**APES – Chapter 9 – Water Resources**

**Intro: Dams and Salmon on the Klamath River**

a) Impacts on the Klamath that are affecting fish populations?
b) What conservation measures/restrictions were put in place/
c) What was the impact of those?
d) What are some of the current and future solutions?

I. **Water Resources** – Know % of various water resources (see fig. 9.1, p. 236)

A. **Of the total:** Ocean
Freshwater
Ice and Glaciers
Groundwater
Surface Waters
Atmospheric water

B. **Groundwater** (see fig. 9.2, p. 237)
Know the geology of aquifers, springs, artesian wells
What are the conditions necessary for recharge?
List of problems confronting users of groundwater (see p. 239)
Cone of depression
Overuse
Saltwater intrusion
Gas and Oil drilling
The Ogallala Aquifer (see fig. 9.4, p. 238)

C. **Surface waters** – Rivers, Streams, Lakes, Ponds, Wetlands
Lakes – may be oligotrophic, mesotrophic or eutrophic
Many uses: industry, municipal drinking, recreation, transport

Rivers – important habitat
Also, many uses

Wetlands – wildlife refuge, fish/bird breeding grounds, recharge aquifers

**D. Atmospheric Water**
Precipitation – rain, snow, etc.
Problems of too much (flooding) and too little (drought)
The effects of these on soil:

Precipitation ends up as runoff …impacted by impervious surfaces in urban and suburban areas.

**II. Humans Alter the Availability of Water**

**A. Levees**
**B. Dikes**
**C. Dams**
**D. Aqueducts**
E. **Desalinization techniques** (see fig. 9.14, p. 245)

**III. Water Uses by Humans**

**A. Agriculture**

Irrigation
Hydroponic

**B. Industry and Power Generation**

C. **Household Use** – per capita use (see fig. 9.20, p. 249)

-major uses of water (see 9.21, p. 249)

**DO THE MATH – p. 251**

**IV. The Future of Water Availability**

**A. Water Ownership**

Conflicts over ownership
For example: who owns the Great Lakes (US, Canada, states, citizens?)
Are withdrawals to be allowed…water leaves Great Lakes?
Are the Great Lakes a national treasure, belonging to all?
Do western, plains states have a claim in exchange for food they grow?

**B. Water conservation**

Best practices

**WORKING TOWARD SUSTAINABILITY**
**Is the water in your toilet too clean?** (pp. 252 – 253)

a) How do graywater and contaminated water differ?

b) What is the potential for the use of graywater?

**Science Applied (pp. 256-259)**
**Is there a way to resolve the California Water Wars?** (Read this section, consider the questions asked)