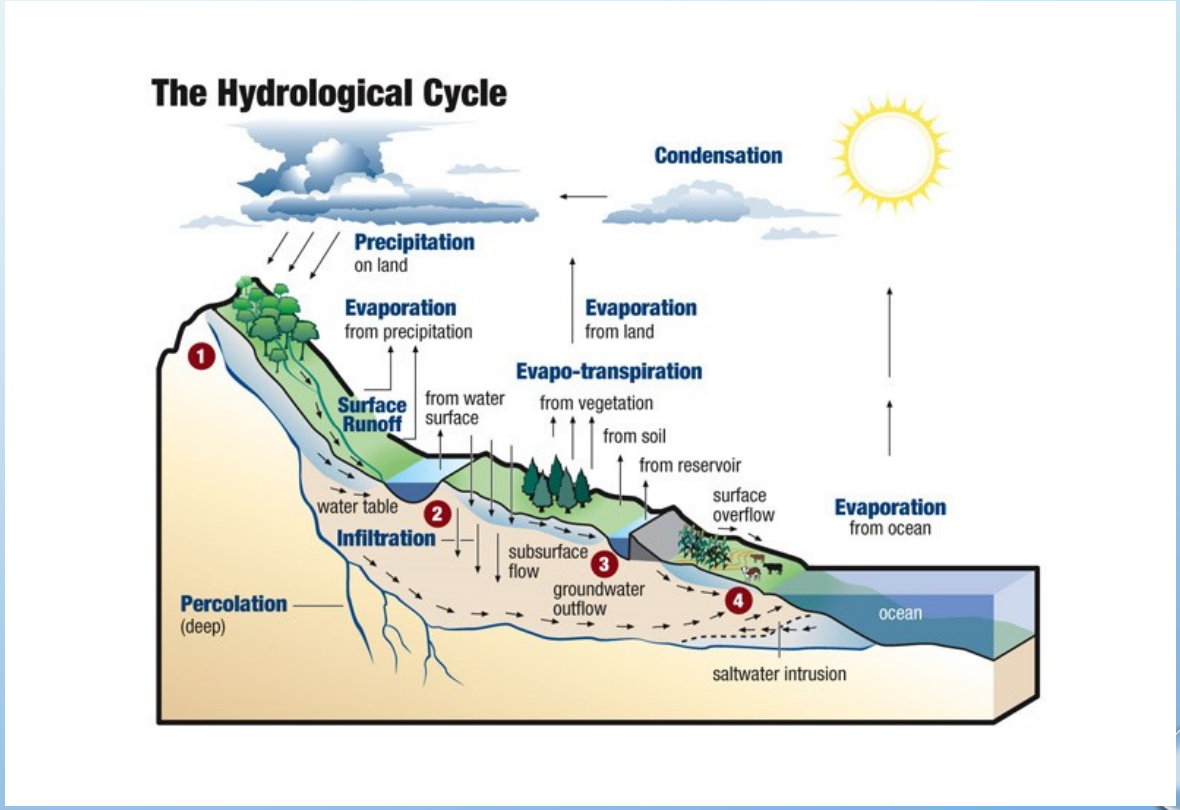
ENVIROTHON AQUATICS

(STUFF YOU SHOULD KNOW)

ABIOTIC FACTORS

WATER (HYDROLOGIC) CYCLE

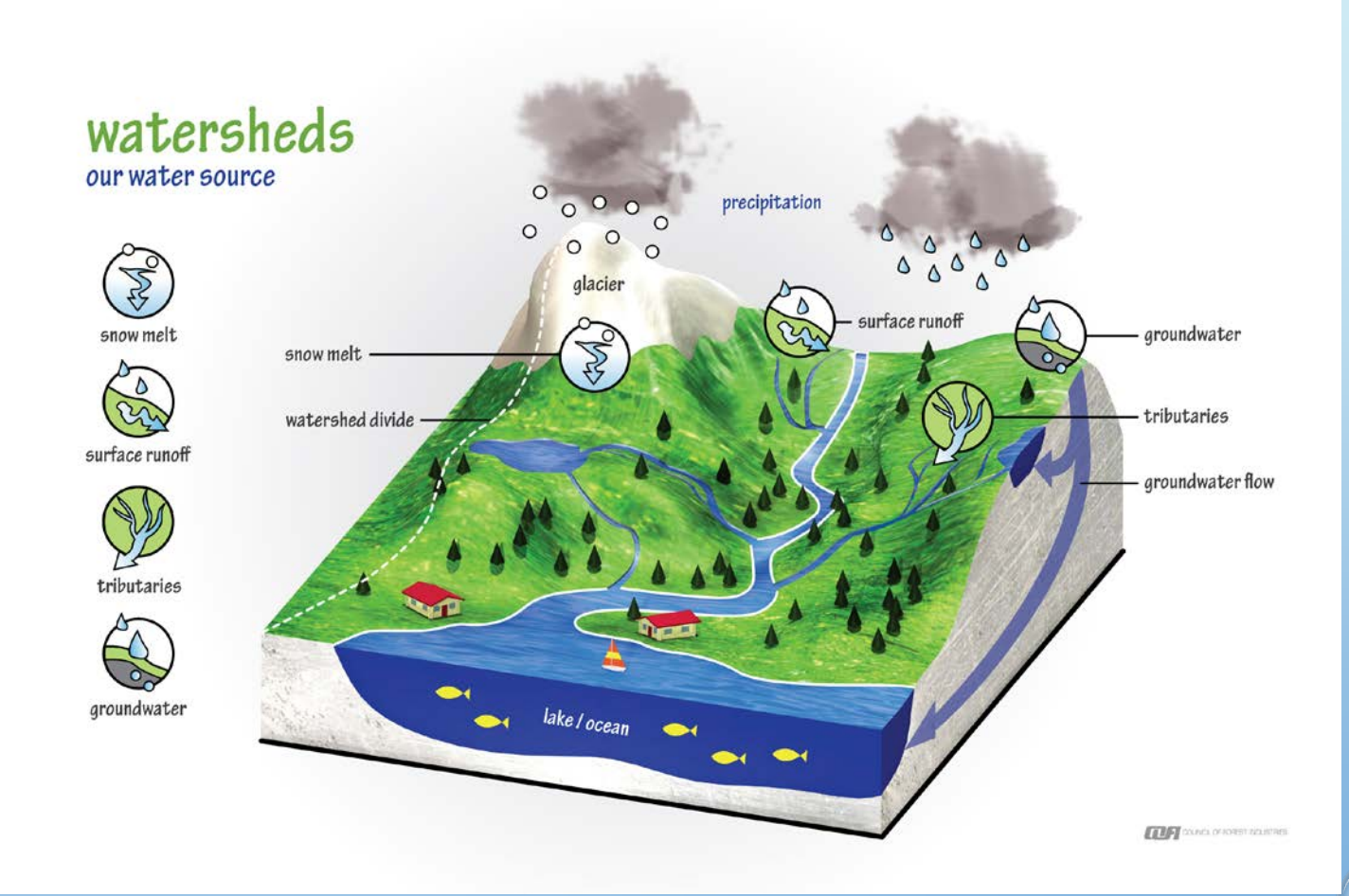
- DYNAMIC PROCESSES AND TERMINOLOGY
- SOIL/NUTRIENT EROSION
- SALINIZATION
- CLIMATIC INFLUENCES



ABIOTIC FACTORS

WATERSHEDS

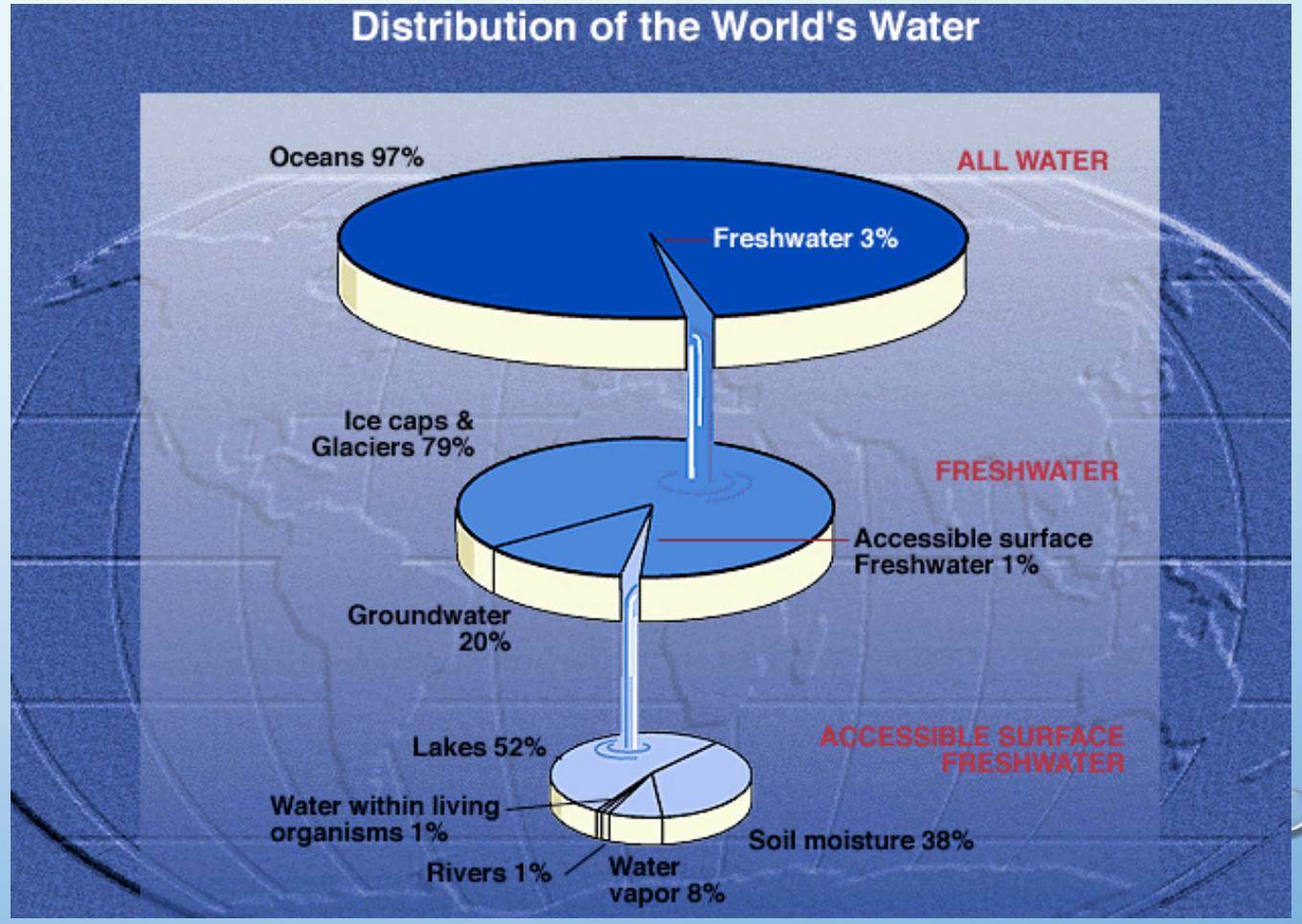
- CONCEPT & COMPONENTS
- HOW TO DELINEATE
- STREAM ORDERS
- HEALTHY AND UNHEALTHY



ABIOTIC FACTORS

WATER PROPERTIES

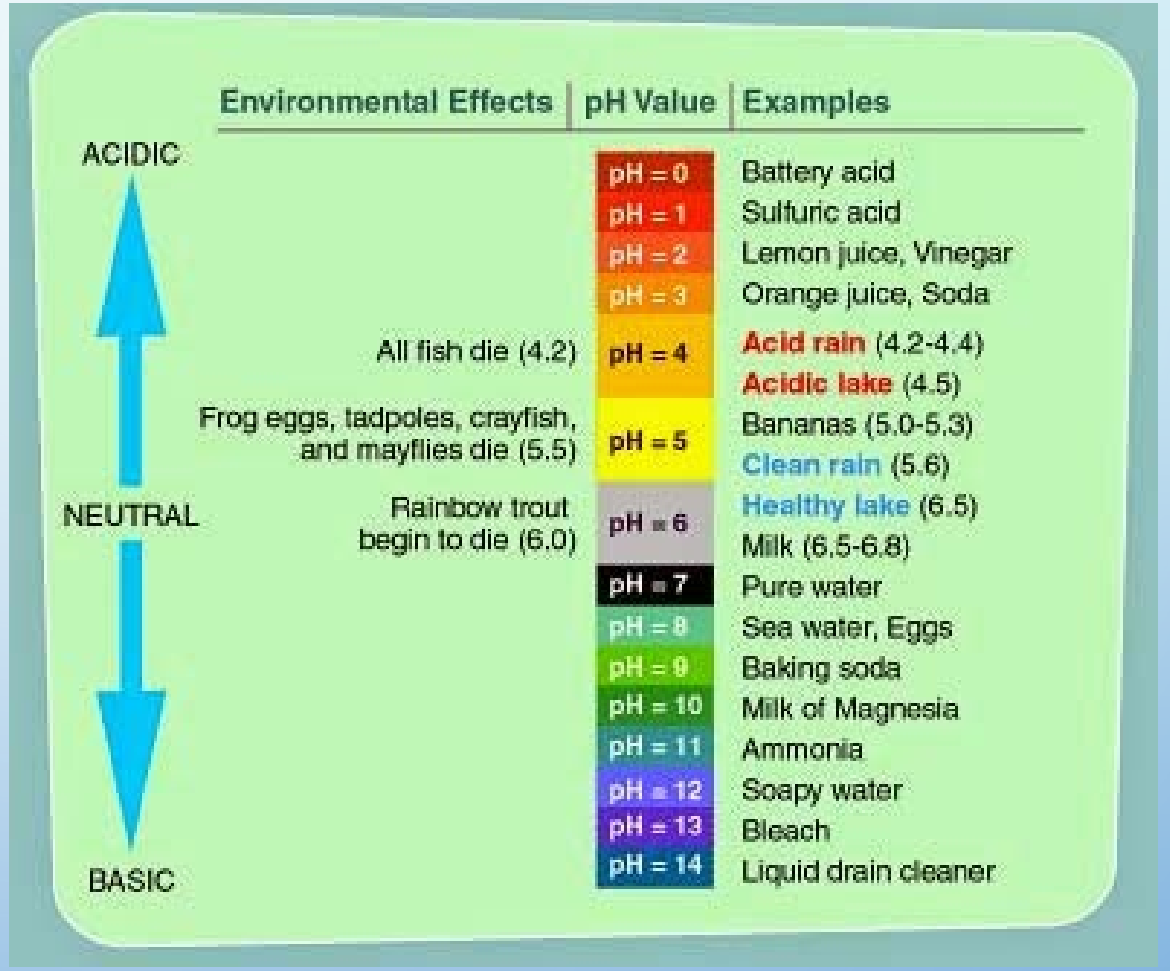
- UNIQUE FEATURES, PROPERTIES
- PHYSICAL FORMS
- DISTRIBUTION ON EARTH



ABIOTIC FACTORS

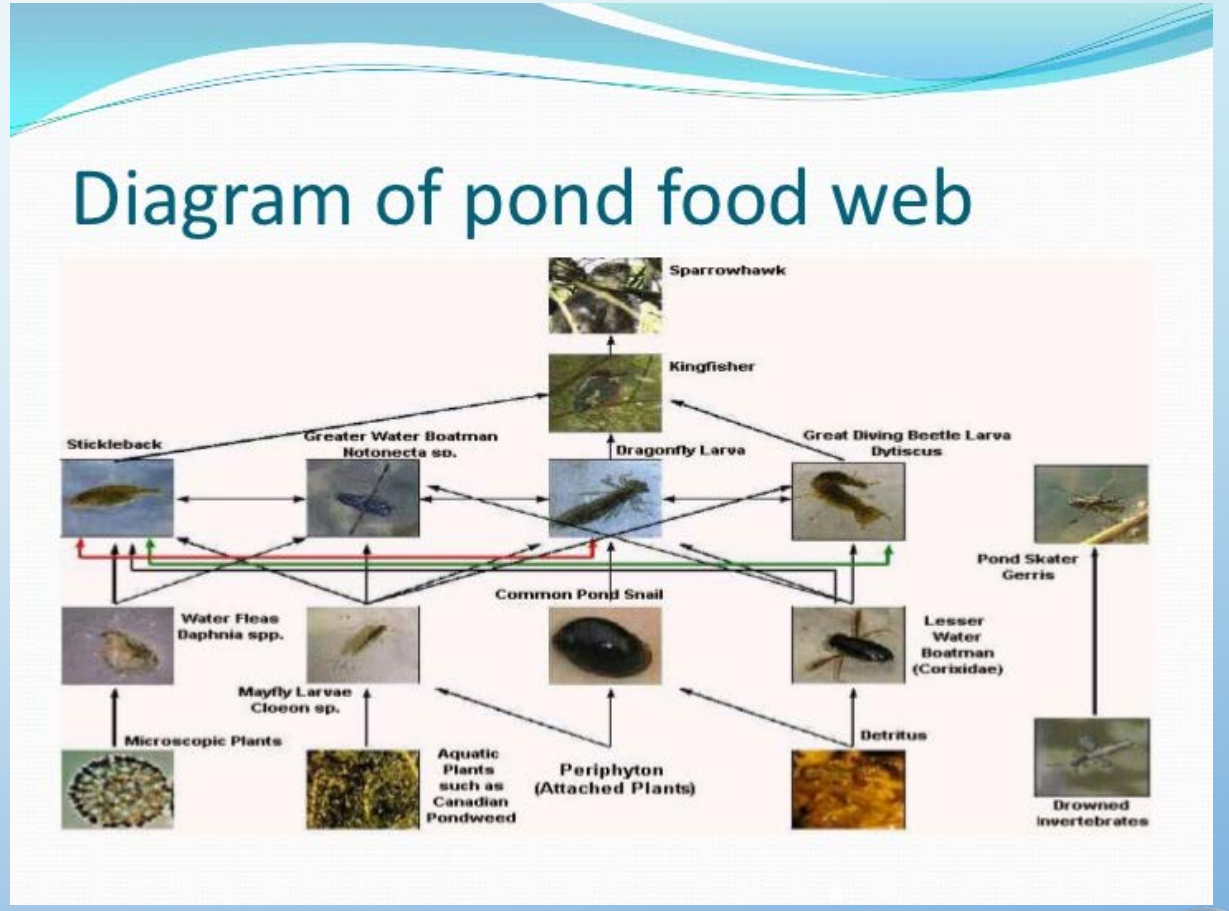
WATER QUALITY – POLLUTION

- TYPES OF POLLUTION
  - POINT/NON-POINT SOURCE
  - BACTERIAL
  - CHEMICAL
  - THERMAL
- TESTING PARAMETERS
  - TEMPERATURE
  - DISSOLVED OXYGEN (DO)
  - PH (ACIDITY)
  - TOTAL DISSOLVED SOLIDS (TDS)
  - CONDUCTIVITY
- INTERPRETING RESULTS IN TERMS OF EFFECTS ON LIVING ORGANISMS



BIOTIC FACTORS

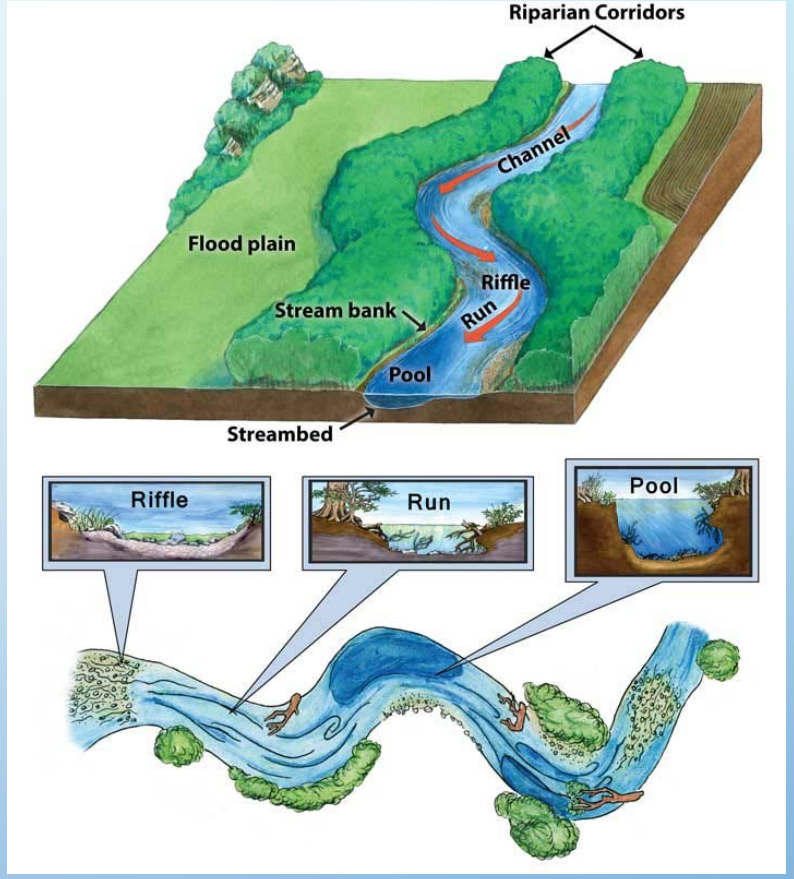
- AQUATIC ECOLOGY
  - FOOD WEBS AND INTERDEPENDENCE
  - ENERGY AND MATTER FLOW
  - BIOASSESSMENT (WQ)
  - RARE, THREATENED AND ENDANGERED SPECIES
  - INVASIVE/NUISANCE SPECIES IDENTIFICATION
    - EFFECTS & MANAGEMENT
    - PLANTS (I.E. MILFOIL , PHRAGMITES)
    - ANIMALS (I.E. ZEBRA MUSSELS, RUSTY CRAYFISH)



BIOTIC FACTORS

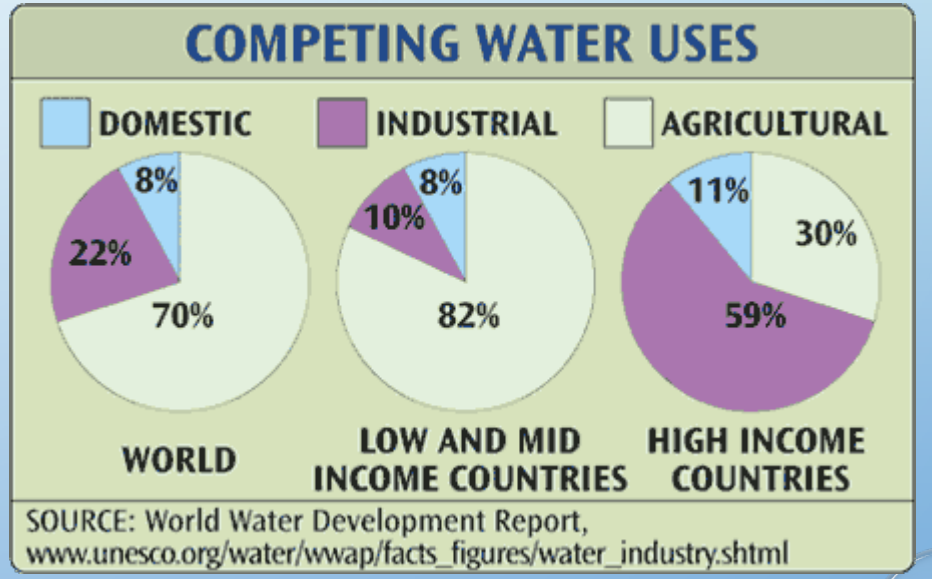
AQUATIC ENVIRONMENTS

- TYPES AND CHARACTERISTICS
  - WETLANDS- TYPES AND FUNCTIONS
  - RIVERS & STREAMS – RIPARIAN ZONES, RIFFLE/POOL
  - AQUIFERS/GROUNDWATER- TYPES, THREATS
  - LAKES & PONDS - TROPHIC STAGES, LIFE ZONES, THERMAL STRATIFICATION



WATER PROTECTION & CONSERVATION

- STATE AND FEDERAL AGENCIES, PROGRAMS:
  - DEP, EPA, ACE
- STATE AND FEDERAL LAWS:
  - CLEAN WATER ACT, SAFE DRINKING WATER ACT, NATURAL RESOURCE PROTECTION ACT (NRPA)
- COMPETING USES FOR WATER WORLDWIDE:
  - HYDROPOWER, NAVIGATION, WILDLIFE, RECREATION, IRRIGATION, INDUSTRY, DRINKING WATER, WASTE ASSIMILATION
- THREATS TO QUALITY AND SUPPLY:
  - (SEE ABOVE), CLIMATE CHANGE
- WAYS TO CONSERVE WATER



Saving water

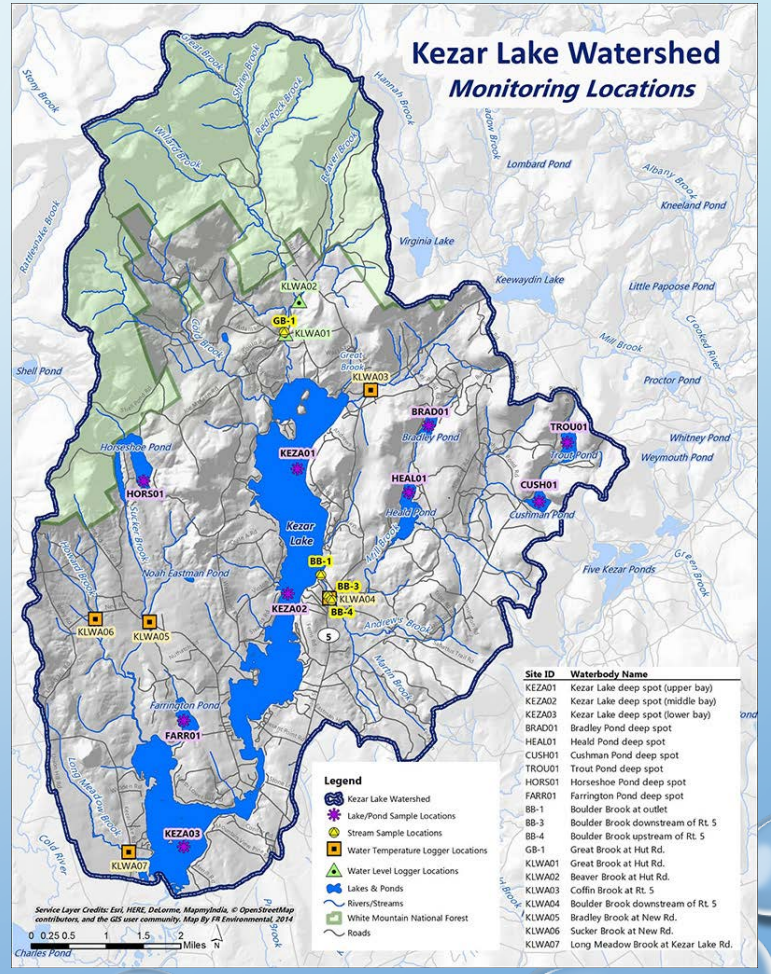
Water conservation

encompasses the policies, strategies and activities to manage fresh water as a sustainable resource to protect the water environment and to meet current and future human demand. Population, household size and growth and affluence all affect how much water is used. Factors such as climate change will increase pressures on natural water resources especially in manufacturing and agricultural irrigation.[1]

GIS & WATER RESOURCE MANAGEMENT

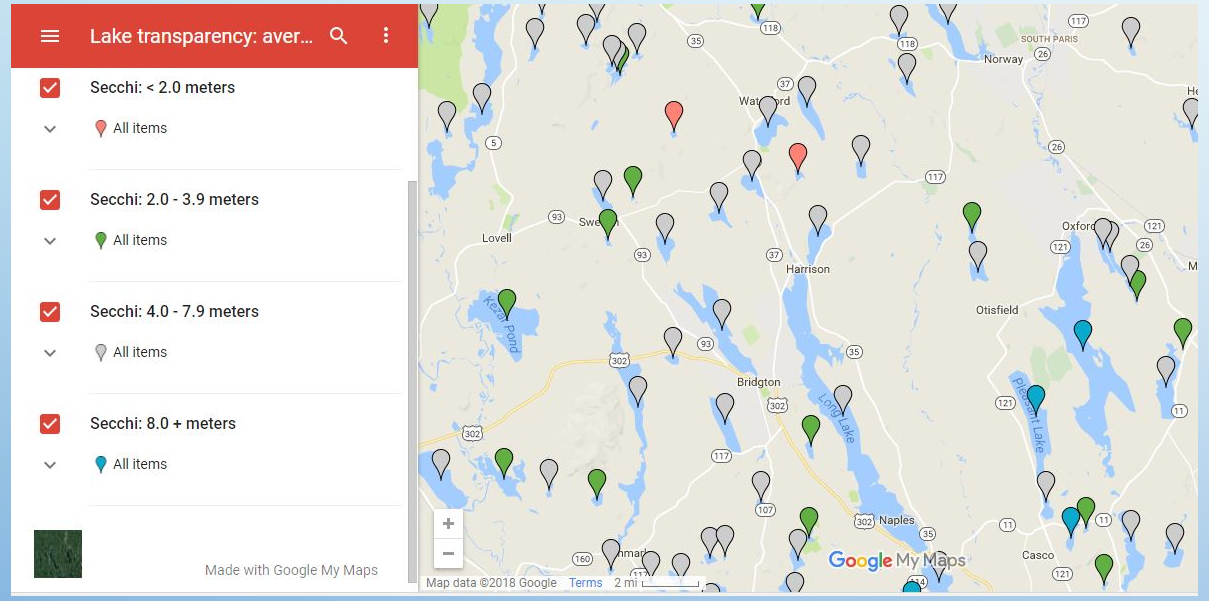
GEOGRAPHIC INFORMATION SYSTEMS (GIS) ARE AN EFFECTIVE TOOL FOR STORING, MANAGING, AND DISPLAYING SPATIAL DATA. CURRENT GIS APPLICATIONS FOR USE IN MANAGING WATER RESOURCES INCLUDE:

- SURFACE HYDROLOGIC AND GROUNDWATER MODELING
- WATER SUPPLY AND SEWER SYSTEM MODELING
- STORMWATER AND NONPOINT SOURCE POLLUTION MODELING FOR URBAN AND AGRICULTURAL AREAS

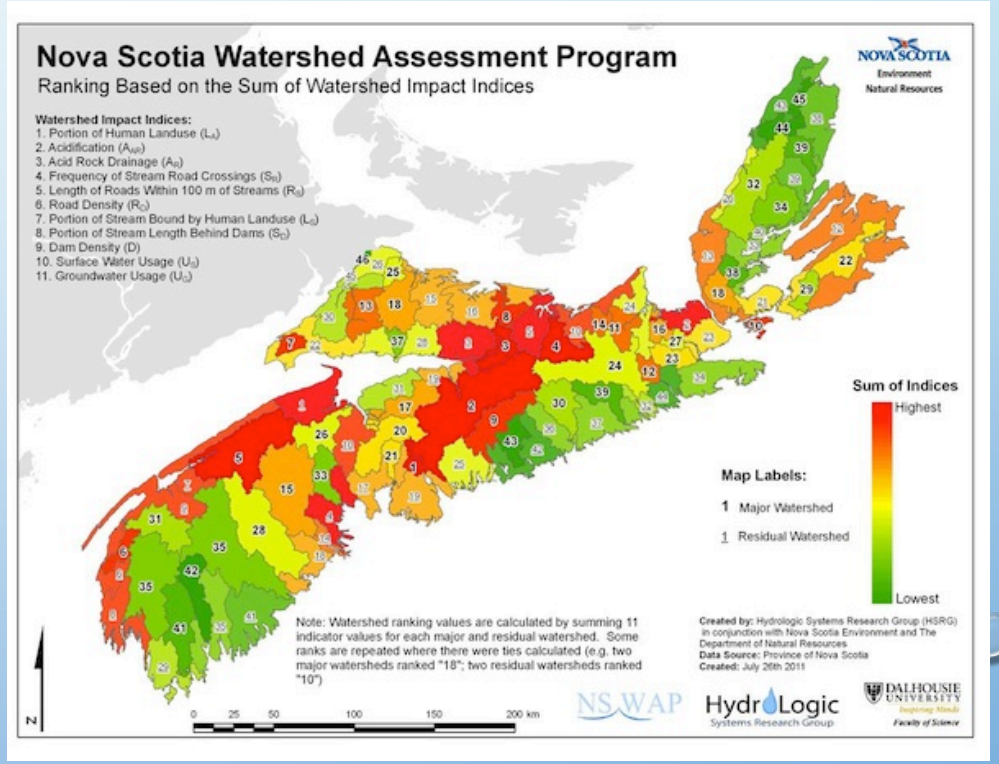


GIS & WATER RESOURCE ASSESSMENT

WATER QUALITY



WATERSHED HEALTH



(Will be included on the State Envirothon Test!)

The End…..
Questions?

Go to www.oxfordcountyswcd.org/outreach-education-programs
for downloadable study materials
under Envirothon at the bottom of the page