal drinking water standard.

Possible Solutions

Further guidance exists to develop flexible cleanup standards, and has been adopted by other states to encourage the cleanup of brownfields. The American Society for Testing Materials (ASTM) has developed standard E2081-00, its Risk Based Standard for Corrective Action (RBCA), which provides a flexible, risk-based framework for ground water cleanups that has been adopted by other states, e.g., Illinois. RBCA uses a three-tiered approach to develop cleanup standards based on site-specific risk and exposure. If there is no exposure to a contaminant (e.g., no one is drinking the ground water), then the risk to public health is inherently low. Site-specific cleanup standards then may be developed that take into account these circumstances.

Despite available tools and the many proven examples of cleanup standards that take ground water use into account, DEP stubbornly continues to apply drinking water standards to every site cleanup. The agency justifies its approach by arguing that other New Jersey water protection statutes prohibit the use of flexible cleanup standards. When read together properly, however, to the contrary, the NJ Legislature's environmental pronouncements demonstrate that DEP is