STEADY STATE ANALYSIS

ERM conducted a literature review to support selection of an accepted statistical method for evaluating temporal trends of chemical concentrations in groundwater systems. Based on this literature review, ERM selected the Mann-Kendall analysis as the most appropriate to evaluate temporal trends in Site chlorinated volatile organic compound (CVOC) groundwater concentration data. The following data plots were generated and interpreted to evaluate temporal data trends:

- a molar trend plot and Mann-Kendall analysis (acceptable 80% confidence level) for MW-268M; and

- a total-plume-mass molar trend plot and Mann-Kendall analysis (acceptable 80% confidence level) using plume-centerline wells.

A time-series evaluation of CVOC concentrations was performed for the most downgradient plume-centerline monitoring well (MW-268M). The molar concentrations of CVOCs were summed for each monitoring event, and then plotted over time (i.e., each subsequent sampling event). The molar trend chart is attached. A Mann-Kendall analysis (attached) confirmed the visual decline in CVOC concentrations to an acceptable 80 percent confidence level. This analysis indicates that total CVOC concentrations at this key location are decreasing over time.

A similar analysis was performed to evaluate changes in total molar CVOC concentrations for wells located along the plume centerline. Plume centerline monitoring wells that were sampled during every Northern Area sampling event were selected for this analysis. The molar concentrations from this subset of wells was summed for each monitoring event, and then plotted over time. The total molar trend chart is attached. A Mann-Kendall analysis (attached) confirmed the visual decline in CVOC concentrations to an acceptable 80 percent confidence level. This analysis indicates that total CVOC concentrations along the plume centerline are decreasing over time.

CVOC concentrations are decreasing along the plume center line, including the most downgradient well, over time. Application of the statistically proven Mann-Kendall analysis indicates that the plume is attenuating.

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