

Groundwater Monitoring Optimization Plan for the Chatham Brothers Barrel Yard, Escondido,
California

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The Chatham Brothers Barrel Yard (Site) is located in Escondido, California. The Site accepted chlorinated solvents, such as Tetrachloroethylene (PCE) and Trichloroethylene (TCE) for reclamation from 1941 to 1981. In 1982 the Department of Hazardous Substances (DHS), the Regional Water Quality Control Board (RQCB), and the Environmental Protection Agency (EPA) began investigating the Site for groundwater contamination. Groundwater monitoring data has been collected irregularly since 1994 in 69 monitoring wells and 24 water supply wells. This study focuses on a statistical approach to determine an appropriate monitoring frequency, for the offsite monitoring well network. The historical groundwater monitoring data was evaluated by using the Monitoring and Remediation Optimization System (MAROS) program. The MAROS program utilizes the Mann-Kendall statistical analysis (a nonparametric measure) and Linear Regression (Rate of Change) to determine a monitoring frequency for each well. Both the Mann-Kendall and linear Regression trend methods gave similar trend estimates for the offsite monitoring wells and water supply wells analyzed. Stable to decreasing trends were observed in offsite monitoring wells near the source area, while increasing trends were observed in some of the monitoring wells and water supply wells located near the center axis and tail end of the PCE and TCE plume. Based on the MAROS analysis, 4 monitoring wells and 2 water supply wells were recommended for a quarterly (Q) monitoring frequency. These wells all received an Increasing (I) trend from the Mann-Kendall analysis and the Linear Regression analysis except for 2 wells that received No Trend (NT) for both. The confidence in this trend was 100% or near 100%, and had a positive and large magnitude Mann-Kendall S statistics. MAROS determined that the sampling frequency for the remaining monitoring wells and water supply wells could be sampled on a less than quarterly frequency without loss of confidence in plume definition. This was based on stable to decreasing trends and a low rate of change along with concentrations at or below the cleanup goal. After further data collection after the next two years, the MAROS analysis can be reevaluated to determine if a reduction in monitoring intensity is appropriate. Additionally, further evaluations and investigations must be performed to determine if the increase and/or reduction of groundwater monitoring is appropriate for the offsite monitoring program.