

Pilot Study of Natural Attenuation of Coliform Bacteria in a Sandy Aquifer

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Southwest Research Institute® is supporting the Wintergarden Groundwater Conservation District in a pilot study to evaluate natural attenuation of coliform bacteria in a confined, sand aquifer. The pilot study is to evaluate the potential for augmenting natural recharge from water stored in small impoundments. Surface water from a small impoundment is being injected into the aquifer through a well into the confined, Carrizo Aquifer. The surface water contains high levels of coliform bacteria including E. Coli. The coliforms are believed to originate from wildlife in the catchment of the impoundment and also from waterfowl utilizing the impoundment. Efforts to treat coliforms by chlorination prior to injection proved to be uneconomical. The pilot study of natural attenuation is being conducted to satisfy regulatory requirements pursuant to Underground Injection Control regulations. The extent of natural attenuation of coliforms is being monitored in a downgradient well. Atmospheric chlorofluorocarbons (CFCs) present in the impounded water are being used as environmental tracers of the recharged water in the aquifer along with fluorescein dye introduced with the injected water. Temperature and electrical conductivity are also being used as tracers of the injected water. The pilot study is currently on-going and is expected to last approximately one year based on estimates of the rate of plume movement.