

UNDERSTANDING WATER



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WHAT IS WATER?

- H₂O
- UNIVERSAL SOLVENT
- ESSENTIAL FOR LIFE
- 3 STATES – liquid/solid/gas



DO WE HAVE MORE OR LESS TODAY ?

Than a Century Ago?

A Millennium Ago?



WHERE IN THE WORLD IS MY WATER?



WATER QUALITY/WATER QUANTITY



TENNESSEE IS WATER RICH

- 35 Reservoirs (over 500,000 acres)
- Over 175,000 Ponds (88,000 plus acres)
- Over 19,000 Miles of Streams
- Average 50 Inches of Precipitation

DISSOLVED OXYGEN (DO)

- Essential for Aquatic Life
- Sources: Air & Photosynthesis
- Oxygen More Soluble in Cold Water
- DO Below 3 ppm Stresses Most Aquatic Life
- 3 – 5 ppm Generally Required
- Used in Respiration, Decomposition, Reactions

HYPOXIA

- "DEAD ZONE" Around Mouths of Rivers
- Nutrients Accelerate Plant Growth
- Die and Sink
- Decompose and Use Up DO

pH

- Pure Water is Neutral (7.0)
- 6.5 – 9.0 Common

TEMPERATURE



- Optimal Ranges
- Loss of Shade, Added Sediment, Thermal "Pollution" Can Increase It
- Snow Melt, Shade, Underground Flows Can Decrease It
- Abrupt Changes Lethal

CLARITY



- Sediment, Plankton, Organic Matter
- Blocks Light, Increases Temperature, Increases Treatment Costs

HARDNESS



- Calcium and Magnesium

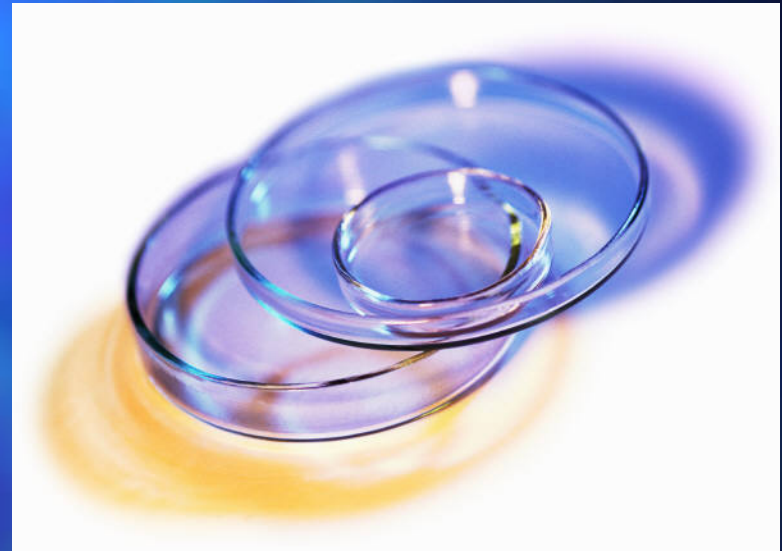
NUTRIENTS

- Phosphorus
- Nitrogen



BACTERIA

- Wastes
- Soil
- Decomposition



HOW CLEAN IS CLEAN?

- What will it be used for?
- 303 d List



MAJOR PROBLEMS

- Surface Water

- Sediment
- Nutrients



- Groundwater

- Bacteria
- Nutrients

