

## GROUND WATER RESOURCE ISSUES IN OREGON

1. Ground water/surface water interconnection
2. Overdraft
3. Ground water/land use interconnection
4. Low yield aquifer management
5. Springs and ground water management
6. De-watering
7. Naturally occurring contaminants, e.g. As
8. Reactive vs Proactive management
9. Policy development and management decisions
10. Waste
11. Artificial Recharge
12. Hanford

In talking about GW Issues,  
Consider:

Geology

Politics

Public interest

Values

Policy development

Economics

Court system

Law

Administrative law

Context of WATER RESOURCES  
DEPARTMENT authorities

MY PERSONAL (CYNICAL) VIEWS

## PRIOR APPROPRIATION DOCTRINE

First in time / first in right

Parallel surface and ground water  
rights systems

# GROUND WATER BASICS

Occurrence

Flow generally

Gradient

$$Q=KIA$$

Drawdown & Specific Capacity

Interference

Removal from storage / Surface water  
capture

Manage as renewable / Equilibrium  
with surface water

Ground water / surface water  
Interconnection

Public interest in preserving surface  
water

Fish

Aquatic life

Aesthetics

Recreation

Pollution abatement

Instream water rights

Scenic water way flows

Restrictive classification

Withdrawal

80% Exceedance levels

Economic Development Department

# Deschutes Basin Example

Geologic development

Recent water development history

Ground water relation to surface water

ISWR, SWW, Tribal rights

Surface water unavailable

Development pressure

Ground water

Depleted SW

Mitigation

Canal lining

Artificial Recharge

Cancellation of unused rights

New rights issued only with mitigation

# FT. ROCK BASIN EXAMPLE

Geology

Connection to Ana Springs / Summer Lake

Late 70's boom

Declines (in wet years)

70's pumpage → declines

Projected for 60-70 yrs.

Restrictive Classification

Decline continues on projection

Ultimately: Call on water Ana Springs

# UMATILLA BASIN EXAMPLE

Geology

Umatilla River / alluvial wells

Ground water regulation

Bogus report

Basalt ground water history

Geology

General GW flow

Potentiometric surface map

Late 60's

Electric power

Drilling technology

Increases in GW use

→ Water level declines

Critical ground water area declaration

Cut back on water use

Lengthy court battles

Balanced system

Balance after John Day Dam

Hydraulic damming effect

Basalt hydraulic connection Arlington hydrograph

Plan to lower pool level - 2 proposals

Removes hydraulic dam

Re-initiate declines

Well deepenings

Reduced storage

→ increased regulation??

Relatively poor connection



# WILLAMETTE BASIN EXAMPLE

Geology

Central basin

Thick water column

Water level fluctuations

Natural

Pumping-induced

Surface water impacts