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The Use of Direct-push Well Technology for Long-term Environmental Monitoring in Groundwater Investigations (SCM-2)

EXECUTIVE SUMMARY

This document provides technical and regulatory guidance concerning the use of Direct Push wells for long-term environmental groundwater monitoring. Direct Push wells offer the potential to save significant amounts of money and time for environmental groundwater monitoring. Equipment used to install such wells is usually smaller and lighter than conventional drilling rigs, so less damage is done to landowner's property. The quality of data from groundwater samples taken from Direct Push wells are comparable to those obtained from conventional wells. Despite these positive attributes, most states' regulations inadvertently prohibit their use for long-term groundwater monitoring and relegate their usage primarily to screening purposes. The basis of the prohibition on the use of Direct Push wells involves their lack of the relatively large volume of annular space that is required for the proper construction of conventional wells. Installation of wells by Direct Push technology is not new, and variances permitting the use of Direct Push wells for long-term monitoring are commonly granted in many states.

In the infancy of environmental ground water monitoring, regulatory agencies and advisory organizations relied upon established well drilling techniques when drafting regulations that would be protective of human health and the environment for the installation of environmental ground water monitoring wells. Those drilling techniques were primarily developed to access water and petroleum resources, and subsequently utilized to obtain environmental samples from aquifers to determine the identity and levels of contaminants present. The standard for environmental monitoring wells was typically based on two and four-inch diameter wells drilled and installed with a hollow-stem auger or other conventional installation techniques. The technologies used for installing ground water monitoring wells have advanced significantly since most of the regulations were written.

This ITRC technical/regulatory guidance document presents detailed information related to Direct Push well technology, including the following:

- a description of Direct Push well technology
- equipment and installation requirements
- known regulatory barriers and concerns
- technology advantages and limitations
- health and safety issues
- stakeholder involvement
- comparative data between Direct Push and conventionally drilled wells in the form of multiple case studies as they relate to contaminant detection and water level measurements

This document is intended to provide the information required to make an informed decision regarding the use of Direct Push wells for long term groundwater chemistry monitoring and for static ground water levels. In addition, links to further references related to Direct Push technology are provided, which may be referenced to address specific concerns and questions of the reader. This document does not address other potential applications for Direct Push well technology, such as temporary well points or site remediation injection wells. The primary conclusions of this report may be summarized in three key points as follows:

- (1) Results from short-term and long-term groundwater monitoring studies have shown that samples taken from Direct Push wells are comparable in quality to those obtained from conventionally-constructed wells.
- (2) Usage of Direct Push wells for long-term monitoring is prohibited in many states by existing regulations that require a larger annular space than can be obtained with Direct Push methods.
- (3) Direct Push wells can be extremely cost-efficient.