

# Groundwater Use in the United States of America

## Total

Groundwater (mgd — fresh, not saline).....	82,300 <sup>1</sup>
Percentage of total freshwater supply for nation.....	29.3% <sup>2</sup>
<ul style="list-style-type: none"> <li>• 41%<sup>3</sup> of America's population regularly depends upon groundwater for its drinking water supply</li> <li>• The U.S. bottled water industry used 5.34 billion gallons of groundwater in 2001<sup>4</sup></li> </ul>	

## Public Supply

Groundwater (mgd).....	15,200
Percentage of total groundwater.....	18.5%
Percentage of total public supply.....	39.0%
<ul style="list-style-type: none"> <li>• 90,400,000 American residents served by 39,400 groundwater-supplied community water systems<sup>5</sup> having 79,900 community supply wells<sup>6</sup></li> <li>• 17,300 non-transient, non-community water systems serving 5,280,000 people<sup>7</sup> using 17,100 non-community supply wells<sup>8</sup></li> <li>• 81,100 transient, non-community water systems serving 10,200,000 people<sup>9</sup> using 80,000 non-community supply wells<sup>10</sup></li> </ul>	

## Individual Household

Groundwater (mgd).....	3,210
Percentage of total groundwater.....	3.9%
Percentage of total individual household supply.....	98.5%
<ul style="list-style-type: none"> <li>• 41,800,000<sup>11</sup> American residents served by privately owned individual wells</li> <li>• 13,100,000<sup>12</sup> occupied American households served by privately owned individual wells</li> </ul>	

## Irrigation

Groundwater (mgd — fresh).....	57,200
Percentage of total groundwater.....	69.5%
Percentage of total irrigation.....	48.5%
<ul style="list-style-type: none"> <li>• 476,000 irrigation wells used serving 121,000 farms<sup>13</sup></li> </ul>	

## Livestock/Aquaculture

Groundwater (mgd — fresh).....	2,840
Percentage of total groundwater.....	3.5%
Percentage of total livestock/aquaculture.....	29.7%

## Industrial, Self-Supplied

Groundwater (mgd — fresh).....	2,670
Percentage of total groundwater.....	3.2%
Percentage of total industrial.....	19.1%

## Mining

Groundwater (mgd — fresh).....	1,010
Percentage of total groundwater.....	1.2%
Percentage of total mining.....	53.7%

## Thermoelectric

Groundwater (mgd — fresh).....	425
Percentage of total groundwater.....	0.52%
Percentage of total thermoelectric.....	0.45%

## Water Prices

Estimates of the economic value of water are relatively few in number and vary greatly both within and across economic sectors. They range from as little as \$1 to \$1,260 (avg.) per acre-foot<sup>14</sup> (2013 dollars). Currently available estimates from the literature suggest the following values for different uses:

- Public supply and domestic self-supply<sup>15</sup> — up to \$345 per 1,000 cubic feet
- Agriculture — up to \$1,260 (avg.) per acre-foot
- Manufacturing<sup>16</sup> — \$10 to \$660 per 1,000 cubic feet
- Electric power generation — \$12 to \$87 per acre-foot for cooling water at thermoelectric power plants, and \$1 to \$157 per acre-foot for hydropower
- Mining and energy resource extraction — \$40 to \$2,700 per acre-foot<sup>17</sup>.

The American Water Works Association surveyed water utilities in the United States, asking for each utility's average residential consumption and the bill at that level. For systems reporting their source water was 51% or greater groundwater, the 2019 average cost/gallon was \$0.005<sup>18</sup>. NGWA calculates that using 2015 estimated use volumes of 15.2 bgd for public supply and the AWWA 2019 average cost/gallon, groundwater for public supply could have an annual value of \$27.7 billion.

(mgd = million gallons per day)

(bgd = billion gallons per day)

<sup>1</sup> U.S. Geological Survey, *Estimated Use of Water in the United States in 2015*. Released 2018. All other groundwater-use data come from this source.

<sup>2</sup> *Ibid.*

<sup>3</sup> Calculated by using the 2015 census estimate of US population (as found in the U.S. Census Bureau's American Community Survey, available from American FactFinder). The number of residents served by groundwater-supplied community water systems is added to the estimated population in households served by private wells.

<sup>4</sup> Drinking Water Research Foundation, May 2005.

<sup>5</sup> From U.S. Environmental Protection Agency, Drinking Water GPR Inventory Report. The information is calculated for the period 2015 Quarter 4.

<sup>6</sup> The number of wells serving community water systems is estimated by using 2006 EPA data (*Community Water Systems Survey*) for the average number of wells per system and multiplying that by the 2015 number of community water systems using groundwater. The number of wells per community water system ranged from 1.7 wells for the smallest systems to 5.4 wells for larger systems. The average number of wells across all system sizes was 2.1 wells.

<sup>7</sup> From U.S. Environmental Protection Agency, Drinking Water GPR Inventory Report. The information is calculated for the period 2015 Quarter 4.

<sup>8</sup> Assumes one well per non-community water system (and zero wells for those systems purchasing groundwater from another system).

<sup>9</sup> From U.S. Environmental Protection Agency, Drinking Water GPR Inventory Report. The information is calculated for the period 2015 Quarter 4.

<sup>10</sup> Assumes one well per non-community water system (and zero wells for those systems purchasing groundwater from another system).

<sup>11</sup> U.S. Geological Survey, *Estimated Use of Water in the United States in 2015*.

<sup>12</sup> U.S. Census, American Housing Survey, 2013.

<sup>13</sup> U.S. Census and U.S. Department of Agriculture, Farm and Ranch Irrigation Survey, 2013.

<sup>14</sup> *Ibid.*; 1 acre-foot = 325, 851 gallons.

<sup>15</sup> American Water Works Association. 2019 Water and Wastewater Rate Survey.

<sup>16</sup> *Ibid.*

<sup>17</sup> U.S. EPA. *The Importance of Water to the U.S. Economy*, November 2013, pp. 13-14. "The variability of the estimates reflects their dependence on a variety of factors, including differences in the methods used to derive them. The variability in the estimates also reflects the multiple elements of water that can affect its value. Because the available estimates are limited in number and highly sensitive to both context and method, they cannot easily be used to draw inferences about the value of water in other contexts." "It is important to recognize that water does not have one single value; even in the context of a single use, its value may change over time."

<sup>18</sup> American Water Works Association. 2019 Water and Wastewater Rate Survey.



# America's Groundwater Industry Employment

## America's Contracting Employment

Drill and service water wells, install and service pumps, install and service point-of-use water treatment devices. This portion of the industry is characterized by small firms, many of which are multi-generation family-owned and operated.

- 5,272 firms employ an estimated 52,000 people; 85% of the firms report annual revenue of \$3.0 million or less<sup>19</sup>.

## America's Scientists and Engineers Employment

Geologists, hydrogeologists, engineers, geochemists, geophysicists, microbiologists, regulators.

### Environmental Consulting

NAICS 54162: Establishments primarily engaged in providing advice and assistance on environmental issues, such as the control of environmental contamination from pollutants, toxic substances, and hazardous materials.

- 28,329 establishments employ an estimated 104,174 people.

Environmental Consulting Services Industry (most likely to relate to NGWA's interests)<sup>20</sup>

Sub-industries YR 2014	Establishments	Sales (\$ millions)	Employment
Earth science services	14,292	\$5,794	37,263
Geological consultant (subset of Earth science services)	5,406	\$4,301	17,687
Geophysical consultant (subset of Earth science services)	1,122	\$924	4,304

## Remediation

NAICS 56291: Establishments include those engaged in remediation and cleanup of contaminated buildings, mine sites, soil, or groundwater.

- 6,135 firms employ an estimated 80,804 people.

Remediation Services Industry (most likely to relate to NGWA's interests)<sup>21</sup>

Sub-industries YR 2014	Establishments	Sales (\$ millions)	Employment
Toxic or hazardous waste cleanup	2,579	\$11,538	39,530
Oil spill cleanup (subset of toxic or hazardous waste cleanup)	1,482	\$2,969	14,080
Decontamination services	460	\$1,163	5,394

## Government, Research Institutes, Universities, and Colleges

- Thousands more.

## America's Community Water Systems Employment

Some 39,400<sup>22</sup> community water systems rely upon groundwater across the United States, and employ an estimated 173,000 full-time professionals, and 373,000 part-time and contract professionals<sup>23</sup>.

<sup>19</sup> Info USA, Well Contractor Firms and Employment 2018

<sup>20</sup> Barnes Reports, 2019 U.S. Industry Market Report.

<sup>21</sup> *Ibid.*

<sup>22</sup> From U.S. Environmental Protection Agency, Drinking Water GPR Inventory Report. The information is calculated for the period 2015 Quarter 4.

<sup>23</sup> U.S. EPA, March 2009, 2006 Community Water Systems Survey.

