Experimental Section

Well water, phytoplankton, *Hyalella montezuma* (an endemic amphipod), and *Motobdella montezuma* (an endemic leech) samples were collected from Montezuma Well in July, corresponding to the peak growing season in the well. Water was collected in 1-L acid-washed polyethylene bottles. Samples for total aqueous arsenic analysis were field-filtered (0.45-□m glass fiber filter) and acidified with trace metal grade nitric acid (Fisher Scientific), while the remaining samples were filtered according to EPA Method 445 for phytoplankton collection. Water samples for total arsenic analysis were stored at 4 ºC prior to analysis. *H. montezuma* and *M. montezuma* were collected at the surface and at a depth of approximately 10 m, respectively, using a 254-□m plankton tow net. Invertebrate samples were rinsed with dionized distilled water, individually stored in plastic Ziplock bags, and immediately frozen in liquid nitrogen. Phytoplankton and invertebrate samples were freeze-dried (Emitech K-750X) and stored at -80 ºC prior to analysis.

Invertebrate and phytoplankton samples were ground to pass through a 40-mesh screen. A composite subsample (~500 mg) of phytoplankton and each invertebrate was weighed into Teflon microwave digestion bombs (Mileston-Ethos 900) for acid digestion of samples. Digestion was performed similar to EPA Method 3051 using 9 mL HNO_3 (trace metal grade, Fisher Scientific) and 3 mL H_2O_2 (30%). Laboratory blanks, NIST Standard Reference Material 1571 (Orchard Leaves), and NRC Certified Reference Material DORM-2 (dogfish muscle) were digested for analytical quality control. Digests were diluted to appropriate concentrations with deionized, distilled water and filtered (0.45-□m Teflon) prior to analysis. All samples were run in triplicate.