

CONTAMINANT REMOVAL BY THE ART In-WELL TECHNOLOGY, WHY DIFFERENT?

Mohamed Odah*

Accelerated Remediation Technologies, Inc.

P.O. Box 2697

Olathe, KS 66063

Voice: 913-438-4384, Ext. 102

Fax: 913-599-6688

modah@artinwell.com

The ART technology is based on established concepts and combines in situ air stripping, air sparging, soil vapor extraction, subsurface circulation and enhanced a long with bioremediation/oxidation. This physical removal is a main component of the ART Technologies process to treat subsurface contamination. The multiple remediation cycles by the ART Technology makes it well suited for recalcitrant compounds since a unit of water will be treated several times prior to discharging into the aquifer. Additionally, the synergistic processes are treating contaminants simultaneously. The multiple, in-well stripping passes and high air to water ratio achieved in the well (via stripping and sparging) are integral to the physical removal of contamination. Concurrently, the subsurface circulation process is actively flushing residual contamination from the soil matrix and mobilizes it back to the well for further treatment. The circulation and extraction processes also actively and continuously provide significant dissolved oxygen (DO) boost throughout the radius of influence, enhancing bioremediation/oxidation of the hydrocarbon compounds.

The in well air-sparging component results in decreased water density, and a net negative gradient back towards the well and creates the in-well packer component between the lower and upper parts of the screen. Vacuum pressure is applied atop of the well point to extract vapor from the unsaturated zone and the well annulus. A submersible pump is placed at the bottom of the well to recirculate water to the top for downward discharge through a spray head. The stripped water cascades down the interior of the well and over the "mounded" water back in to the aquifer. Enhanced stripping via air sparging near the bottom of the well occurs simultaneously. Selected summaries for the ART technologies implementations along with general methodologies to estimate removal effectiveness will be presented.

###