

Name \_\_\_\_\_ Period \_\_\_\_\_ Module Due Date \_\_\_\_\_

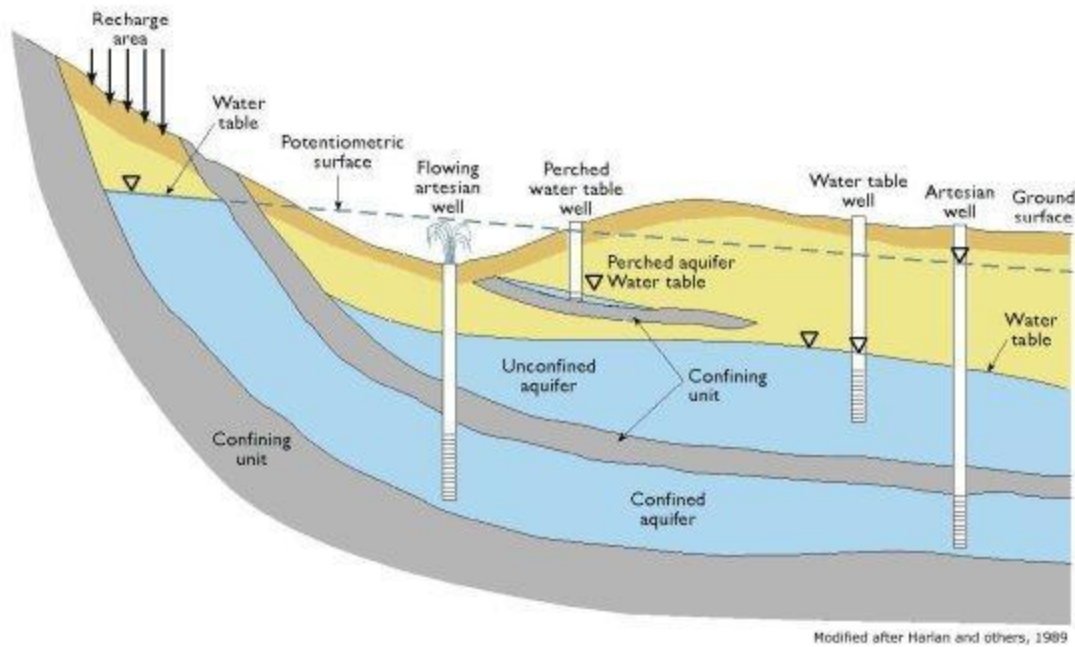
### 'The Availability of Water' Module

1. **Fill in** the table below and **calculate** the % of total water for each source.  
(You may use a calculator but you should be able to do this with "easier" numbers for the exam.)

| Water Source      | Volume (cubic miles) | Part of total (%) |  |
|-------------------|----------------------|-------------------|--|
| Oceans            | 317,000,000          |                   |  |
| Ice caps/glaciers | 7,000,000            |                   |  |
| Groundwater       | 2,000,000            |                   |  |
| Freshwater lakes  | 30,000               |                   |  |
| Inland seas       | 25,000               |                   |  |
| Soil moisture     | 16,000               |                   |  |
| Atmosphere        | 3,100                |                   |  |
| Rivers            | 300                  |                   |  |
| <b>Total</b>      | <b>326,074,400</b>   | <b>100%</b>       |  |

2. From the data table, **list all** the sources of *FRESH water with their percentages*.
3. **Calculate** the *total percentage of fresh water* on Earth.
4. There are really only a few sources of usable freshwater. **List** those few available sources. Calculate the percentage of the water on Earth is actually in a form that is *usable for humans*.
5. **Identify** the most important reason to study water from a human ecology point of view.
6. Search '[NSF science 360 video water cycle](#)' on YouTube and watch (~7 mins). Take notes below.

7. Search '[How Do Aquifers Work?](#)' on YouTube (7:11mins) and use the diagram below to answer the questions below.



**Groundwater Model Questions ('Aquifers')**

- a) Where does water enter the aquifer?
- b) In this model, water generally flows from where to where?
- c) From where does the water in the artesian wells come?
- d) What are the possible sources of groundwater pollution in this model?

8. Search '[NSF Science 360 The Ogallala Aquifer](#)' on YouTube (5:37mins) and then **answer** the following questions.

- a) How big is the Ogallala aquifer?
- b) How many states are above the Ogallala aquifer?
- c) What is the current issue with the Ogallala aquifer?
- d) Why isn't the Ogallala aquifer recharging?
- e) What is being done to protect or preserve the Ogallala aquifer?

9. Search '[Human Water Cycle: Agriculture](#)' on You Tube (5:13 mins) and answer the following questions:

- a) Where does water used in agriculture come from?
- b) What effect does water that contains salt have on crops?
- c) What is an option for desalinate water for agricultural use?

**Answer** the following AP exam questions.

10. Which of the following contrasts between confined and unconfined aquifers is correct?

- a. Confined aquifers are more rapidly recharged.
- b. Only confined aquifers can produce artesian wells.
- c. Only unconfined aquifers are overlain by a layer of impermeable rock.
- d. Only unconfined aquifers have a water table above them.
- e. Only unconfined aquifers can be drilled for wells to extract water.

11. Which of the following statements about surface water is NOT correct?

- a. Historically, most rivers regularly spilled over their banks.
- b. The largest river in the world is the Amazon River.
- c. Levees are used to make reservoirs.
- d. Dikes are human-made structures that keep ocean water from moving inland.
- e. Wetlands play an important role in reducing the likelihood of flooding.

12. Which of the following is NOT a likely consequence of severe drought?

- a. reduced rate of nutrient cycling
- b. loss of topsoil
- c. severe erosion of soil during subsequent rains
- d. starvation
- e. slower recharge of confined aquifers

13. A drought in the 1930s transformed large parts of the Midwestern United States into a “Dustbowl.” This is an example of:

- a. what would happen if the giant toad or feral pigs are not controlled.
- b. the results of many inches of rain falling within a few hours.
- c. the conversion of rangeland or cropland into a desert like area.
- d. evaporation of water from the ground and release of moisture from leaves.
- e. water flowing over the surface when it is unable to infiltrate the ground because of saturation of the soil or a steep slope.

14. The Ogallala aquifer is a one-time deposit of water and has such a slow recharge rate that it is:

- a. huge and can accommodate the water needs of the Great Plains for at least several more decades.
- b. not replenishing at the rate it is being used, and one result is land subsidence.
- c. protected by state laws and is therefore underutilized.
- d. suffering from severe salinization as water infiltrates the ground and dissolved minerals are added to the aquifer.
- e. increasing each year with the expectation that the rate of increase will grow as the climate changes and brings more storms to the Great Plains.