WATER SUPPLY PLANNING AND MANAGEMENT: SUSTAINABILITY

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IDNR/OWR ISWS ISGS
GOAL OF WATER SUPPLY PLANNING:

TO PROVIDE ADEQUATE SUPPLIES OF CLEAN WATER FOR ALL USERS AT REASONABLE COST
HOW TO MANAGE WATER SUPPLIES?

• Business as usual?
• Change?
• Previously not had a process and structure for regional planning and management
• Governor established an administrative process and structure
• RWSPC needs develop a structure/framework for making management recommendations
HOW TO MANAGE WATER SUPPLIES? (contd.)

• Many pieces to the jigsaw puzzle (supply and demand data; diverse interests; management concepts)

• RWSPC identify all the pieces of the jigsaw puzzle and the big picture
THE WATER CYCLE: CLIMATE, SURFACE WATER, and GROUNDWATER ARE ALL LINKED
WATER SUPPLY PLANNING AND MANAGEMENT

HUMANS

NATURE

Economics

Ethics

Politics

Laws & Regulations

Culture

Water

Biological Species

Rocks Sediment Soil

Atmosphere
SUSTAINABILITY

“meeting current needs without compromising the opportunities of future generations to meet their needs”

World Commission, 1987
SUSTAINABILITY RECOGNIZES:

- Present and future generations
- The value of water supply
- Shared responsibilities
- Limits of water
- Stewardship
- Maintenance of integrity of societal and ecological systems
- Adaptability to deal with uncertainties and risks
- Similar to “reasonable use” and “no adverse impacts”?
NON-SUSTAINABLE MANAGEMENT INCLUDES:

- Inadequate consideration of future generations
- Undue recognition of the value and limits of water
- Singular decision making
- Unreasonable use, adverse impacts, and high costs
- Imbalance between meeting societal and ecosystem needs
- Inability to deal with droughts etc.
Does A Reservoir In Illinois Offer A Sustainable Water Supply?
Does A Reservoir In Illinois Offer A Sustainable Water Supply?

- May be, may be not!
- Depends on definition of sustainability
- Critical considerations: time and costs
- Sustainable until water storage capacity is no longer adequate to meet needs – droughts or increasing demand
- Sustainable until costs of dredging, enlarging the reservoir, or preventing sedimentation become too high
ARE LAKE MICHIGAN ALLOCATIONS SUSTAINABLE?

• Yes, if a long-term increase in precipitation does not cause higher diverted runoff and leakage to eat into the allocations

• Yes, if a long-term decrease in precipitation and evaporation doesn’t cause Lake Michigan water level to drop drastically
IS WITHDRAWING LARGE AMOUNTS OF WATER FROM AQUIFERS SUSTAINABLE?

- Safe yield: withdrawals = recharge
- BUT withdrawals can increase to, e.g., reduce streamflow; dewater aquifers; cause existing wells to go dry; cause deterioration in water quality
- Safe yield is not necessary sustainable
- Critical considerations: acceptable impacts and costs
Decline in artesian head west of Champaign
WHAT IMPACTS ARE ACCEPTABLE?
WHAT CONSTITUTES REASONABLE USE?
WHAT IS SUSTAINABLE?
SUSTAINABILITY THRESHOLDS?

- Critical levels for managing water supply operations, e.g., Q7/10
- Sustainable operations above thresholds
- Non-sustainable operations below thresholds
- Thresholds can be set by society based on acceptable/unacceptable impacts, costs, etc.
- Strategies can be implemented to ensure compliance with thresholds
- Can you implement additional thresholds within existing laws, regulations and property rights?
- Can you achieve “sustainability” without changing laws, regulations and/or property rights?
Regional Water Supply Planning Committee

- Identify a framework within which you can pull all the pieces together and set goals, strategies etc.
- Do you wish to use sustainability as a framework for making management recommendations?
  - If yes, you probably need to clearly define sustainability.
  - If not sustainability, will you adopt another framework?
- Identify the resources you wish to protect, preserve and enhance – society, economy, and ecosystems.
- Identify the impacts and costs that will be socially acceptable.
THANK YOU!