Warm-Up 07JAN2016

1. What are the 2 kinds of aquifers? How are they similar? How are they different?
2. What is salt-water intrusion?

Warm-Up 07JAN2016

What are the 2 kinds of aquifers? How are they similar? How are they different?

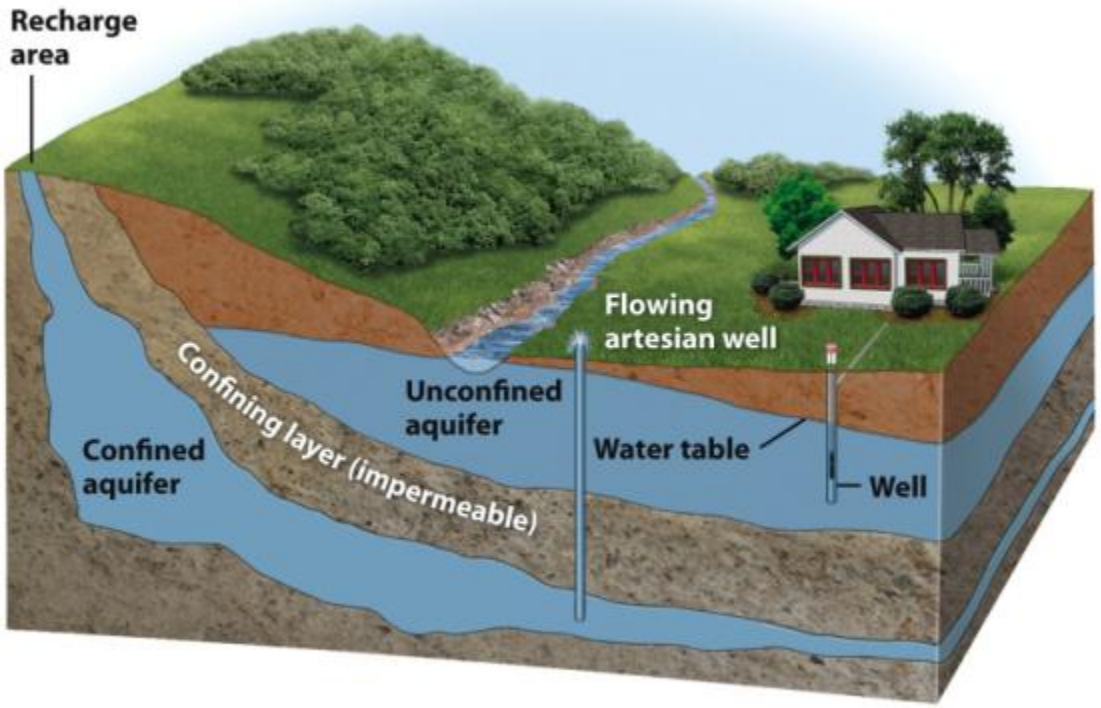


Figure 9.2
Environmental Science

Warm-Up 07JAN2016

What is salt-water intrusion?

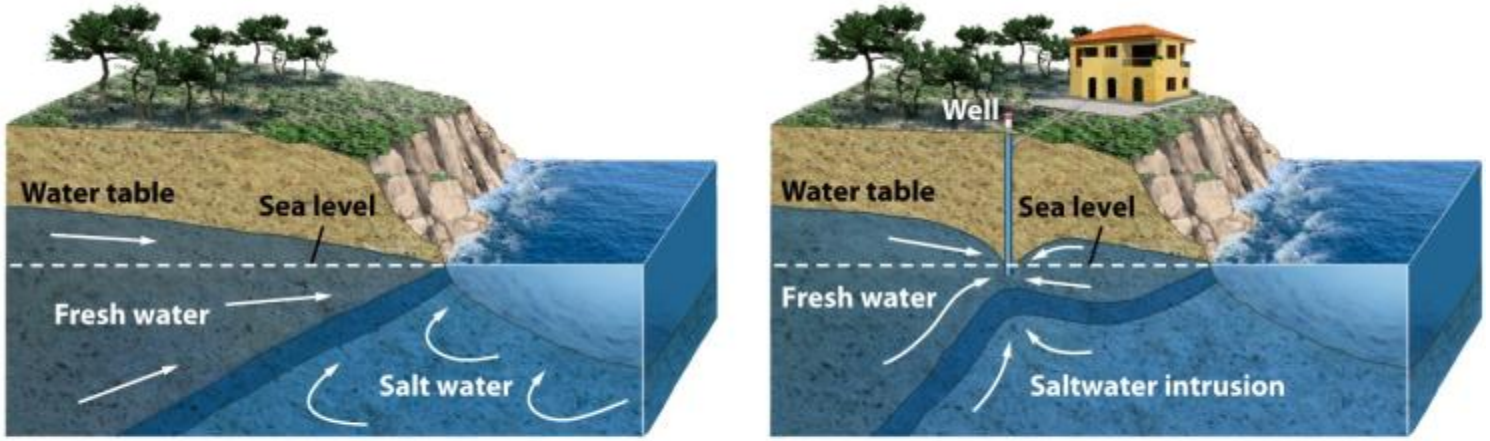


Figure 9.6
Environmental Science

Logistics

Due Tomorrow:

10 Vocabulary

Due Monday:

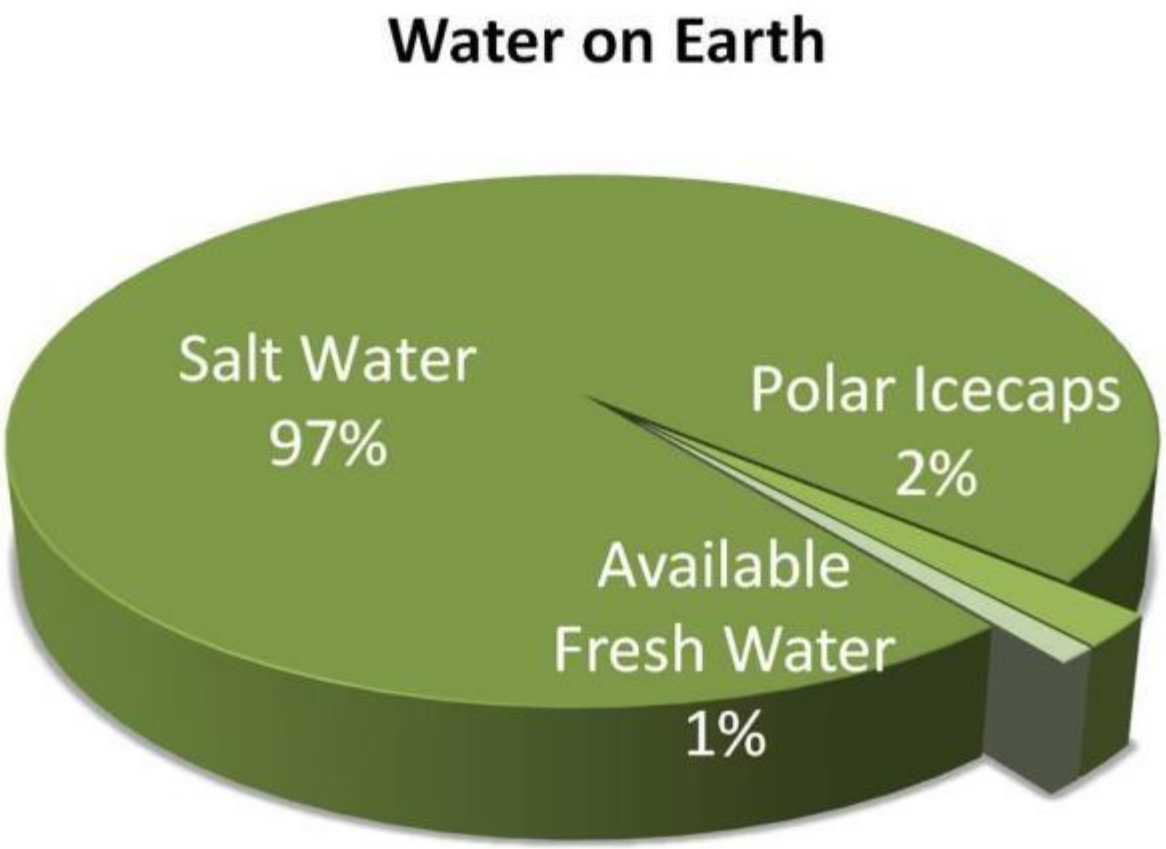
Read Klein Chapter 3

Finish reading Chapter 9 in the APES textbook

Due Friday (1/15):

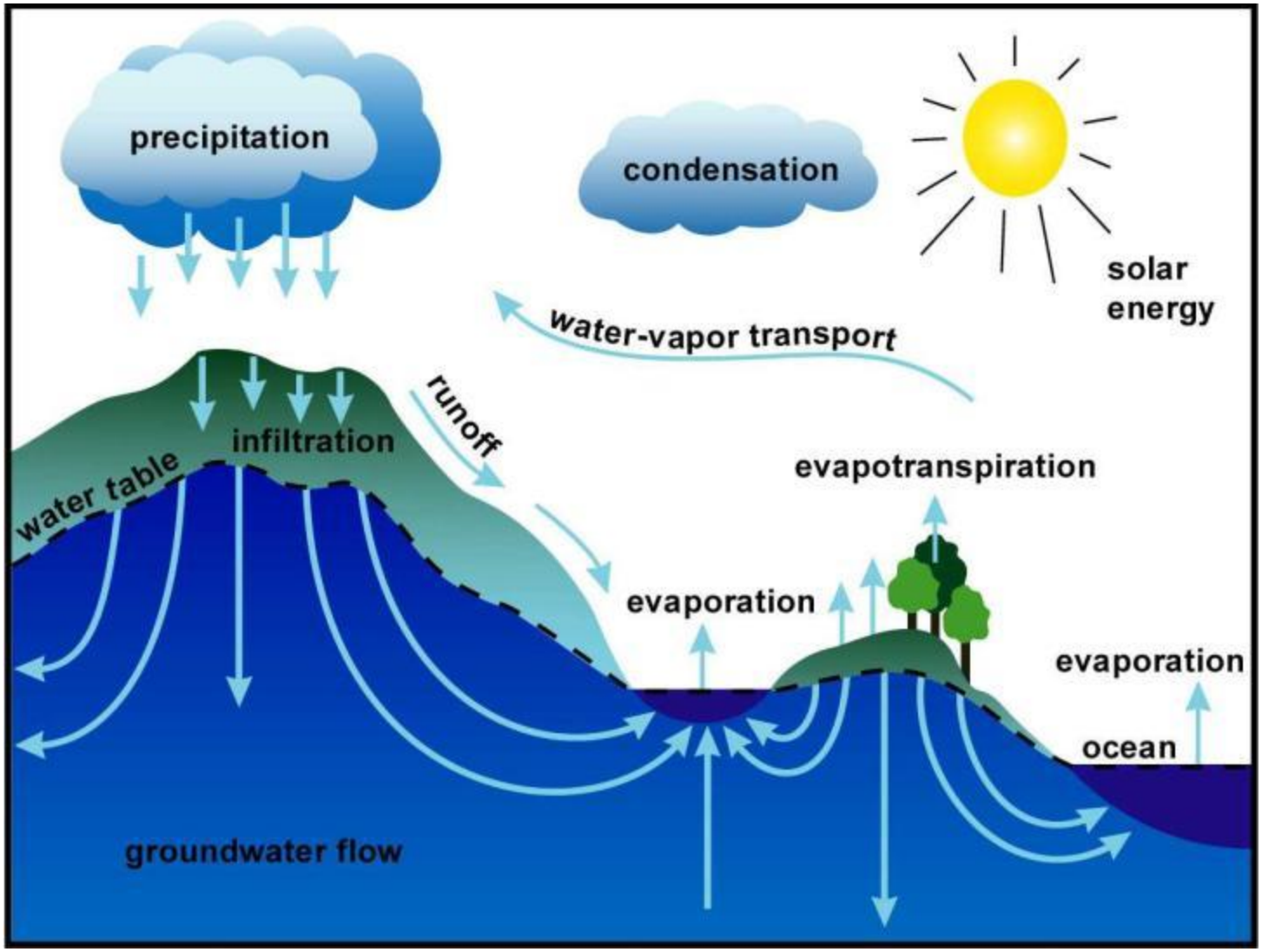
Eco-Column Supplies

Water is a paradox



Atmospheric Water

- Important for water storage and in global nutrient cycles
- Will indicate precipitation in certain regions and this is very important in arid regions.


precipitation
condensation
solar
energy
water-vapor transport
runoff
infiltration
water table
evapotranspiration
evaporation
evaporation
ocean
groundwater flow

Impermeable Surfaces

- Pavement or buildings that do not allow water to infiltrate into the soil
- The result is run-off during rain storms and snowmelt this can lead to flood events downstream

1. How do human activities worsen the effects of droughts and floods?

2. How might paved surfaces influence re-charge rates?

- Because water is scarce, humans have devised several ways to hold on the water that is available

Altering the Availability of Water

- Levees- an enlarged bank built up on each side of the river. (prevents flooding)
- Dikes- similar to a levee but built to prevent ocean waters from flooding adjacent land.

Figure 9.9
Environmental Science

Altering the Availability of Water

- Dams- a barrier that runs across a river or stream to control the flow of water.
- Reservoir- the area where water is stored behind the dam.

Figure 9.10
Environmental Science

Altering the Availability of Water

- Aqueducts- canals or ditches used to carry water from one location to another.

Figure 9.12
Environmental Science


Wyoming
CHEYENNE
SALT LAKE CITY
Nevada
Utah
Colorado
DENVER
Green River
Colorado River
Lake Powell
GLEN CANYON DAM
San Juan River
Lake Mead
LAS VEGAS
Colorado River
HOOVER DAM
Lake Mohave
DAVIS DAM
Lake Havasu
California
Arizona
New Mexico
SANTA FE
Little Colorado River
LOS ANGELES
Aqueduct
PARKER DAM
Central Arizona Project
Colorado River
Colorado River
PHOENIX
SAN DIEGO
Mexico

Altering the Availability of Water

- Desalination- removing the salt from salt water to obtain fresh water.

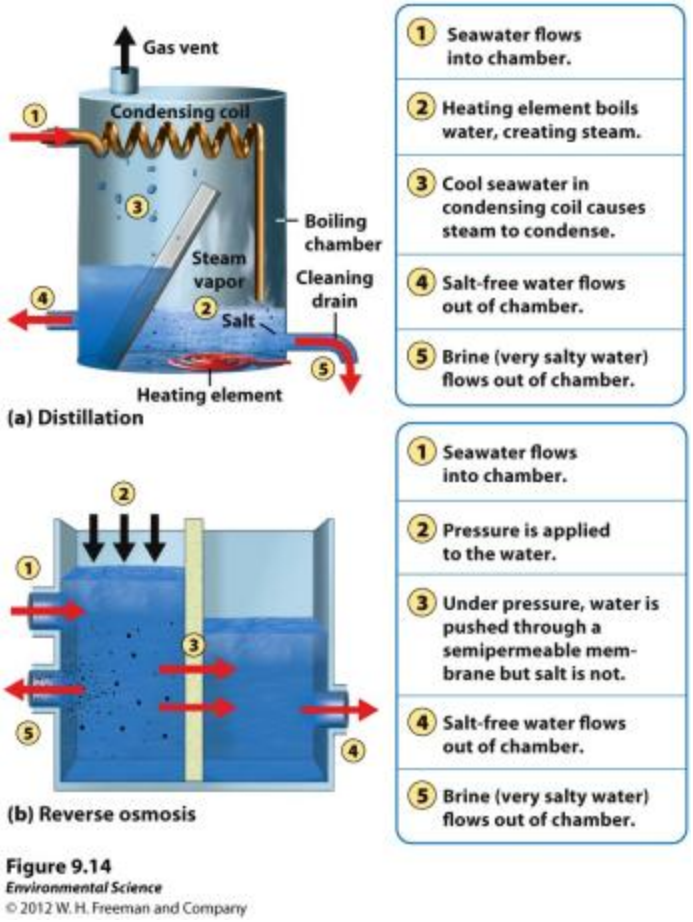


Figure 9.14
Environmental Science

- These strategies have social, economic, and environmental consequences

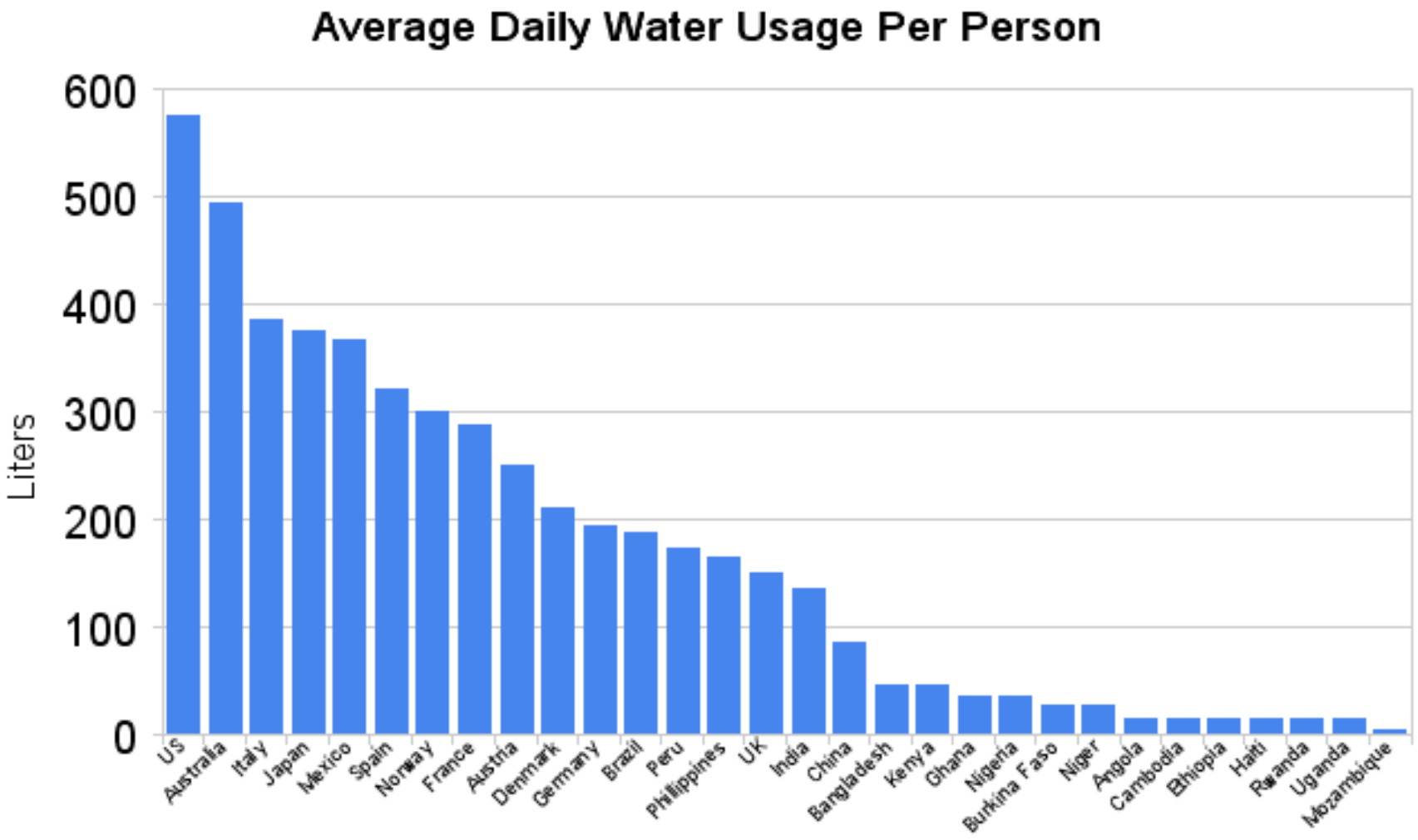

BUMP
Hang on, What's this?
Pretty sure this wasn't here last year

Altering the Availability of Water

- Fish ladders- a set of stairs with water flowing over them that have been added to some dams to help migrating fish such as salmon get upstream.

Figure 9.11
Environmental Science

- How do levees, dikes, dams, and aqueducts differ from one another? What is the primary purpose of each?
- Why is it necessary to desalinize water?


Average Daily Water Usage Per Person
Liters
600
500
400
300
200
100
0
US
Australia
Italy
Japan
Mexico
Spain
Norway
France
Austria
Denmark
Germany
Brazil
Peru
Phillippines
UK
India
China
Bangladesh
Kenya
Ghana
Nigeria
Burkina Faso
Niger
Angola
Cambodia
Ethiopia
Haiti
Rwanda
Uganda
Mozambique

Agriculture, Industry and Household Needs

- Agriculture- the largest user of water around the world.

Furrow irrigation

Flood irrigation

Spray irrigation

Drip irrigation

Agriculture, Industry and Household Needs

- Irrigation techniques-
  - Furrow irrigation- a trench that is flooded with water.
  - Flood irrigation- the entire field is flooded with water.
  - Spray irrigation- an apparatus that sprays water across a field.
  - Drip irrigation- using a slow dripping hose that is laid on or buried beneath the soil.

- Hydroponic agriculture- crops grown in fertilized water and no soil.

Agriculture, Industry and Household Needs

- Industry- the second largest user of water worldwide.

Figure 9.19
Environmental Science

Agriculture, Industry and Household Needs

- Households- the third largest user of water worldwide .

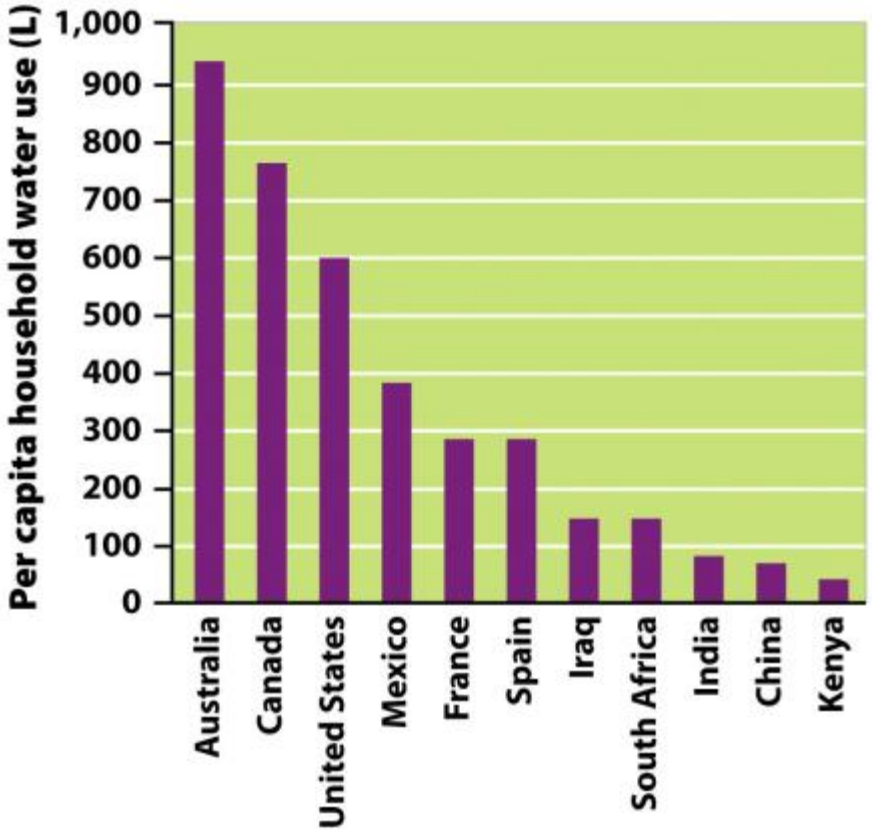


Figure 9.20
Environmental Science

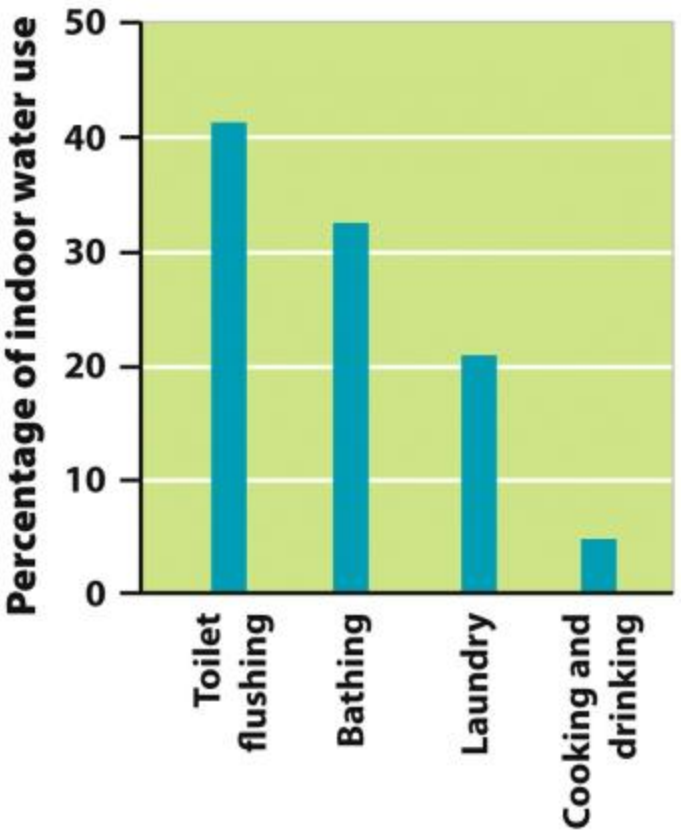


Figure 9.21
Environmental Science

Potatoes	60 gallons per pound
Wheat	108 gallons per pound
Corn	168 gallons per pound
Rice	229 gallons per pound
Soybeans	240 gallons per pound
Beef	12,009 gallons per pound

feed
6.7
Pounds of grains and forage

water
52.8
Gallons for drinking water and irrigating feed crops

land
74.5
Square feet for grazing and growing feed crops

fossil fuel energy
1,036
Btus for feed production and transport. That's enough to power a typical microwave for 18 minutes.

- What are the dominant uses of water by humans?
- How do different irrigation methods influence water use?
- Why does it require so much more water to produce 1 kg of beef than 1 kg of grain?