

REMINDERS

❖ Two required essays are still due by April 17, 2020.

➤ A late penalty will be applied.

✓ A third essay may be used for extra credit in place of a "Think Geographically" essay.

ESSAY TOPICS (choose any two):

- Contributions of a noted geographer, earth scientist or explorer (ch. 1)
- Relationship of climate change to a listed current event topic (ch. 2)
- Discuss a natural process that is deemed a natural hazard (ch. 3)

❖ **Extra Credit:**

"Think Geographically" Essays from any five of the textbook's **chapters 4-12**.

- Last day to submit as of now is **May 12** but it is best to do them as you finish reading a chapter.

- Any essay may be handed in before the deadline.
- Don't wait for the night before to write them!

EXAM II INFO

EXAM II: Tuesday, April 21 **On BlackBoard from 11:15 AM -12:30 PM**

Study Guide II is available on the Handouts Section of Course Home Page. It includes Part II terminology and the place names for North America, South America and Antarctica.

LECTURES FOR EXAM II

PP 09: People & Physical Environment
PP 10: Earth-Sun Relationships
PP 11: The Hydrosphere - Oceans
PP 12: The Atmosphere - Weather
PP 13: The Atmosphere - Climate
PP 14: The Lithosphere - Geologic Influences
PP 15: The Lithosphere - Landscape Development
PP 16: Earth Habitat - The Biosphere and Zones of Life
PP 17: Earth Habitat - Human Impact & Natural Processes
PP 18: Earth Habitat - Earth Resources

TEXTBOOK READING FOR EXAM II

WEATHER and CLIMATE: chapter 2
LITHOSPHERE: chapter 3
BIOSPHERE: chapter 4
EARTH RESOURCES: chapter 5

PART II: People and their Physical Environment

- ✓ **I. Introduction to the Physical Environment**
- ✓ **II. Earth-Sun Relationship**
- ✓ **III. Earth Systems**
 - ✓ A. The Hydrosphere: Oceans
 - ✓ B. The Atmosphere: Weather and Climate
 - ✓ C. The Lithosphere: Geologic Influences

IV. Earth Habitat

- ✓ A. Biosphere
- ✓ B. Natural Controls and Cycles
- ✓ C. Human Impact
- ✓ D. Natural Hazards
- **E. Earth Resources**

GEOG 101 Part II
People and their
Physical Environment

18: Earth Habitat
Earth Resources
Chapter 5

Prof. Anthony Grande
Hunter College Geography



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RESOURCES

❖ NATURAL RESOURCES

Aspect of the physical environment that a population deems **necessary** and **useful** to it.

- Minerals, energy sources, water, forests, wilderness, soil, and scenery are said to be resources.
- **Once used**, tangible resources return to the earth as **waste**.
- The **value** of a resource depends on its scarcity and demand for use (supply and demand). There is an uneven distribution worldwide.

❖ **Potential Resource:**

A material that *might* become useful in the near future.

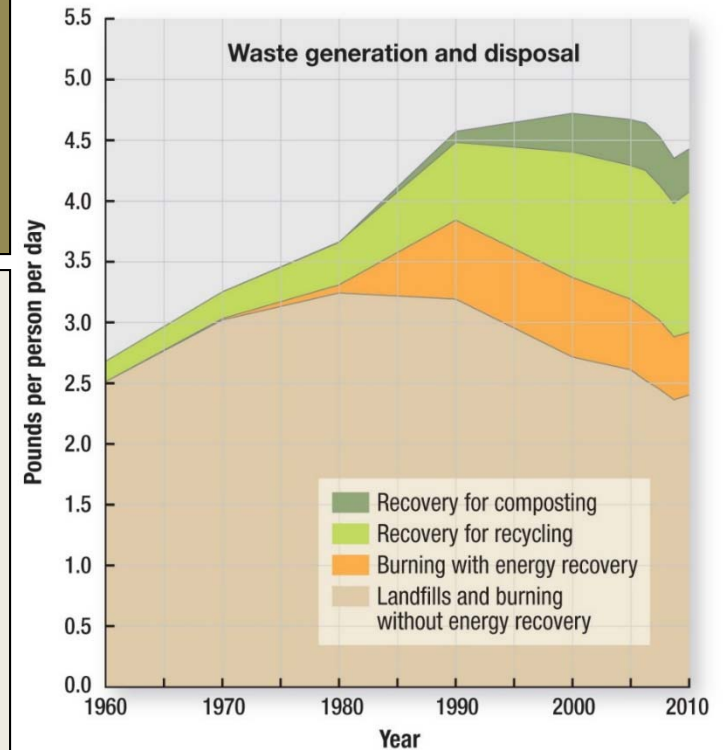
❖ **Resource Management:**

A process by which a resource is analyzed, used, conserved and evaluated for future use.

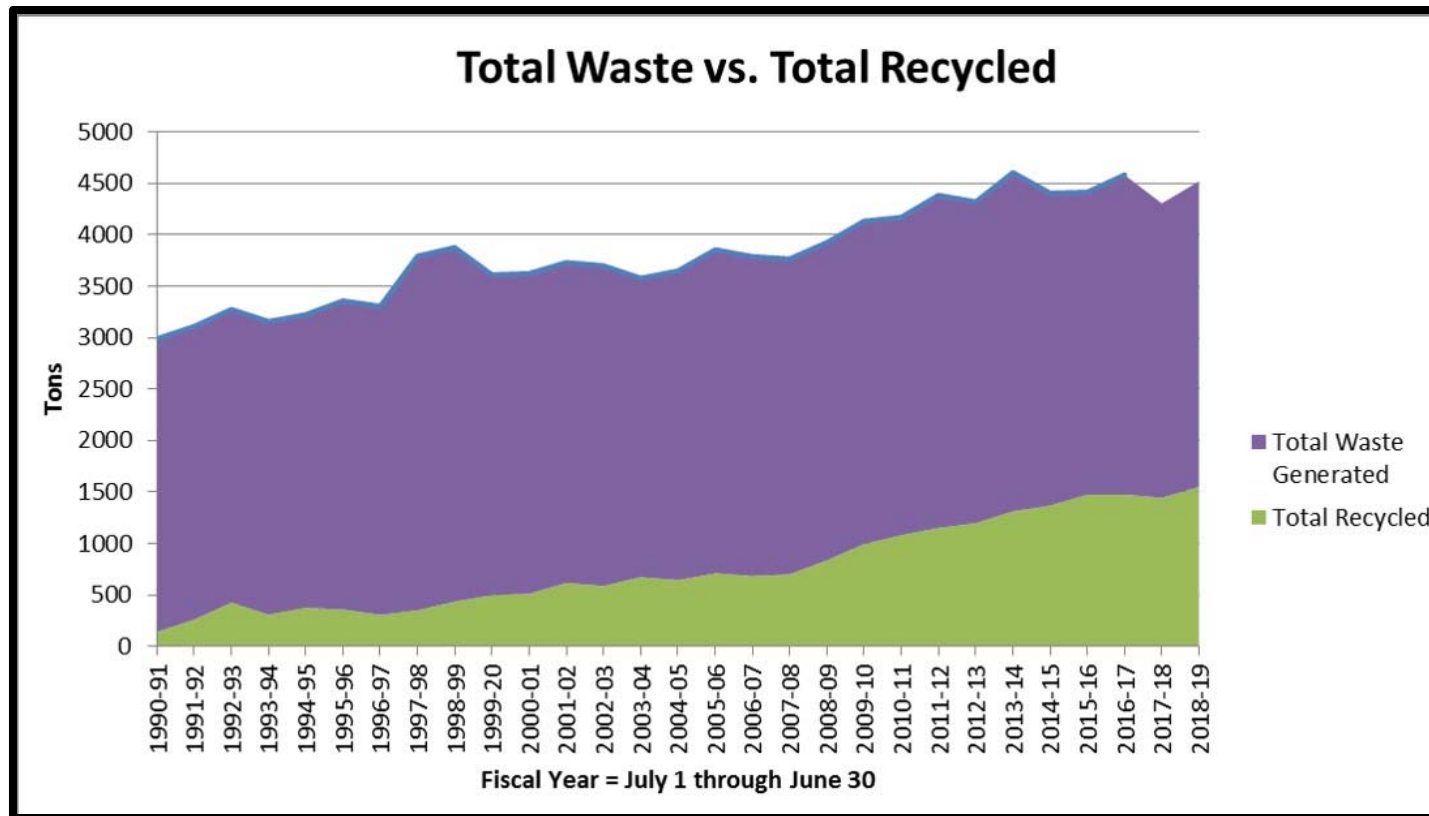
Waste Generation and Recovery

Discarded resources: solid wastes that are buried in landfills or destroyed incineration.

Bi-products of use: elimination by liquid (sewer) and gaseous (smoke-stack) methods and may act to contaminate areas near their discharge.



Waste vs. Recycling

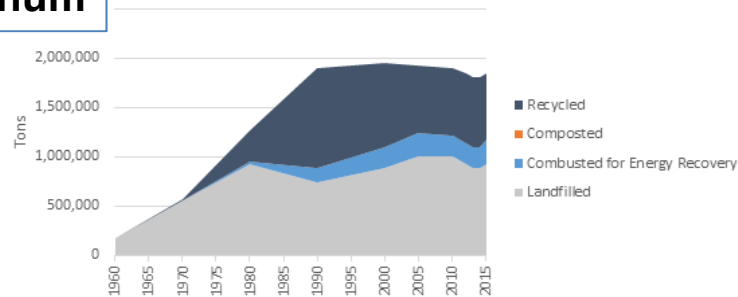


1990-2019

Waste vs. Recycling

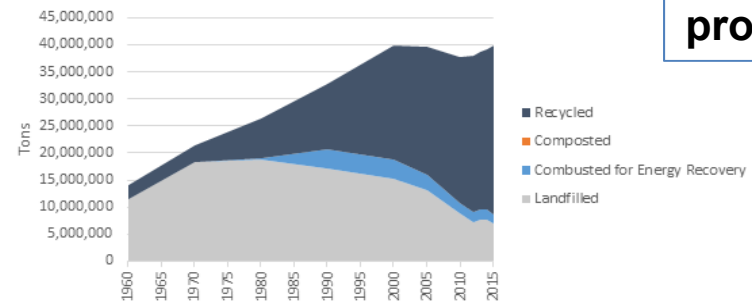
Aluminum

Aluminum Containers and Packaging Waste Management: 1960-2015



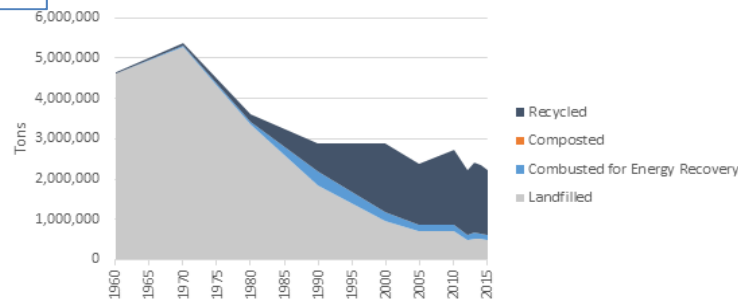
Paper products

Paper and Paperboard Containers and Packaging Waste Management: 1960-2015



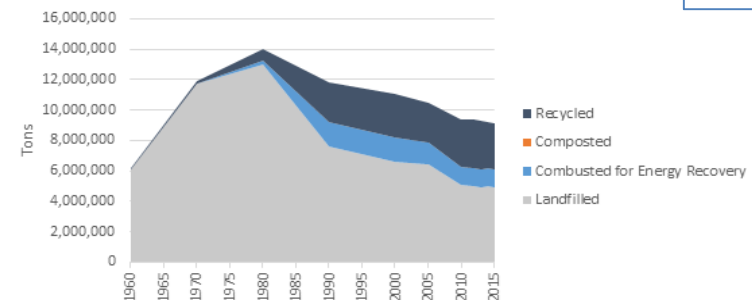
Steel

Steel Containers and Packaging Waste Management: 1960-2015



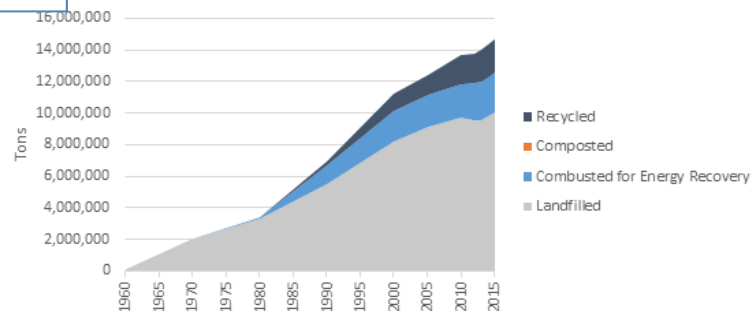
Glass

Glass Containers and Packaging Waste Management: 1960-2015



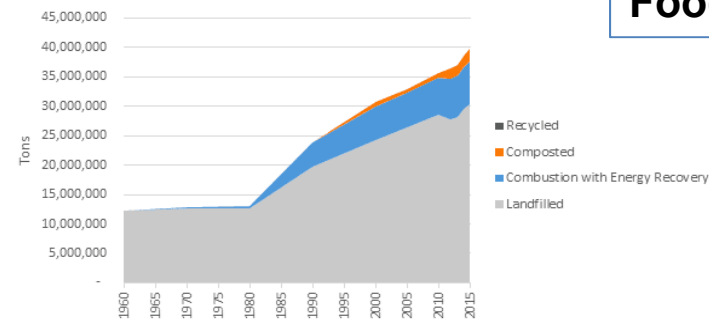
Plastic

Plastic Containers and Packaging Waste Management: 1960-2015



Food waste

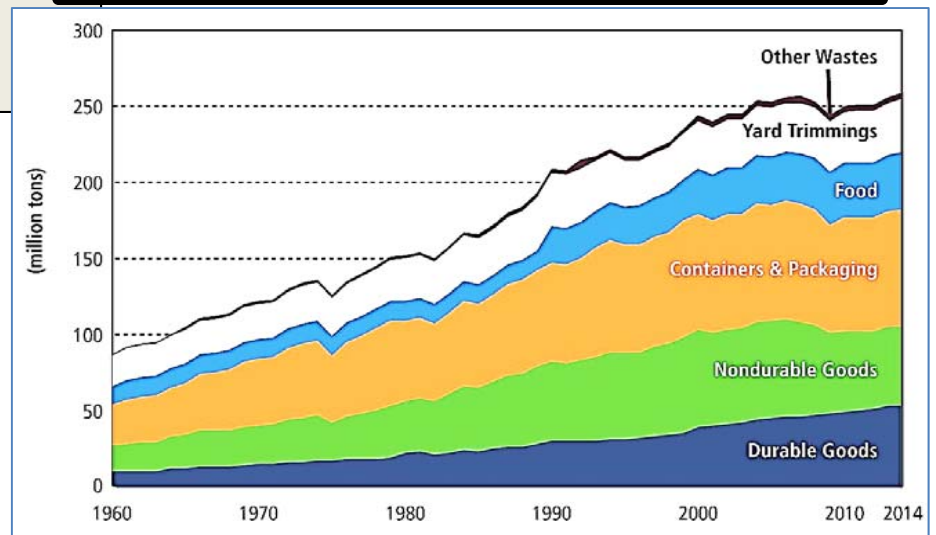
Food Waste Management: 1960-2015



POLLUTION

- ❖ **Pollution:** Human-created impurities (solids, gases, liquids) **added** to air, water and land and **cannot** be absorbed, diluted or eliminated by nature processes.
- Artificially generated excessive heat/cold is considered to be pollution.

Landfills: collection sites for waste; they have the potential of polluting the surface, underground water and creating visual unsightliness.



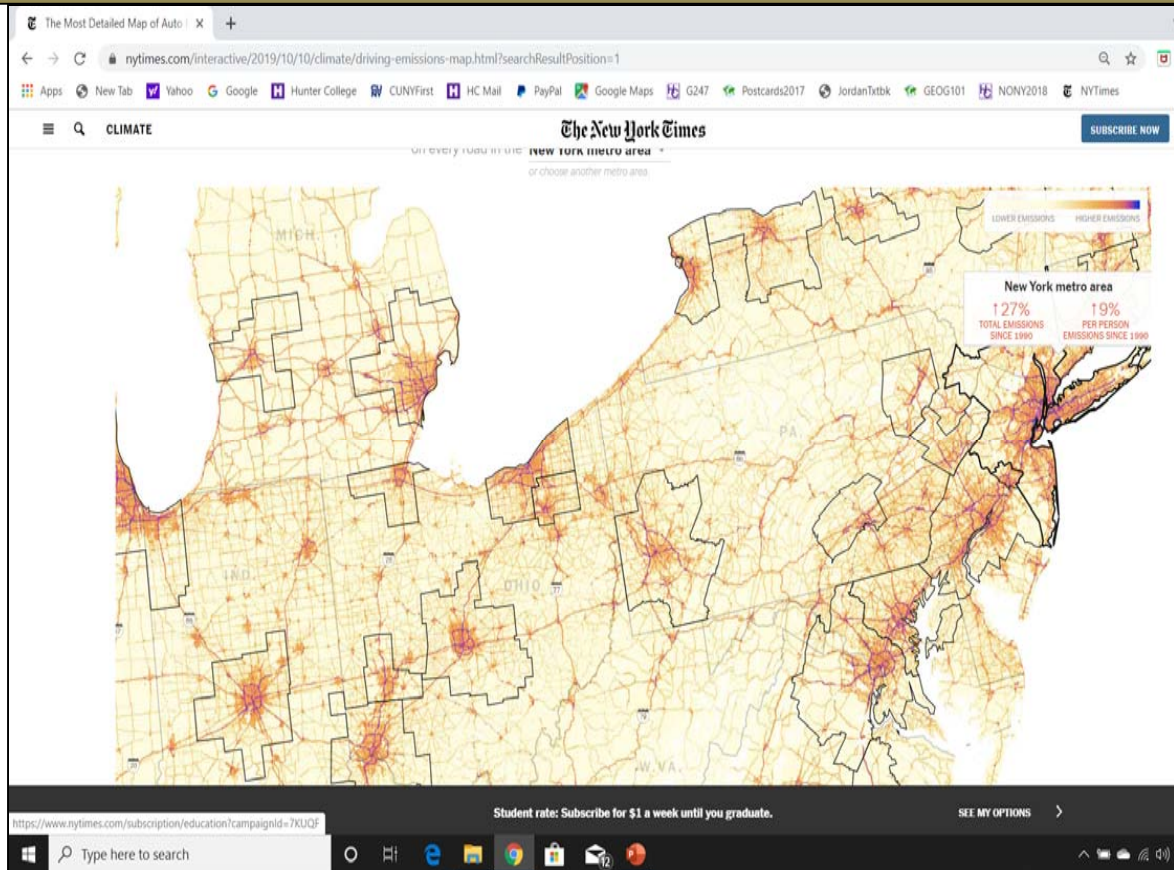
VEHICLE EMISSIONS

“Most Detailed Map of Auto Emissions in America”

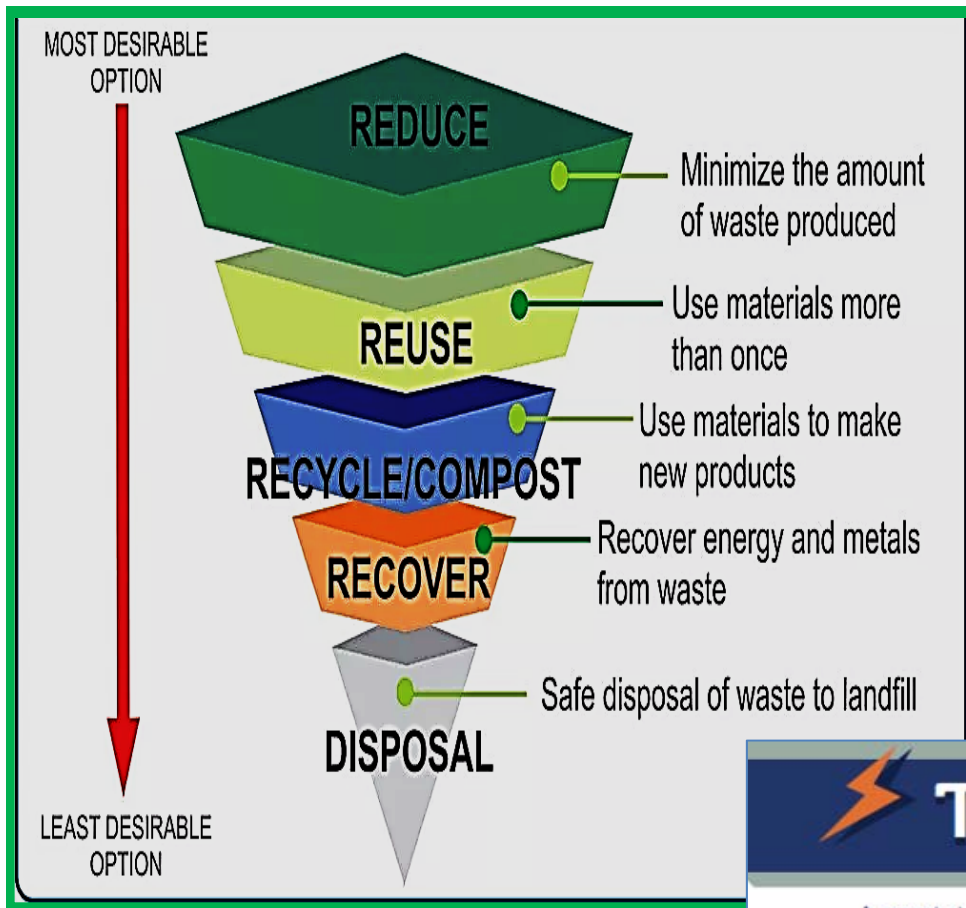
U.S. EPA, based on 2017 data

NYTimes 10/10/19

<https://www.nytimes.com/interactive/2019/10/10/climate/driving-emissions-map.html?searchResultPosition=1>



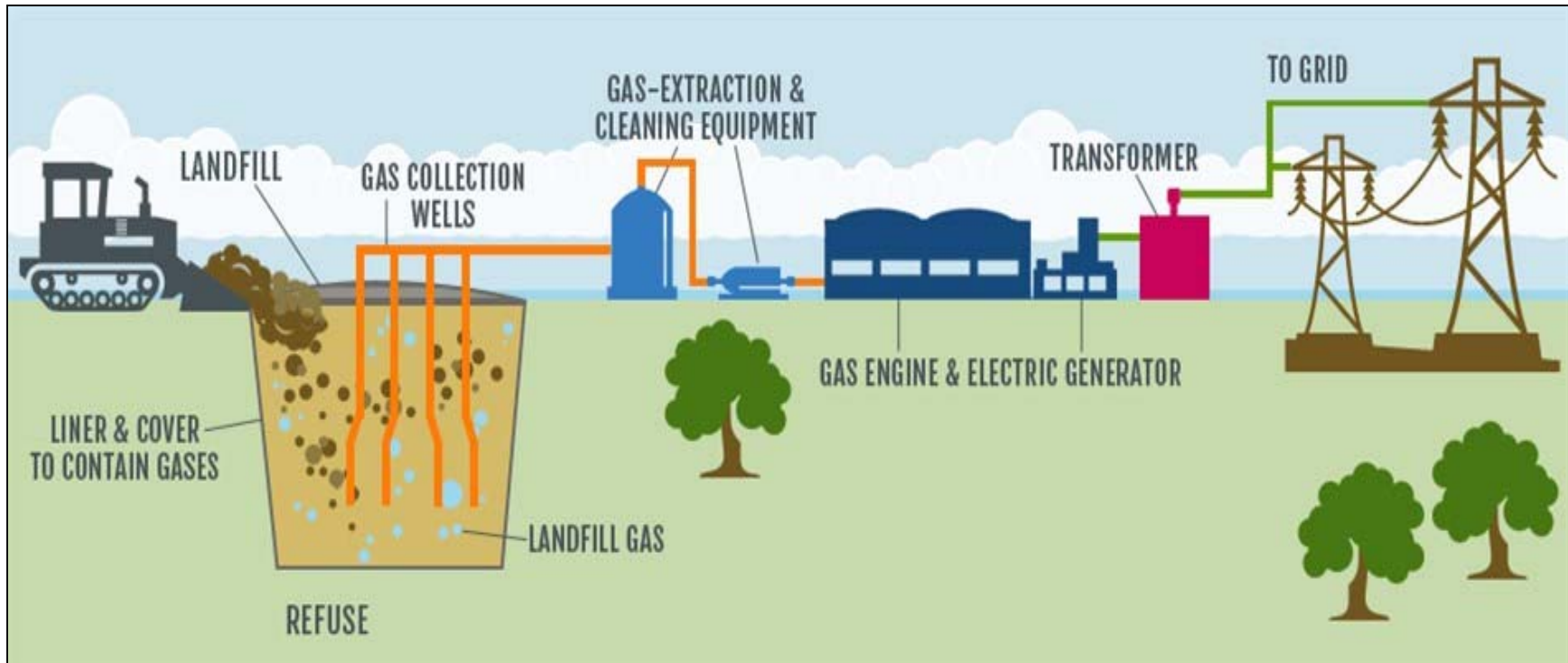
Making Waste Useful



Waste Management Hierarchy



Alternative Energy Production



Using methane gas extracted from a landfill to power an electric generator.

https://www.youtube.com/watch?v=_shqPUEBHTo Fresh Kills, SI methane collection 2 min

RESOURCES

NATURAL RESOURCES

There are three types of natural resources:

1. **renewable**,
2. **non-renewable**
3. **land/biological**

1. **Renewable:**

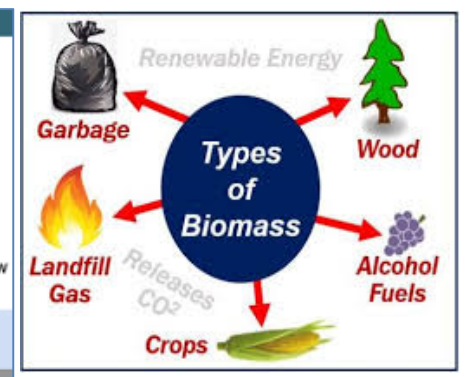
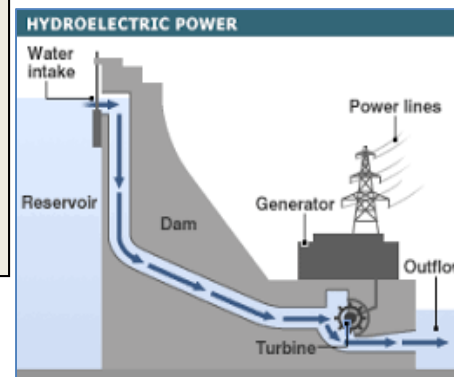
Those that are able to be regenerated as fast as they are used (some can be depleted if overused).

<https://www.youtube.com/watch?v=VkTRcTyDSyk>
Tidal energy (2 min)



There are 2 groups of renewal resources:

- a. **Perpetual:** solar, wind, geothermal, tides, waves.
- b. **Potential:** soil, wood, biomass, water



RESOURCES

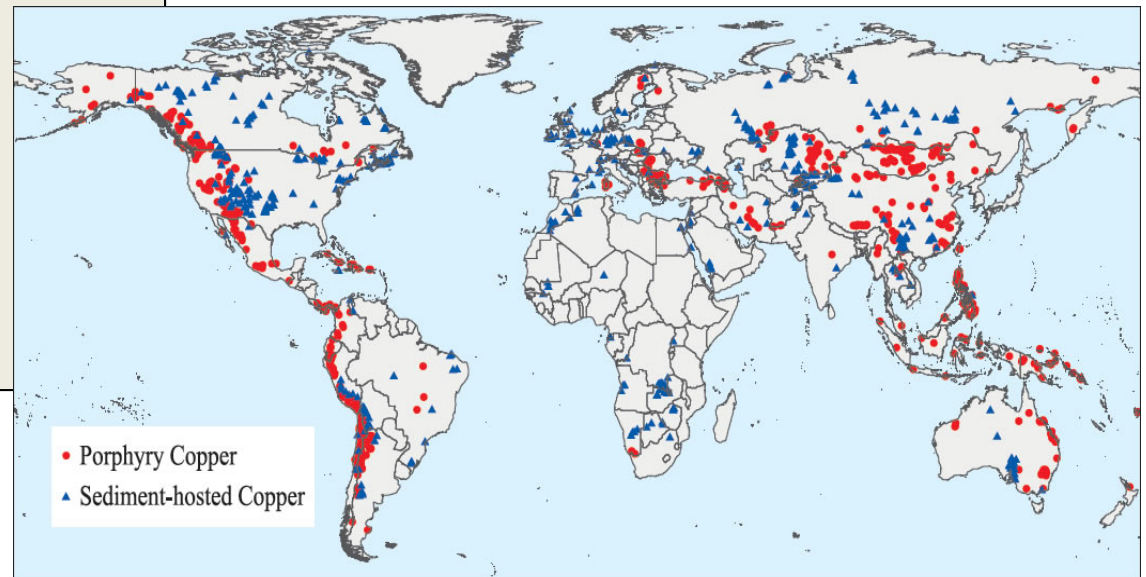
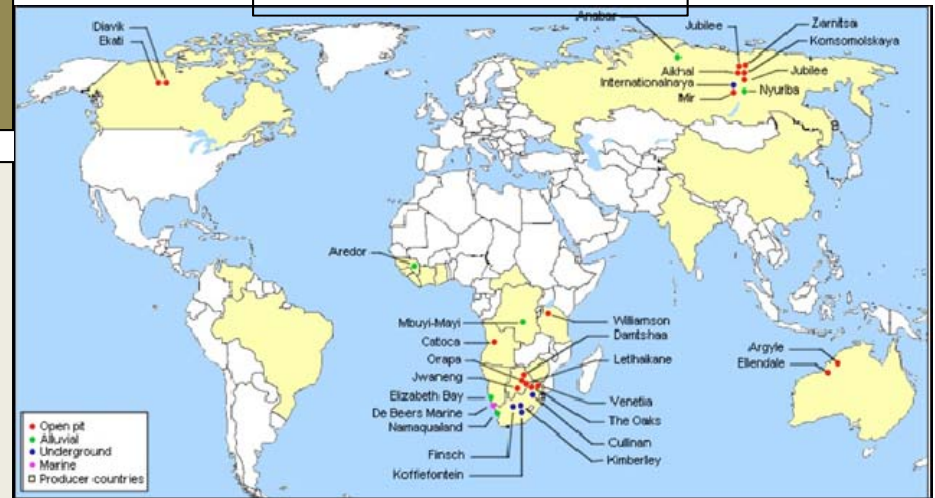
2. Non-renewable:

Also called geologic resources.

Those that cannot be regenerated in a timely manner.

Examples: fossil fuels, metallic ores, minerals, gems, and semi-precious stones.

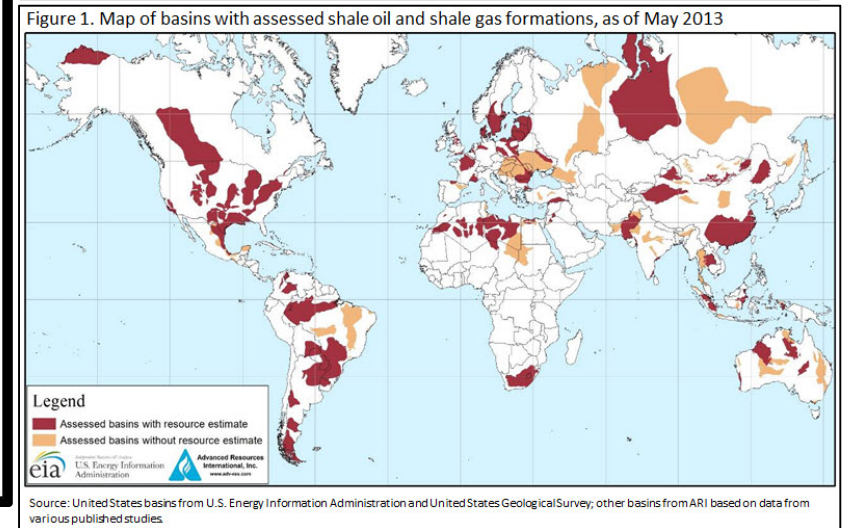
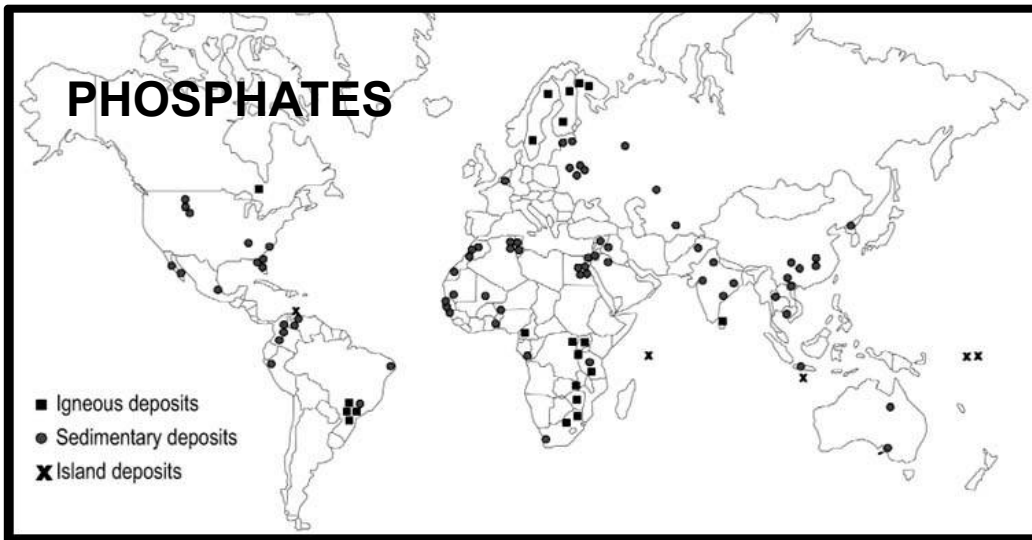
DIAMOND MINES



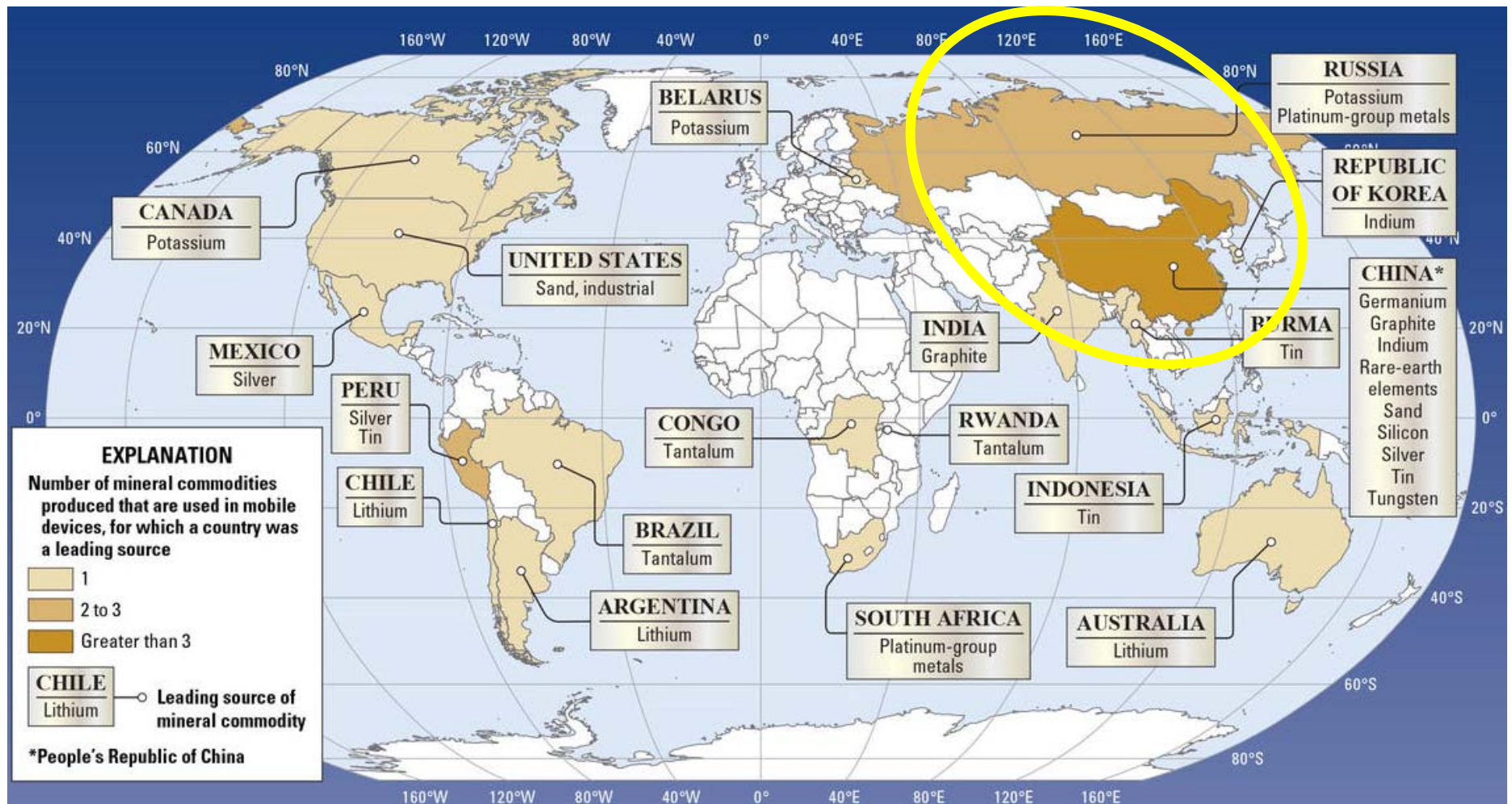
Some World Mineral Resources



There is an uneven distribution of mineral resources worldwide leading to geopolitical and geo-economic situations.



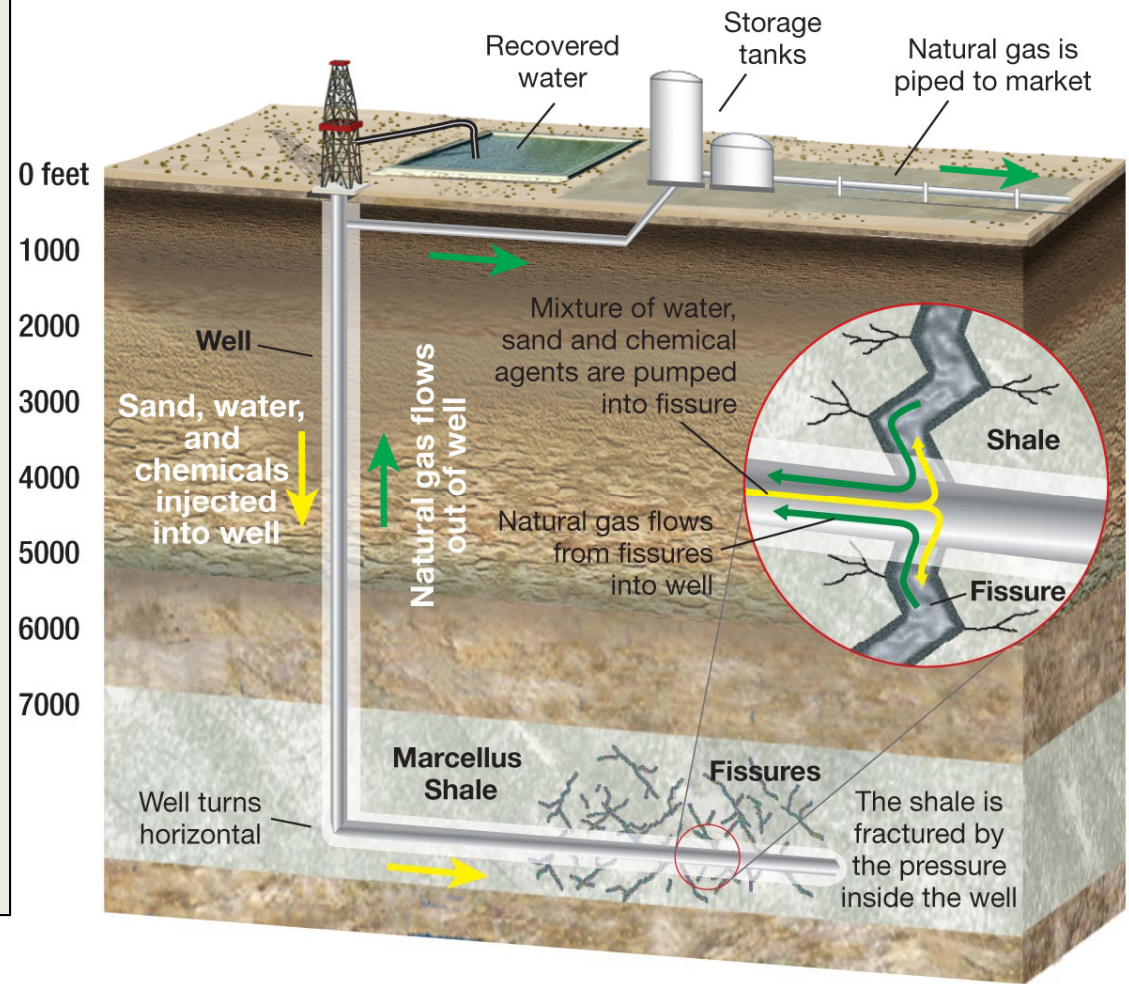
Producers of Mineral Resources needed for mobile devices



The geopolitics of economic need (cell-phone manufacturing)! 16

Hydraulic Fracturing aka “Fracking”

- ❖ **Methods used to remove natural gas and petroleum from places that were once inaccessible.**
- Uses modern technology to locate, access and remove the material.
- Has been linked to surface and ground-water pollution.

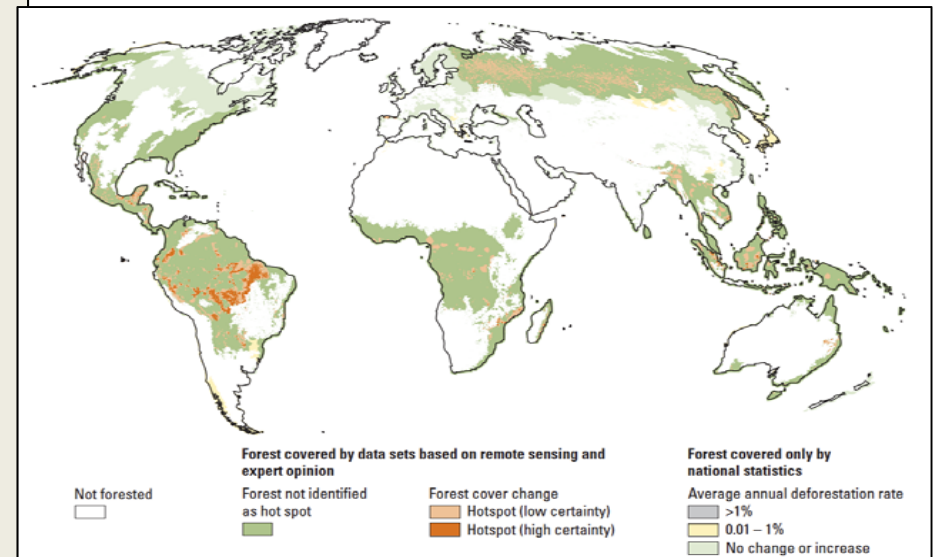
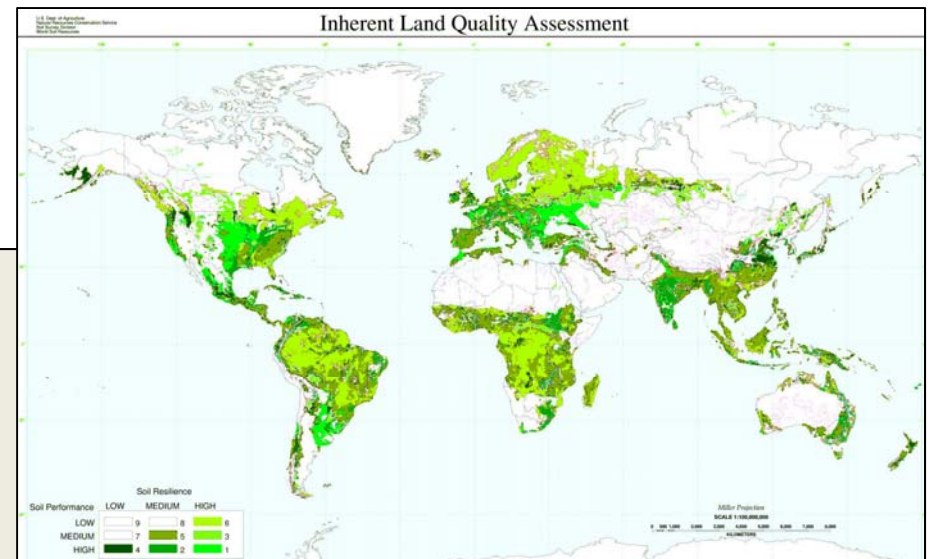


RESOURCES

3. Land and biological resources: Land resources are those biomes that provide people with necessities for life, as fertile soils, forests, and wetlands, and includes flora/fauna that exist there.

All aspects of the biosphere, including biodiversity, are relevant.

What happens to biological (living) resources as habitats change with climate?



RESOURCES

Biological Resources: FOOD

Food resources are part of culture and have been created by people from aspects of the physical environment.

- **Agriculture** (first gathering then planting)
- **Wildlife** (first hunting then animal-husbandry)
- **Fisheries** (first fishing then fish-farming)

There is a direct relationship to carrying capacity of the land as a growing human population tries to feed itself.

RESOURCE MANAGEMENT

- ✓ **Resource management** - the conscious evaluation and consumption of earth resources in the present and for use in the future.
- ❖ **Sustainable Development** – seeks to **balance** the needs of a population and with protecting the quality of habitat.
 - **Tragedy of the Commons** – environmental perception; attitude
 - “One more.” “Who will notice?”*
 - “My contribution is too small to matter.”*
 - “My contribution will not affect ...”*

RESOURCE MANAGEMENT

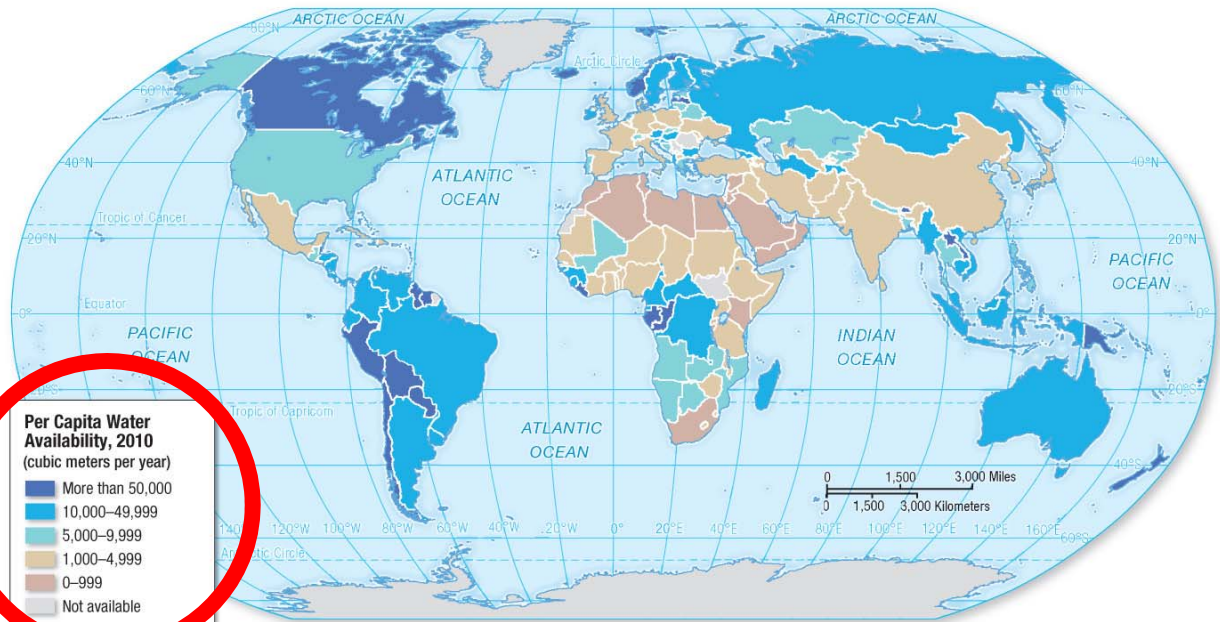
Resource scarcity and environmental impacts are the most important issues facing a growing and increasingly consuming, world population.

Strategies – options available for people

- **Reuse** (use more than once; recycle)
- **Replace** (substitute; use something else or renewable)
- **Conserve** (use less; avoid waste or destruction)



Water Resources



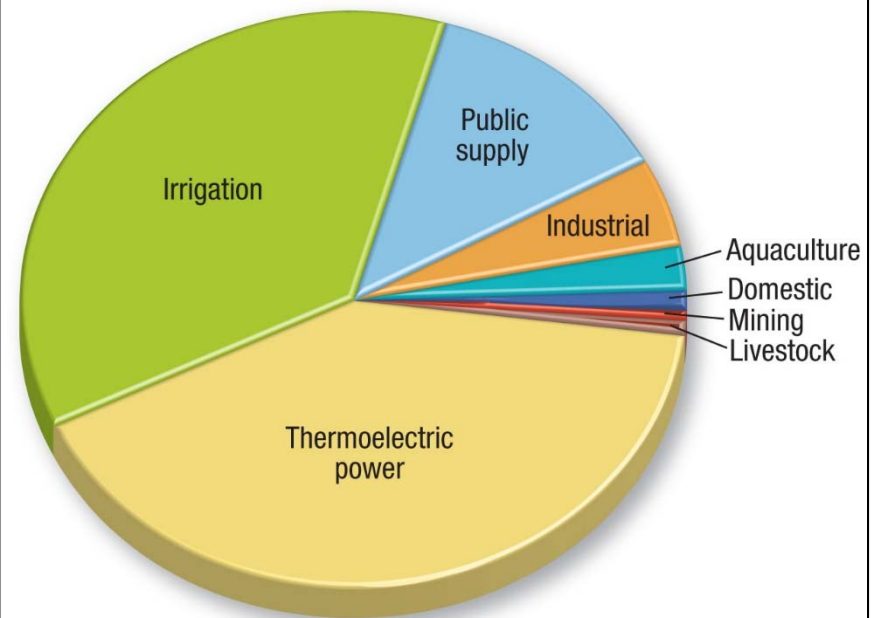
Next to air we need water to survive.

Uneven distribution world-wide: some areas too wet, others too dry.

Much of the earth's population has limited access to clean, dependable water supply.

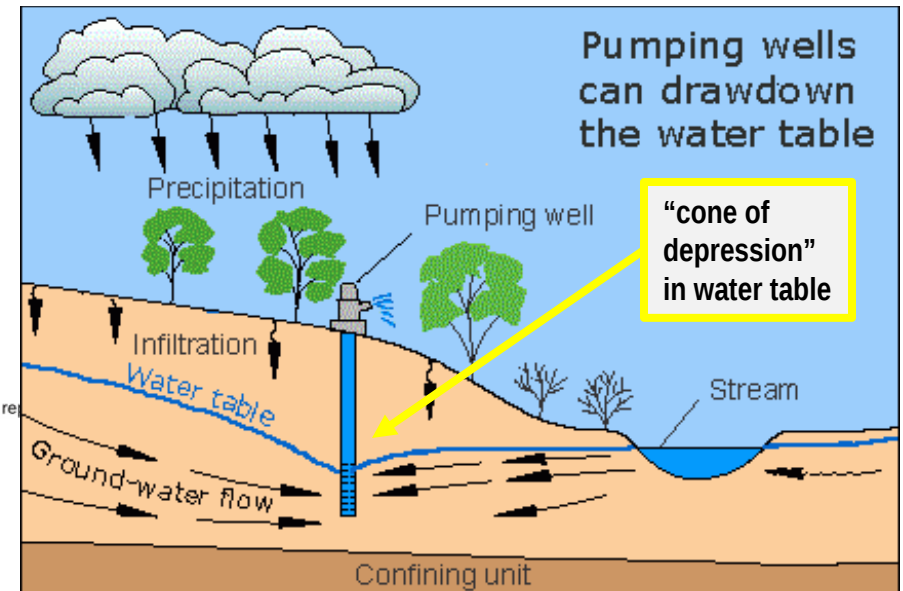
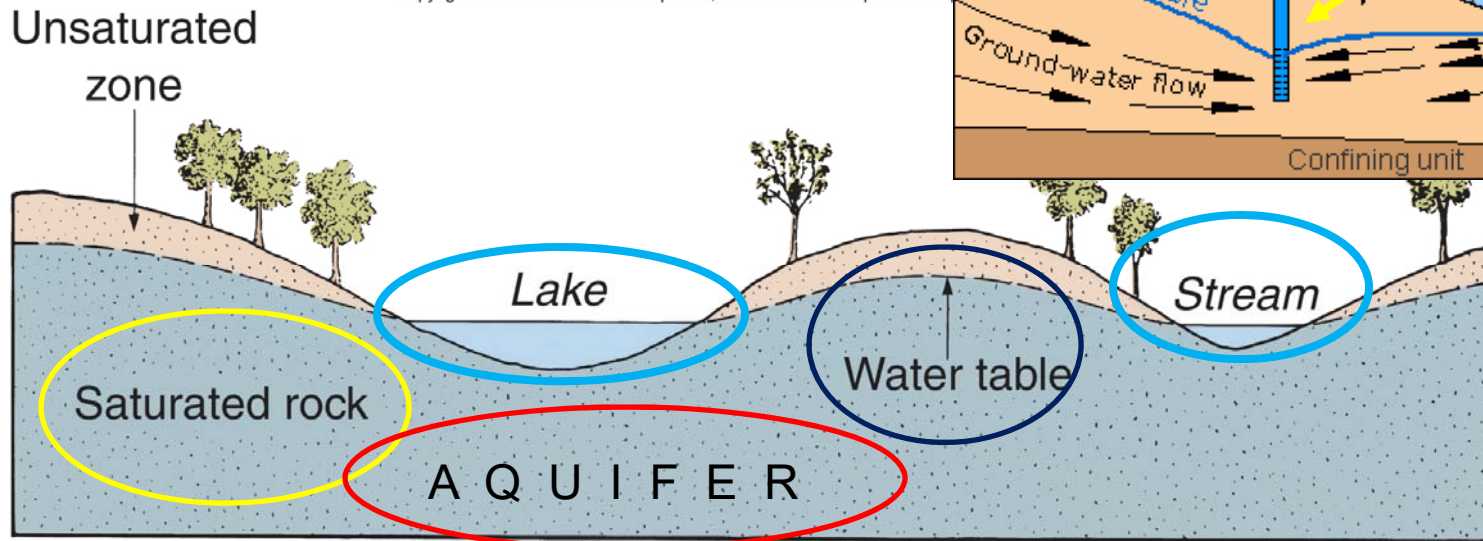
<https://www.youtube.com/watch?v=vLgmFRceoVE>
2 min desalinization process

Fresh water withdrawals



Groundwater Dynamics

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- GROUNDWATER** - part of the Hydrologic Cycle.
- AQUIFER** - zone of **saturated rock** through which water moves.
- WATER TABLE** - **top of the saturated zone**: location varies with amount of precipitation and pumping.
- When the water table intersects the surface, a lake, stream, marsh or spring is formed.

Long Island Groundwater Conditions

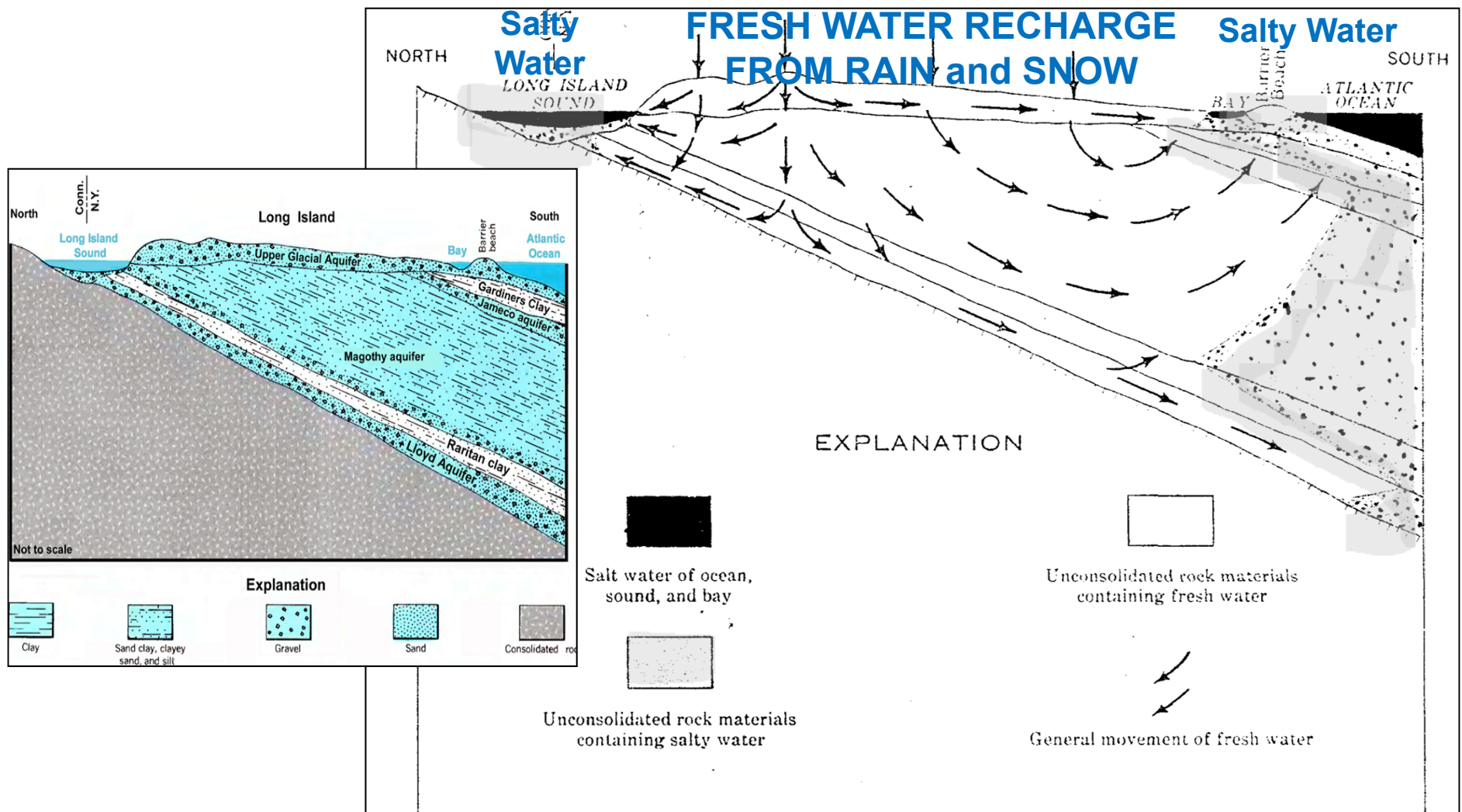
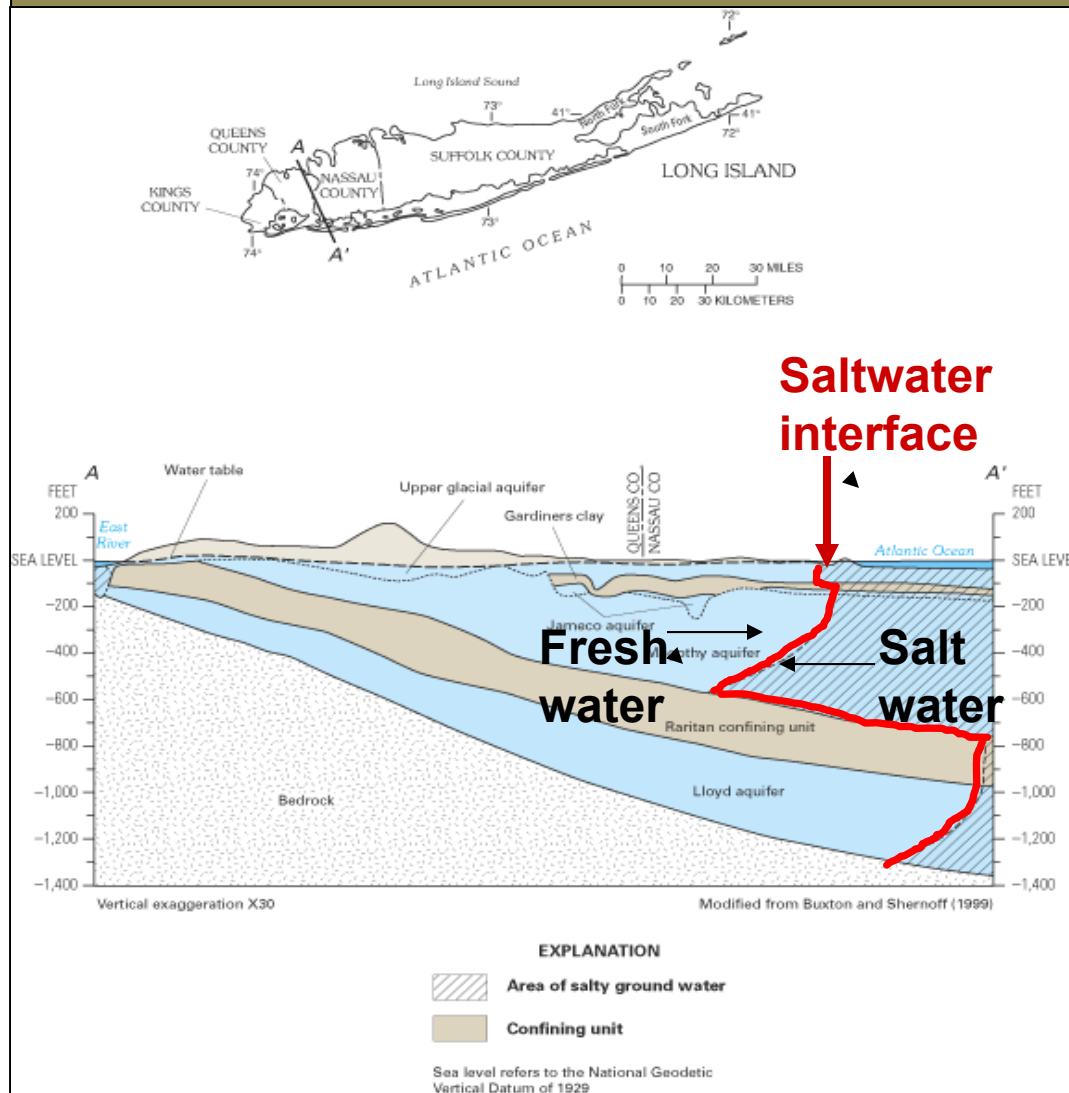


Figure 4.—Diagrammatic section showing predevelopment (phase 1) generalized ground-water conditions. Contacts between rock units are as shown in figure 2.

Groundwater: Saltwater Interface



Saltwater interface: boundary between the freshwater lens on land and the salt water lens under the ocean.

The interface moves inland when freshwater **withdrawal is greater than** freshwater replacement - called **recharge**.

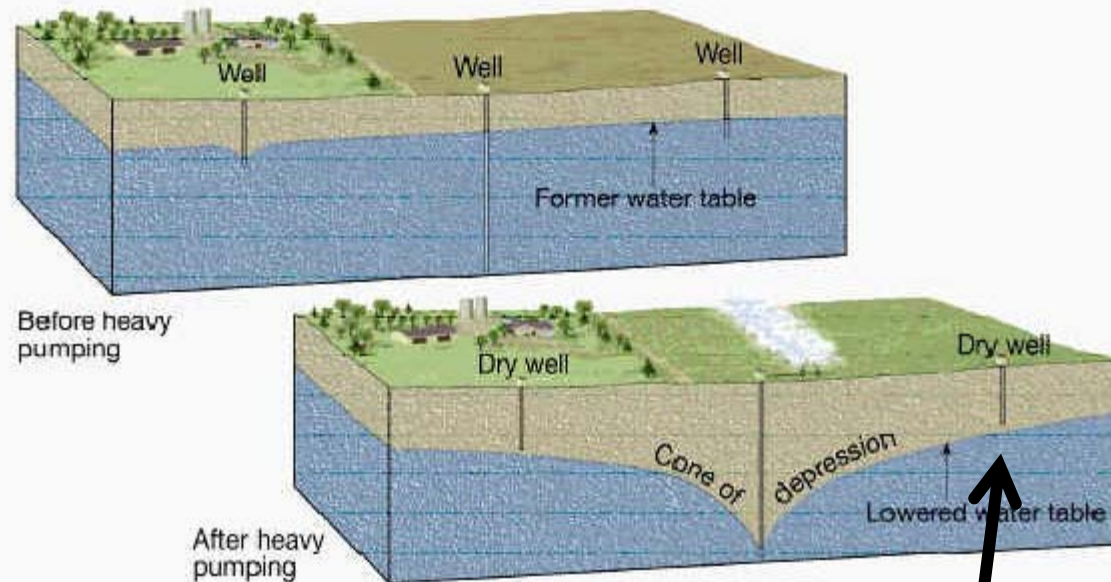
> This is a major problem and concern of urbanized coastal areas, as fresh water wells can become contaminated by salty water.

Source: USGS Circular 1262

<https://www.youtube.com/watch?v=8zxZUSVjg10> 1.5 min California example

Lowering of the Water Table

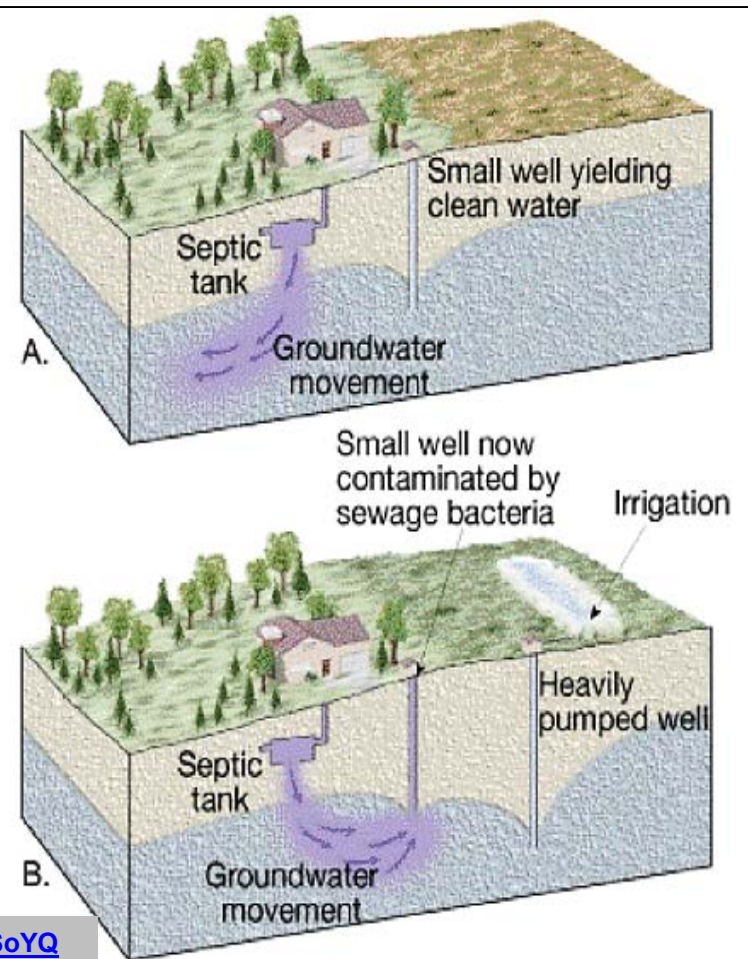
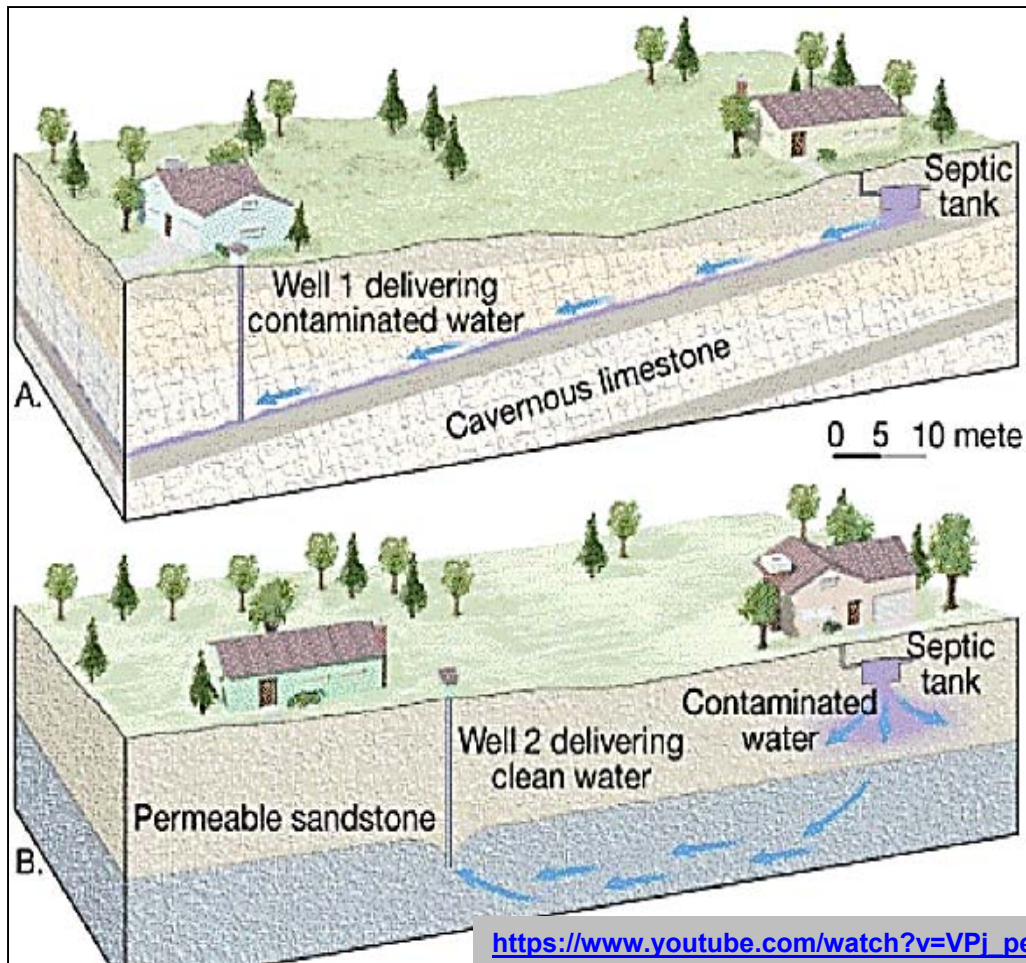
Formation of a cone of depression in the water table



Source: Fayette Co., TX

When the water table drops below the bottom of a well, the dry becomes dry. To make the well wet again, either you have to stop pumping from nearby wells or you drill the well deeper.

Groundwater Contamination from Household Waste Water



https://www.youtube.com/watch?v=VPj_pesSoYQ

Follow the arrows in each diagram to see where waste water is going.

N E X T: EXAM II

PART II Exam Topics:

- I. Intro. to the Physical Environment**
- II. Earth-Sun Relationship**
- III. Earth Systems**
 - The Hydrosphere: Oceans
 - The Atmosphere: Weather and Climate
 - The Lithosphere: Geologic Influences
- IV. Earth Habitat and Environmental Protection**
 - The Biosphere: Zones of Life
 - Natural Controls and Cycles
 - Human Impact
 - Natural Hazards
 - Earth Resources

NEW DATE

**EXAM 2 is now
Tuesday, April 21 on
BlackBoard**

**Be sure you know
how to enter
BlackBoard and
access the timed
exam which starts
and stops
automatically**

**Exam 2 will cover all the
topics in Part II.**

**See Study Guide II on the
course home page for
definitions and place names
for North America, South
America and Antarctica.**