Groundwater Use in the United States of America

Total

Groundwater (mgd — fresh, not saline) ..... 76,000[1]
Percentage of total freshwater supply for nation ..... 24.8%[2]

- 38%[3] of America's population regularly depends upon groundwater for its drinking water supply
- The U.S. bottled water industry used 5.34 billion gallons of groundwater in 2001[4]

Public Supply

Groundwater (mgd) 15,700
Percentage of total groundwater 20.7%
Percentage of total public supply 37.4%

- 90,220,000 American residents served by 39,000 groundwater-supplied community water systems[5] having 88,000 community supply wells[6]
- 17,300 non-transient, non-community water systems serving 5,280,000 people[7] using 17,100 non-community supply wells[8]
- 81,300 transient, non-community water systems serving 10,200,000 people[9] using 79,800 non-community supply wells[10]

Individual Household

Groundwater (mgd) 3,540
Percentage of total groundwater 4.66%
Percentage of total individual household supply 98.3%

- 34,191,000[11] American residents served by privately owned individual wells
- 13,100,000[12] occupied American households served by privately owned individual wells

Irrigation

Groundwater (mgd — fresh) 49,500
Percentage of total groundwater 65.1%
Percentage of total irrigation 43%

- 476,000 irrigation wells used serving 121,000 farms[13]

Livestock/Aquaculture

Groundwater (mgd — fresh) 3,020
Percentage of total groundwater 3.97%
Percentage of total livestock/aquaculture 26.4%

Industrial, Self-Supplied

Groundwater (mgd — fresh) 2,900
Percentage of total groundwater 3.82%
Percentage of total industrial 19.3%

Mining

Groundwater (mgd — fresh) 1,120
Percentage of total groundwater 1.47%
Percentage of total mining 49.8%

Thermoelectric

Groundwater (mgd — fresh) 587
Percentage of total groundwater 0.77%
Percentage of total thermoelectric 0.5%

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 $4,500 per acre-foot[14] (2010 dollars). Currently available estimates from the literature suggest the following values for different uses:

- Public supply and domestic self-supply — up to $4,500 per acre-foot
- Agriculture — $12 to $4,500 per acre-foot
- Manufacturing — $14 to $1,600 per acre-foot
- 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[15].

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 2014 average cost/gallon was $0.00374[16]. NGWA calculates that using 2010 estimated use volumes of 15.7 bgd for public supply and the AWWA 2014 average cost/gallon, groundwater for public supply could have an annual value of $21.4 billion.

(mgd = million gallons per day)
(bgd = billion gallons per day)

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[1] U.S. Geological Survey, *Estimated Use of Water in the United States, 2010*. Released 2014. All other groundwater-use data come from this source.
[2] *Ibid*.
[3] Calculated by using 2014 rural average household size of 2.61 persons (as found in the U.S. Census Bureau's American Community Survey, available from American FactFinder) multiplied by the number of occupied households using water wells in the American Housing Survey for 2013 and then adding that number to the number of residents served by groundwater-supplied community water systems.
[4] Drinking Water Research Foundation, May 2005.
[5] From U.S. Environmental Protection Agency, sdwis-fed-gpra-2015. The information is calculated for the period from 7/1/2014 to 6/30/2015.
[6] 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.
[7] From U.S. Environmental Protection Agency, sdwis-fed-gpra-2015. The information is calculated for the period from 7/1/2014 to 6/30/2015.
[8] Assumes one well per non-community water system (and zero wells for those systems purchasing groundwater from another system).
[9] From U.S. Environmental Protection Agency, sdwis-fed-gpra-2015. The information is calculated for the period from 7/1/2014 to 6/30/2015.
[10] Assumes one well per non-community water system (and zero wells for those systems purchasing groundwater from another system).
[11] Calculated by using 2014 rural average household size multiplied by the number of occupied households using water wells in the American Housing Survey for 2013.
[12] U.S. Census, American Housing Survey, 2013.
[13] U.S. Census and U.S. Department of Agriculture, Farm and Ranch Irrigation Survey, 2013.
[14] An acre-foot is approximately 325,851 gallons.
[15] 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."
[16] February 2015 e-communication to NGWA from Kenneth Mercer, Ph.D., senior manager of Technical and Research Programs, American Water Works Association.

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America's Groundwater Industry Employment

America's Contracting Employment

NAICS 235810: 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.

- 6,080 firms employ an estimated 33,500 people; 83% of the firms report annual revenue of $2.5 million or less[17].

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.

- 29,000 establishments employ an estimated 99,600 people.

Environmental Consulting Services Industry (most likely to relate to NGWA's interests)[18]

Sub-industries YR 2014	Establishments	Sales ($ millions)	Employment
Earth science services	15,200	$4,210	36,700
Geological consultant (subset of Earth science services)	5,750	$3,120	17,600
Geophysical consultant (subset of Earth science services)	1,190	$671	4,270

Remediation

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

- 6,020 firms employ an estimated 81,200 people.

Remediation Services Industry (most likely to relate to NGWA's interests)[19]

Sub-industries YR 2014	Establishments	Sales ($ millions)	Employment
Toxic or hazardous waste cleanup	2,680	$7,780	42,100
Oil spill cleanup (subset of toxic or hazardous waste cleanup)	1,540	$2,000	15,000
Decontamination services	478	$784	5,740

Government, Research Institutes, Universities, and Colleges

- Thousands more.

America's Community Water Systems Employment

Some 39,000[20] 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[21].

[17] Barnes Reports, 2015 U.S. Industry Market Report for 2014.
[18] *Ibid.*
[19] *Ibid.*
[20] From U.S. Environmental Protection Agency, swdis-fed-gpra-2015. The information is calculated for the period from 7/1/2014 to 6/30/2015.
[21] U.S. EPA, March 2009, *2006 Community Water Systems Survey.*

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