Publication

Direct push optical screening tool for high-resolution, real-time mapping of chlorinated solvent DNAPL architecture

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Synopsis:
This report details field testing of a new direct push optical screening tool for high-resolution three-dimensional subsurface mapping of chlorinated solvent dense nonaqueous phase liquids (DNAPLs) in unlithified sediments. The new tool is a laser-induced fluorescence (LIF) technology known as "DyeLIF™," which was developed and validated during this ESTCP project and is produced by Dakota Technologies, Inc.

The DyeLIF tool is a new site characterization technology that – for the first time – facilitates rapid, cost-effective 3-dimensional (3-D) delineation of residual chlorinated solvent DNAPL in the subsurface. This type of high-resolution

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source characterization can identify previously unknown residual DNAPL, thereby optimizing source zone excavation or in situ treatment programs. In particular, high-resolution characterization using DyeLIF can dramatically reduce cumulative remediation costs and improve remediation performance by targeting excavation or treatment on the most impacted areas that convey mass to potential receptors. Similarly, a site investigations program using DyeLIF can also quickly determine that residual DNAPL is not present in the subsurface at a particular site. That knowledge can also be very valuable for risk evaluations and scoping of remediation systems.

Read more about SERDP and ESTCP's projects.