

## Arsenic in Montezuma Well

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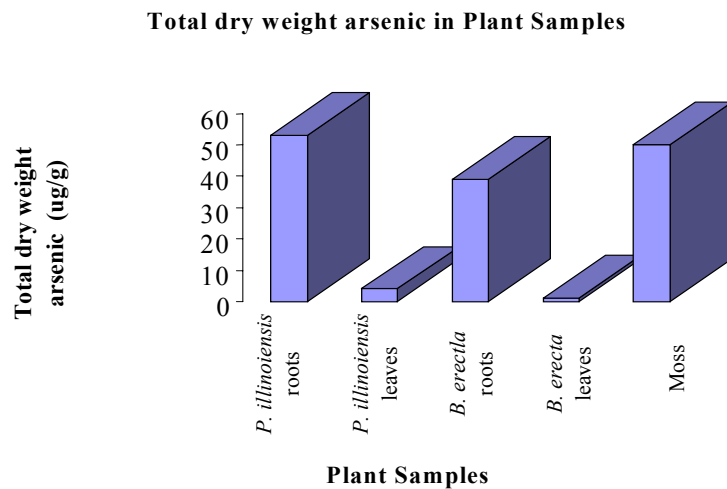
**Table 1. Typical chemical analyses for Verde Valley water sources<sup>a</sup>**

Water Source	pH	Ca	Mg	Na	K	Alk	Cl	SO <sub>4</sub> <sup>2-</sup>
Verde River	8.0	50	24	27	1.8	256	8.7	10.0
Sycamore Creek	7.9	62	26	7.0	0.4	267	3.6	4.5
Oak Creek	7.6	32	16	5.0	0.4	149	1.7	1.3
Wet Beaver Creek	8.2	54	28	23	2.8	246	114	34
Montezuma Well	6.9	110	36	50	5.4	460	22	11
Well water	7.8	58	28	26	3.2	279	15	4.4

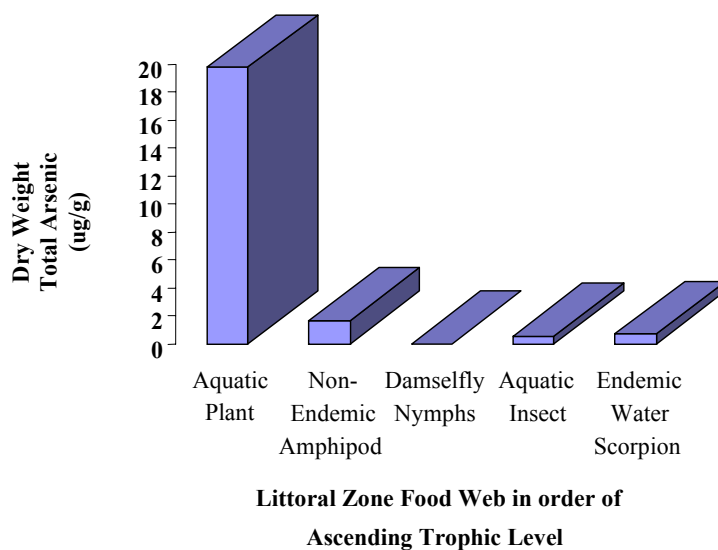
<sup>a</sup>Concentrations reported as µg/L, except for alkalinity, which is reported as mg CaCO<sub>3</sub>/L.

**Table II. Total Arsenic in Samples by ICP-MS**

Sample Analyzed for Total Arsenic	Avg. Total Arsenic (µg/g) fw	Avg. Total Arsenic (µg/g) dw
Montezuma Well Sediment	67±5 (n=5)	427
Montezuma Well Soil	76±10 (n=5)	95
<i>Potamogeton illinoiensis</i> roots	27±5 (n=4)	53
<i>Potamogeton illinoiensis</i> leaves	2.0±0.3 (n=4)	4.1
Moss	27±3 (n=2)	50
<i>Berula erecta</i> roots	20±3 (n=4)	39
<i>Berula erecta</i> leaves	0.7±.2 (n=4)	1.3
Endemic amphipod	1.6±0.3 (n=3)	3.4
Non-endemic amphipod	1.7±0.3 (n=3)	3.2
Endemic water scorpion	0.7±0.07 (n=3)	1.5
Damselfly nymphs	<0.5 (n=3)	NA
Aquatic insect	0.6±0.2 (n=3)	1.0
Endemic leech	926±100 (n=2)	2,810
Endemic leech, rinsed	15±1 (n=2)	45.5



**Figure 1.** Total dry weight arsenic in aquatic plant samples, Montezuma Well.



**Figure 2.** Dry Weight Total Arsenic in Littoral Zone Food Web, Montezuma Well, AZ.

**Figure 3.** Surface plot from the Kriging analysis of Verde Valley arsenic data. The vertical axis represents arsenic concentration in  $\mu\text{g/L}$ . The horizontal axes represent the distance from Humbolt, Arizona in kilometers.

**Figure 4.** X-ray absorbance near edge spectrum of *Potamogenton illinoensis* taken from Montezuma Well, showing the contributions of arsenate, arsenite, and arsenic-glutathione to the composite spectrum.

## Verde Valley Surface Water Arsenic Concentration

