

REMINDERS

- ❖ **Required essays for Part II** (your choice of either 4 or 5) are due by **April 15, 2021**.
 - A late penalty will be applied if not submitted on time.
- ❖ **EXAM II: On BlackBoard from Friday, April 16 at 9 AM to Monday, April 19 at 9 PM.** Set time aside to take the exam.

❖ **Extra Credit:**

- ✓ “Think Geographically” Essays from any five of the chapters of the textbook (see syllabus).
 - Last day to submit them is May 14 but it is best to do them as you finish reading a chapter.

EXAM II INFO

EXAM II: On BlackBoard from Fri., April 16 at 9 AM to Mon., April 19 at 9 PM. **Study Guide II has been posted.** It includes Part II terminology and the place names for North America, South America and Antarctica. >>Once the exam is accessed, it must be completed. It cannot be re-entered.

LECTURES FOR EXAM II	TEXTBOOK READING 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	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.

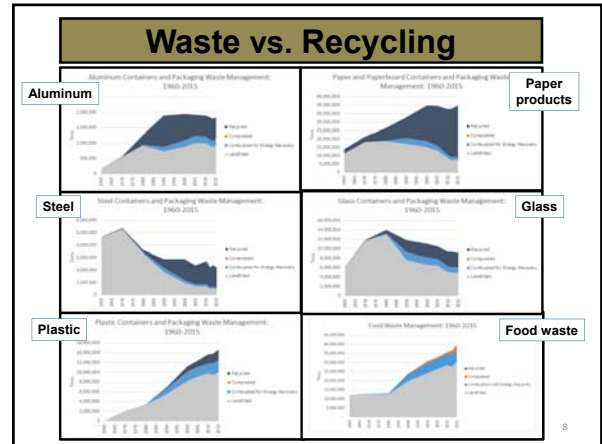
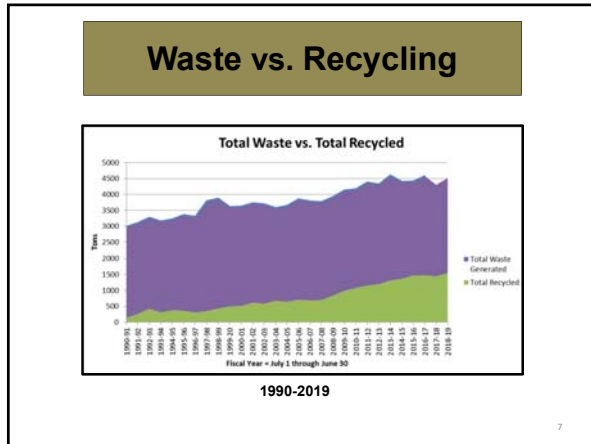
❖ **Resource Management:**
A process by which a resource is analyzed, used, conserved and evaluated for future use.

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.



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/interactives/2019/10/10/climate/driving-emissions-map.html?searchResultPosition=1>

Making Waste Useful

Waste Management Hierarchy

- REUSE:** Use materials more than once
- RECYCLE/COMPOST:** Use materials to make new products
- RECOVER:** Recover energy and metals from waste
- DISPOSAL:** Safe disposal of waste to landfill

The Power of Waste

A recent study from the Earth Engineering Center at Columbia University assessed the average value of municipal solid waste that is currently sent to U.S. landfills. It demonstrates the tremendous potential of modern technologies that convert waste into energy to help boost energy security, reduce landfill waste and lower greenhouse gas emissions.

13.8M homes powered

GARBAGE → ENERGY → 13.8M HOMES

If current capacity were to be expanded so that all of the non-recycled municipal solid waste that is currently sent to U.S. landfills each year could be converted to energy, we could generate enough electricity to power 13.8 million homes with power.

Alternative Energy Production

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

<https://www.youtube.com/watch?v=shtPUEBHTc> 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 able to be regenerated as fast as they are used (some can be depleted if overused).

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



There are 2 groups of renewable resources:

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





RESOURCES

2. Non-renewable:

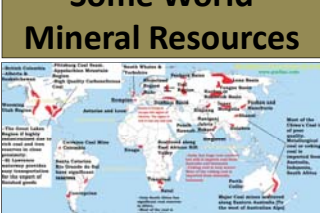
Also called geologic resources.
Those that cannot be regenerated in a timely manner.

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


DIAMOND MINES





Some World Mineral Resources




PHOSPHATES





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



Producers of Mineral Resources needed for mobile devices



EXPLANATION
Number of mineral commodities produced that are used in mobile devices, for which a country was a leading source

- 1
- 2 to 3
- Greater than 3

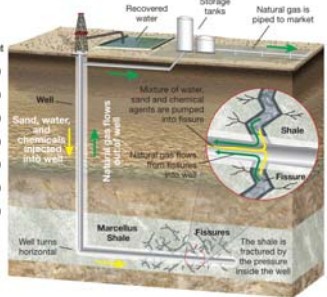
CHILE - Leading source of mineral commodity
Lithium

People's Republic of China

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

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.



<https://www.youtube.com/watch?v=Uj2niW2BBA> 5 min Fracking explanation.


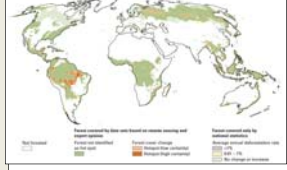
RESOURCES

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.

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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 ...”

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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)




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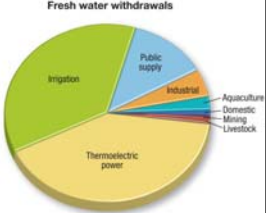
Water Resources



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=VJmFRce0VE>
2 min desalination process

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Future World Freshwater Situation

Water Stress by Country: 2040
Updated Feb., 2020



ratio of withdrawals to supply

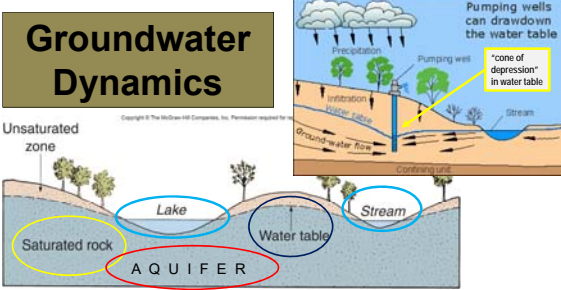
- Low (< 10%)
- Low to medium (10-20%)
- Medium to high (20-40%)
- High (40-60%)
- Extremely high (> 60%)

NOTE: Projections are based on a business-as-usual scenario using SSP2 and RCP6.5.

For more: <https://www.reuters.com/article/uk-ethiopia-dam-egypt-sudan-idUKKBN2BX0KS>
new dam in Ethiopia will lessen volume of water in the Sudan and Egypt.

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Groundwater Dynamics

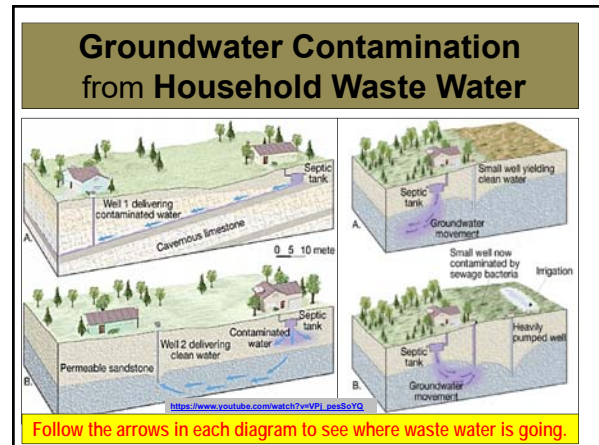
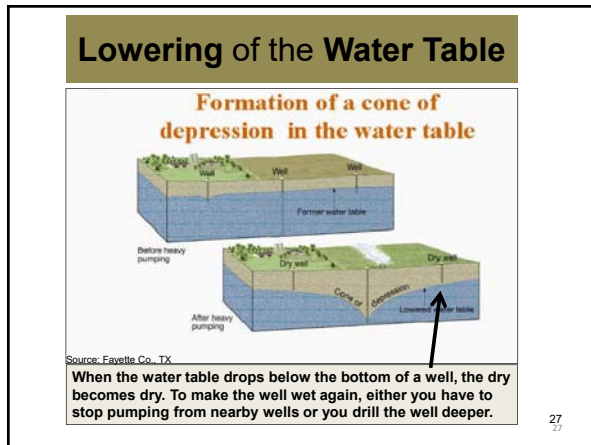
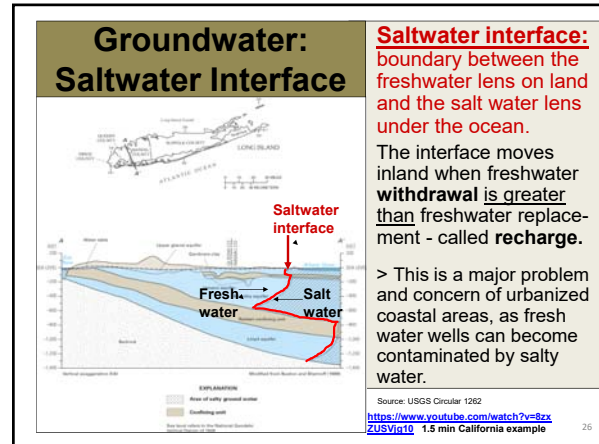
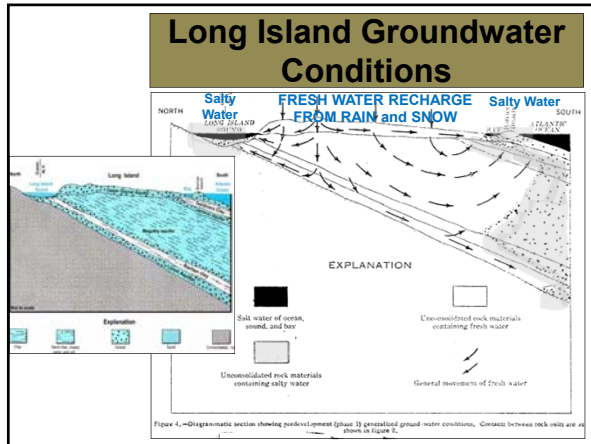


GROUNDWATER - part of the Hydrologic Cycle.

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.

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NEXT: EXAM II

<p>PART II Exam Topics:</p> <ol style="list-style-type: none"> I. Intro. to the Physical Environment II. Earth-Sun Relationship III. Earth Systems <ul style="list-style-type: none"> - The Hydrosphere: Oceans - The Atmosphere: Weather and Climate - The Lithosphere: Geologic Influences IV. Earth Habitat and Environmental Protection <ul style="list-style-type: none"> - The Biosphere: Zones of Life - Natural Controls and Cycles - Human Impact - Natural Hazards - Earth Resources 	<p>EXAM 2 is on BlackBoard from 9 AM April 16 to 9 PM April 19</p> <p>Once the timed exam is accessed, it stops automatically after 75 minutes.</p> <p>*****</p> <p>Exam 2 will cover all the topics in Part II.</p> <p>See Study Guide II for definitions and place names for North America, South America and Antarctica.</p>
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