SUPPLEMENTAL INFORMATION:

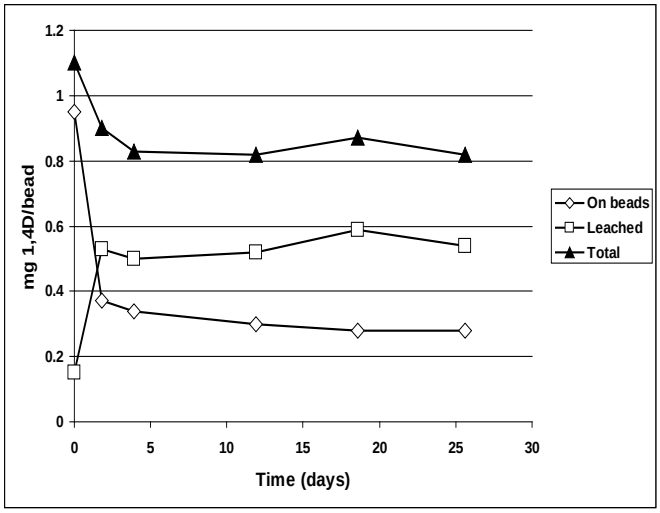

Figure S1. Leaching study of 1,4-dioxane from Bio-Sep® beads for stable isotope probe analysis.

1,4-Dioxane Leaching Study

Because 1,4-dioxane is less efficiently adsorbed onto activated carbon (material used in the Bio-Sep® beads), the leachability of ^{13}C-dioxane from Bio-Trap® samplers into the aquifer was simulated in the laboratory. The leachability study provided an indication of the level of desorbing or leaching of ^{13}C-dioxane into groundwater and whether a steady state could be reached beyond which limited or no leaching would occur. The results of the leaching study indicated that 50% of 1,4-dioxane leached from the Bio-Sep® beads within the first two to four days, and a total of 55% of 1,4-dioxane leached after 18 days. After 4 days, the loss of 1,4-dioxane became stabilized through the end of the 25-day study (Figure S1). Based on these results, Bio-Trap® samplers baited with the ^{13}C-dioxane were pre-soaked in deionized water for five days prior to shipment to the site for deployment.

SIP Sampler Preparation

For PLFA-SIP analysis, cometabolic biodegradation of both TCE and 1,4-dioxane were investigated using Bio-Trap® samplers baited with ^{13}C-TCE or ^{13}C-1,4-dioxane in the University of Tulsa laboratory. To bait the Bio-Trap® samplers, Bio-Sep® beads were loaded as vapor-phase under

reduced pressure for approximately 48 hours. After the Bio-Traps were baited, they were pre-soaked for 5 days in deionized water to remove the labile fraction of the ^{13}C -dioxane and ^{13}C -TCE (as discussed above). The pre-deployment concentration of the ^{13}C-labeled compound was then measured and recorded for each SIP sampler so that percent loss of the compound could be measured after deployment in the field.