

Adding Accurate Control to Horizontal Well Systems under Tanks, Roads, Utilities, and Adjacent Owner Properties

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Background/Objectives. Horizontal remediation wells (HRWs) provide an excellent means to intersect the strata of most plumes efficiently while providing significantly more linear contact area than vertical wells. However, HRWs have not historically offered discrete controlled treatment along the length of the plume. In addition to this drawback, varying lithology in the plane of the horizontal well may also allow preferential pathways that render the well system at best *less efficient* and at worst *useless*.

Approach/Activities. New segmented horizontal well systems offer discrete control over each individual, custom defined, screened interval. Design allows for treatment proportioning and adjustments as needed, thereby solving both drawbacks to HRWs – lack of control and preferential pathway avoidance. The flow rate or volume to or from each segment of a horizontal well system can be individually controlled, allowing for changes in distribution of treatment along the well system's length and increasing the efficiency of any remedial technology.

This segmented HRW technology was recently utilized at a Fueling Station in Jacksonville, Florida to provide treatment control and reduce disruption to site activities. The remedy used horizontal installation to minimize business disruption, provide ease and speed of system installation. The HRWs allowed installation in poorly accessible locations. Four well systems, with 26 well segments, were installed and used for injection. The site utilized chemical oxidants and a patent pending injection system to complete the application.

Results/Lessons Learned. The chemical oxidant treatment was efficiently applied as needed based on feedback. The discrete and controlled nature of the well system allowed precise chemical oxidant placement. The cleanup was conducted under a performance contract and was completed on time and the control using the horizontal well systems was key to the success of the project. The project demonstrated an installation time reduction of nearly 60%. The project was completed within the one year time frame outlined by the performance contract. A substantial cost savings was recognized at the site compared to conventional vault and trenching installation procedures.