

# How Much Water Is There and How Is It Used?



Water Fact Sheet #3

*Italicized terms are defined in Fact Sheet #10*

In an average year, almost 44 million *acre-feet* of water flow out of Montana. Of this amount, 65 percent originates within Montana's borders. The remainder flows into the state from Wyoming, Idaho, and Canada. The state is divided into seven major river *basins*: Kootenai, Clark Fork, St. Mary, Upper Missouri, Lower Missouri, Little Missouri, and Yellowstone.

The average annual amount of water flowing into and out of each basin is shown in Figure 3. Together, the Kootenai and Clark Fork produce the most water per unit area supplying 59 percent of Montana's water but cover only 17 percent of the area of Montana. In contrast, the Missouri basins cover over half of the area in Montana but because these watersheds contain more semi-arid plains areas, they produce only 18 percent of the total water. Water use can be estimated as either the *water withdrawn* or the *water consumed* for a particular purpose. Water withdrawn refers to water extracted from the ground or *diverted* from a *surface water* source (Figure 1). Some of this withdrawn water reenters the system downstream as *return flow*. Water consumed refers to water no longer available for use because it has evaporated, transpired through natural vegetation, been consumed by humans or livestock, or used for crop production or industrial applications.

Although water use varies by basin, irrigation accounts for approximately 12.4 percent of the water withdrawn and approximately 68 percent of the water consumed in Montana (Figure 1 and 2). *Reservoir* evaporation such as water evaporated from lakes and ponds also accounts for a large portion of water consumed, although the water is not technically diverted. Approximately 1.2 million *acre-feet*, or 28 percent of the total water consumed, evaporates from reservoirs.

Most of the water used in Montana comes from surface water sources. *Groundwater* use, although small compared to surface water, provides much of the water used for public supply and self-supplied domestic and industrial uses. Groundwater also provides a significant source of irrigation water in some areas (see Fact Sheet #4: *Can Groundwater Meet the Demand for New Water Uses in Montana?*).

Montana withdrew about 1.4 times the national average for total water withdrawn and 1.7 times the national average for surface water withdrawn in the year 2000, making Montana one of the larger water consumers in the nation (Figure 4). Montana was well below the national average for average groundwater withdrawn in 2000.

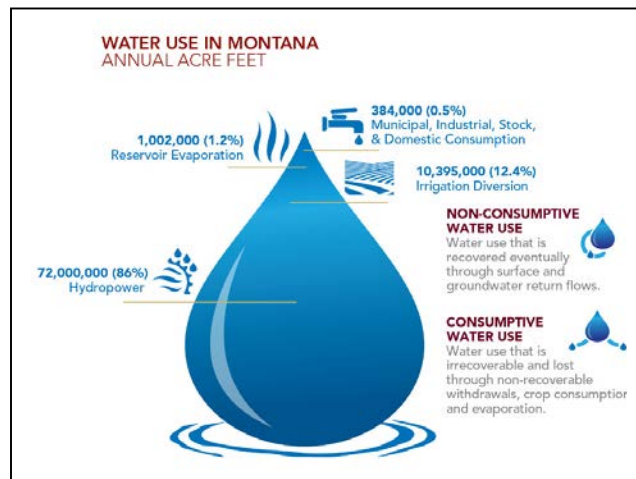


Figure 1 - Water use in Montana by purpose.

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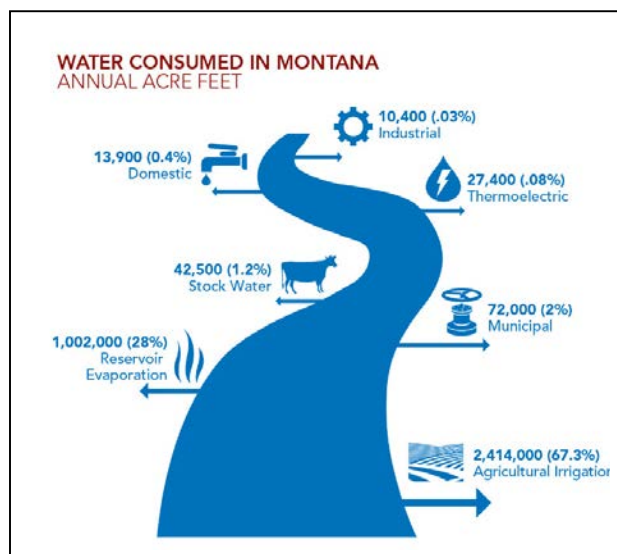


Figure 2 - Water Consumption in Montana by purpose.

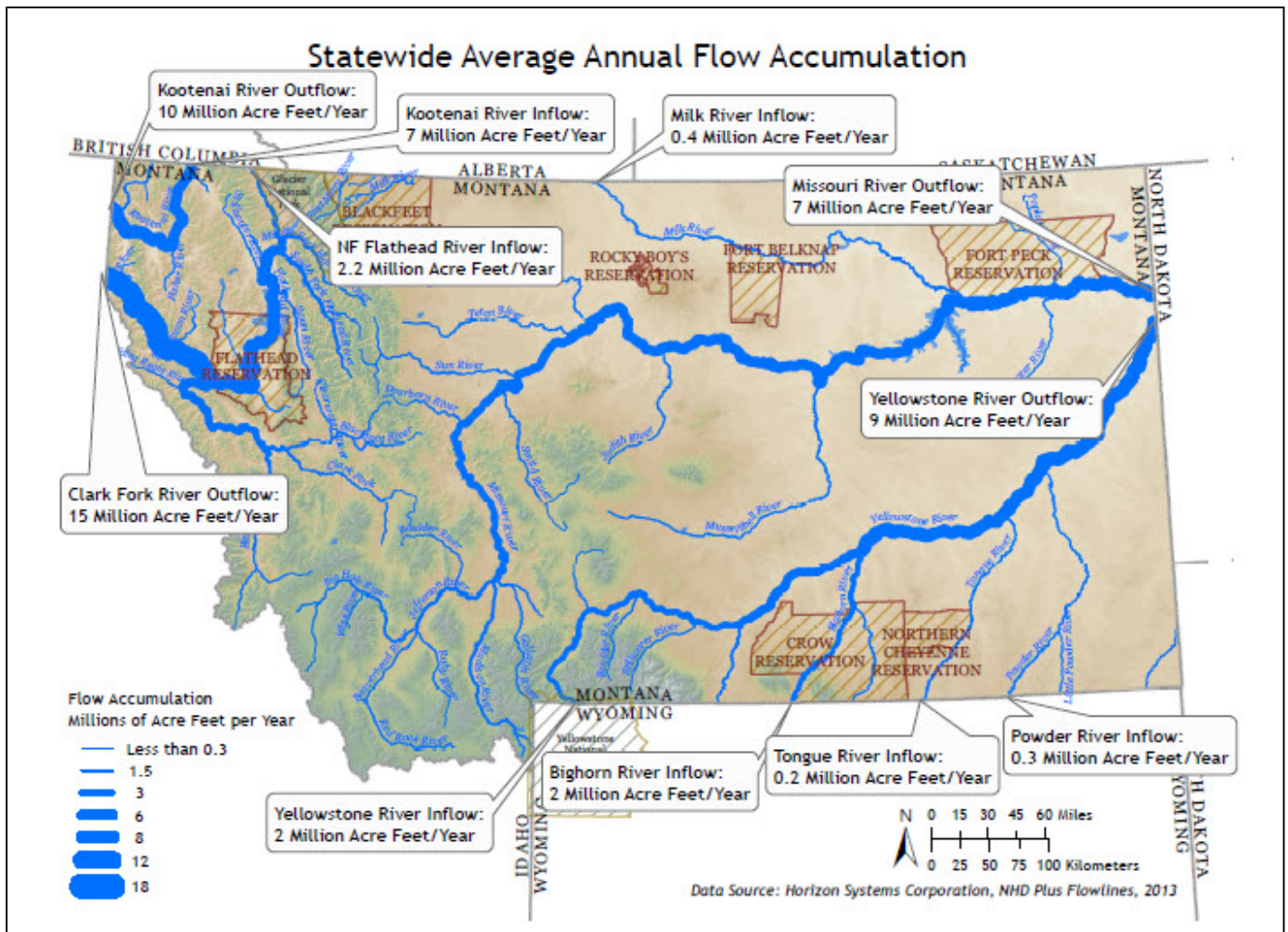


Figure 3 – Statewide average inflows and outflows in Montana.

By category, irrigation and livestock represent the only industries in which Montana exceeds the national average. Concerns with the amount of water used in hydraulic fracturing, commonly known as fracking, have increased as the exploration of shale formations in the state continues. Currently, fracking contributes less than a tenth of the water consumed in Montana, although it is 100 percent consumptive. The chief shale formation being accessed, the Bakken formation, extends into the northeastern part of the state. Most of the activity of the Bakken has been focused in North Dakota; however, as more productive wells are drilled in Montana, some of the focus could shift westward.

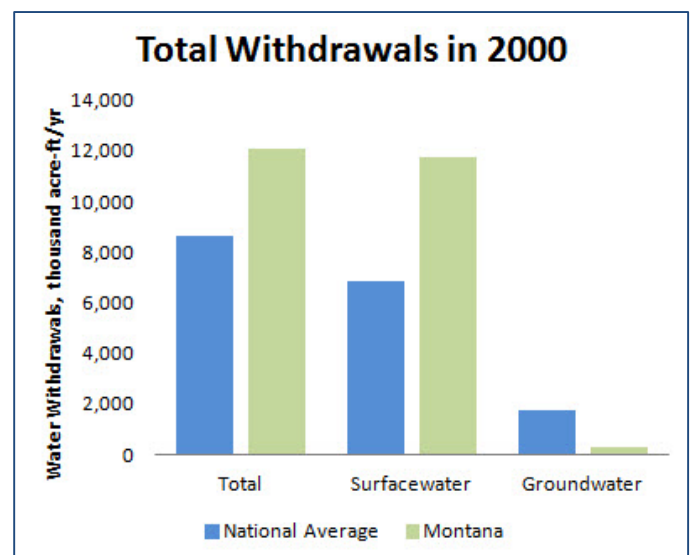


Figure 4. National and state average withdrawal in 2000.