

Groundwater Data and Information Needs

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OWRD collects groundwater data for multiple goals:

- Define hydrologic and aquifer systems with basin studies**
- Water Management = timely and effective regulation and distribution**
- Allocation of groundwater**

Actions related to the IWRS



**Recommended Action 1.A
Conduct Additional Groundwater
Investigations**

**Recommended Action 1.B
Improve Inter-Agency Natural
Resource Data Collection**

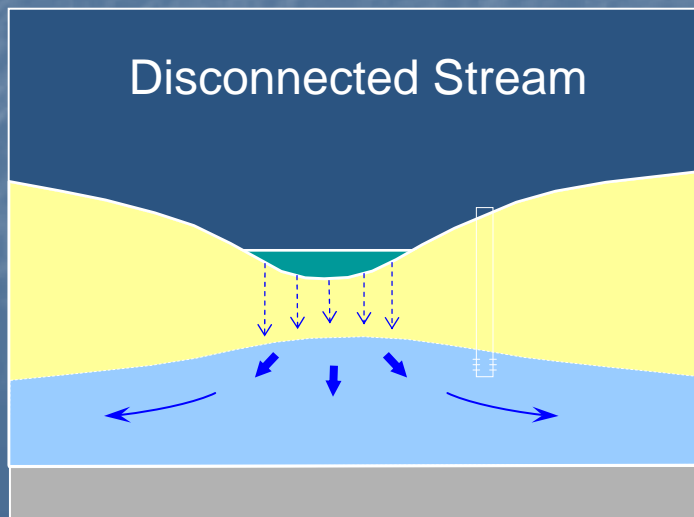
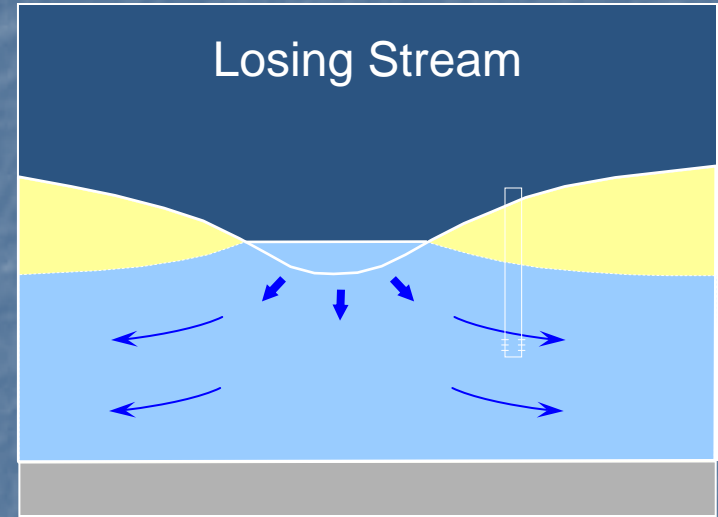
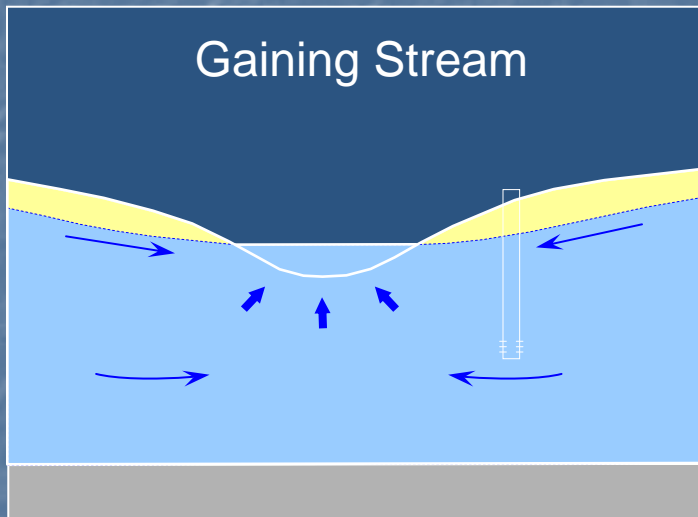
**Recommended Action 2.B
Improve Water-Use
Measurement and Reporting**

**Recommended Action 10.B
Improve Access to Built Storage**

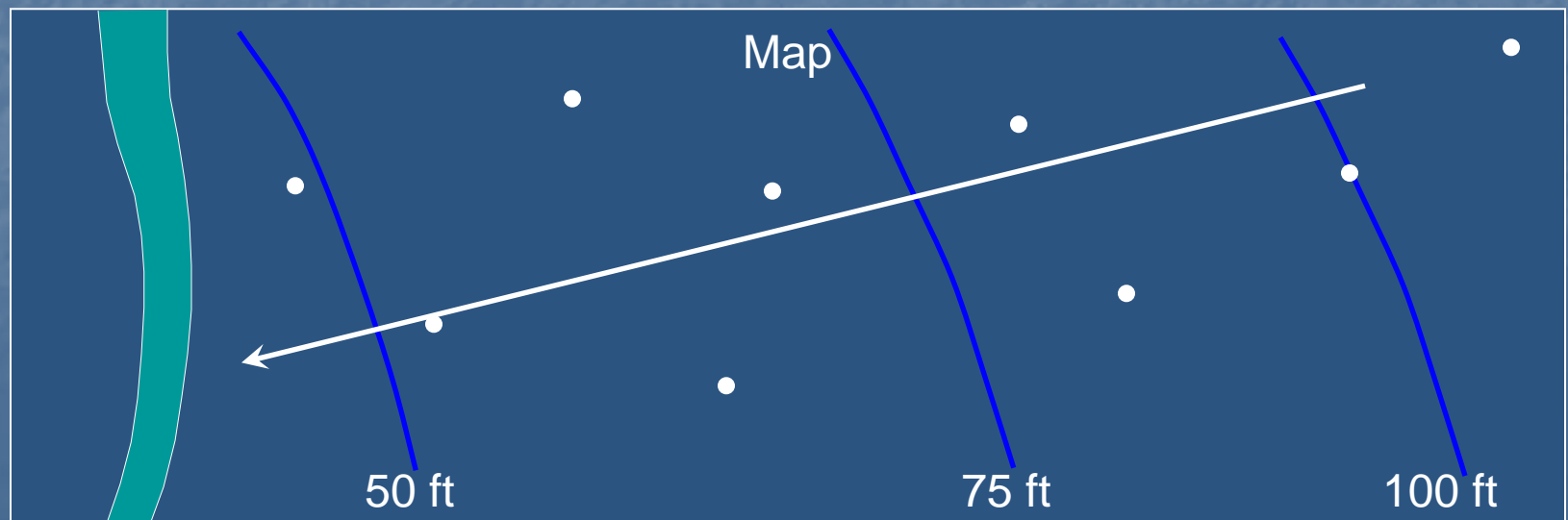
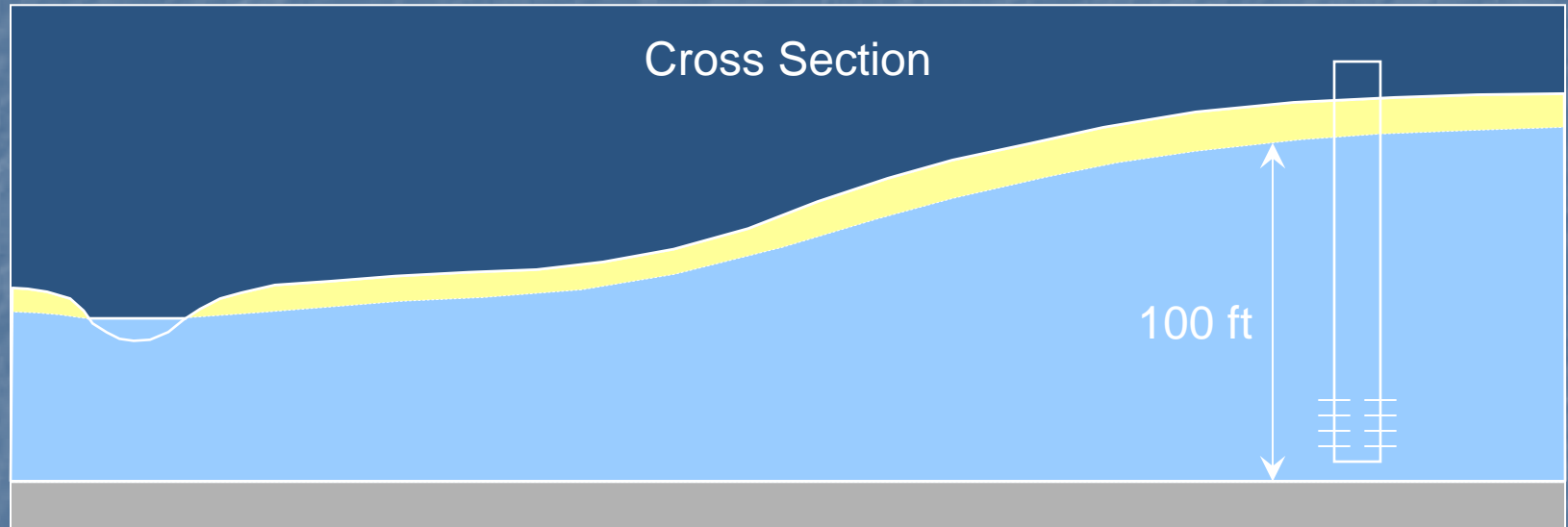
Components of a basin groundwater study:

- **Geological framework**
- **Basin Water Budget**
- **Groundwater Use**
- **Aquifer recharge**

Basin Study: Relationship between groundwater and surface water

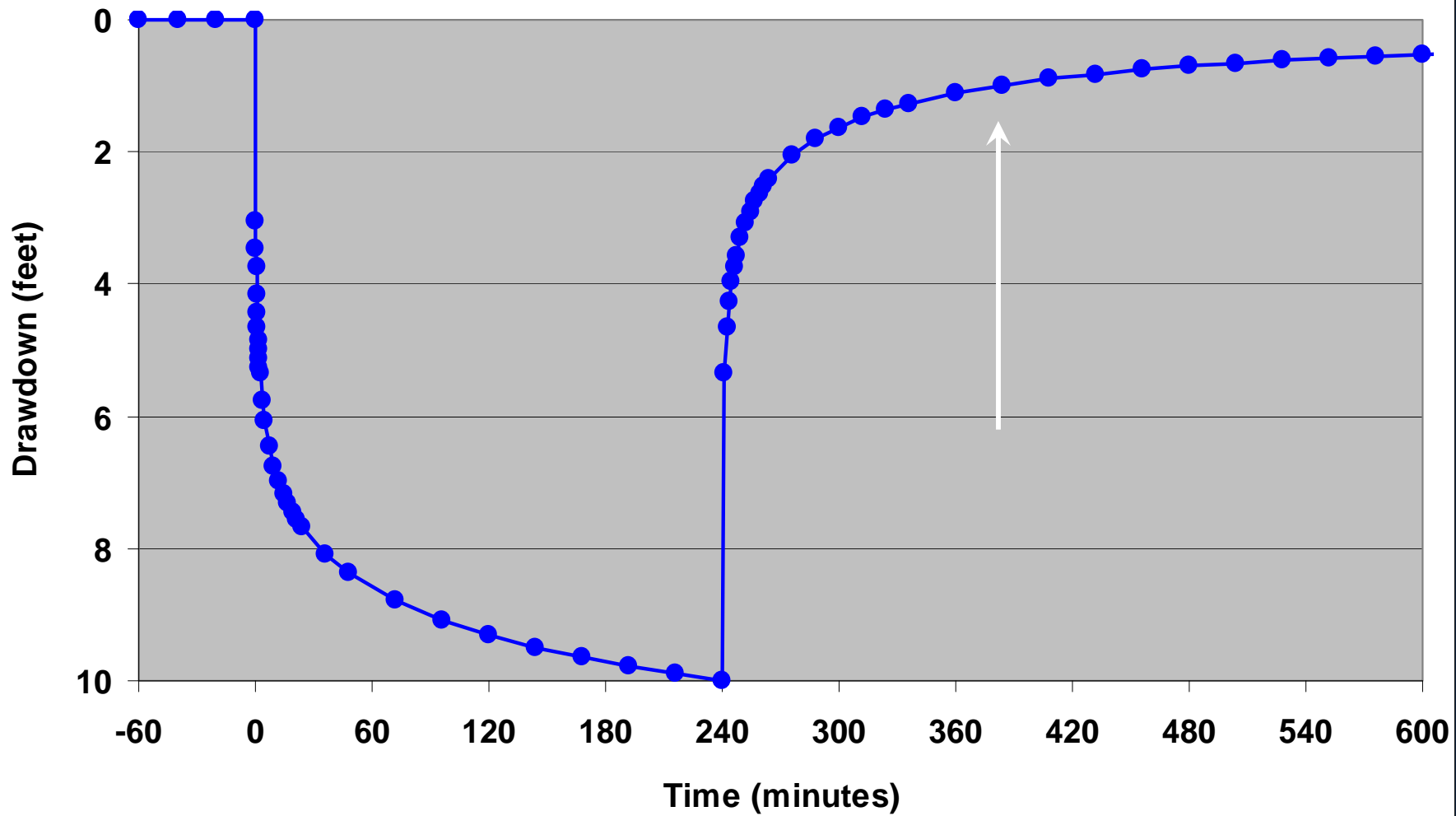


Basin Study: Direction & Rate of Groundwater Flow



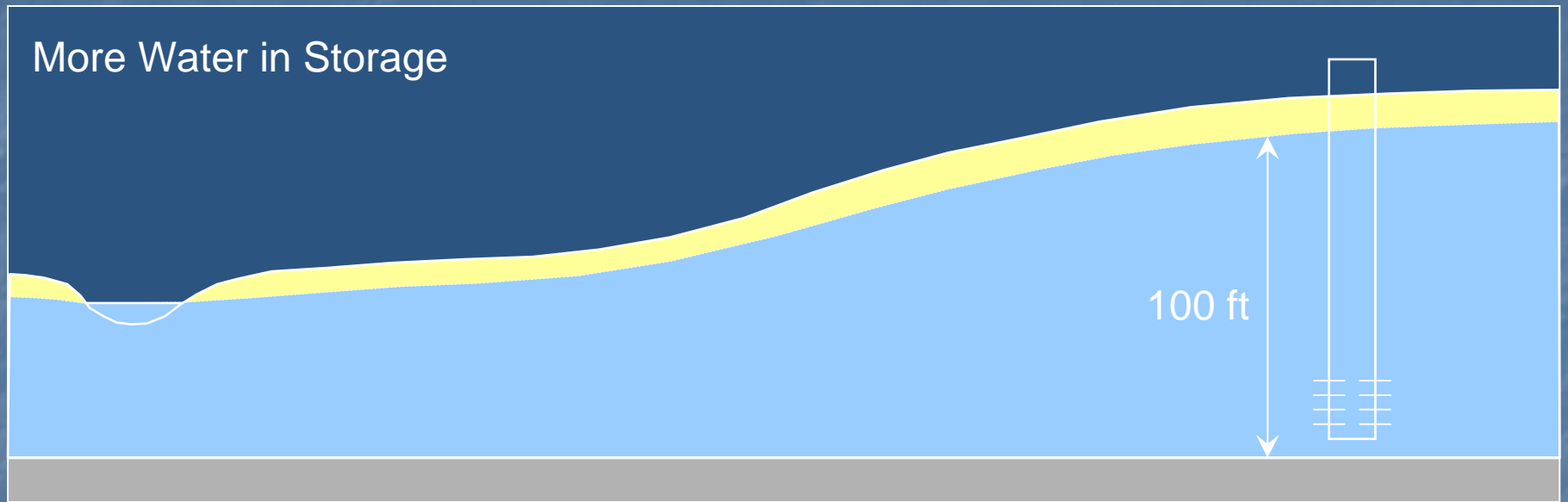
Basin Study: Aquifer Test Data

Water Levels Before, During, & After Pumping

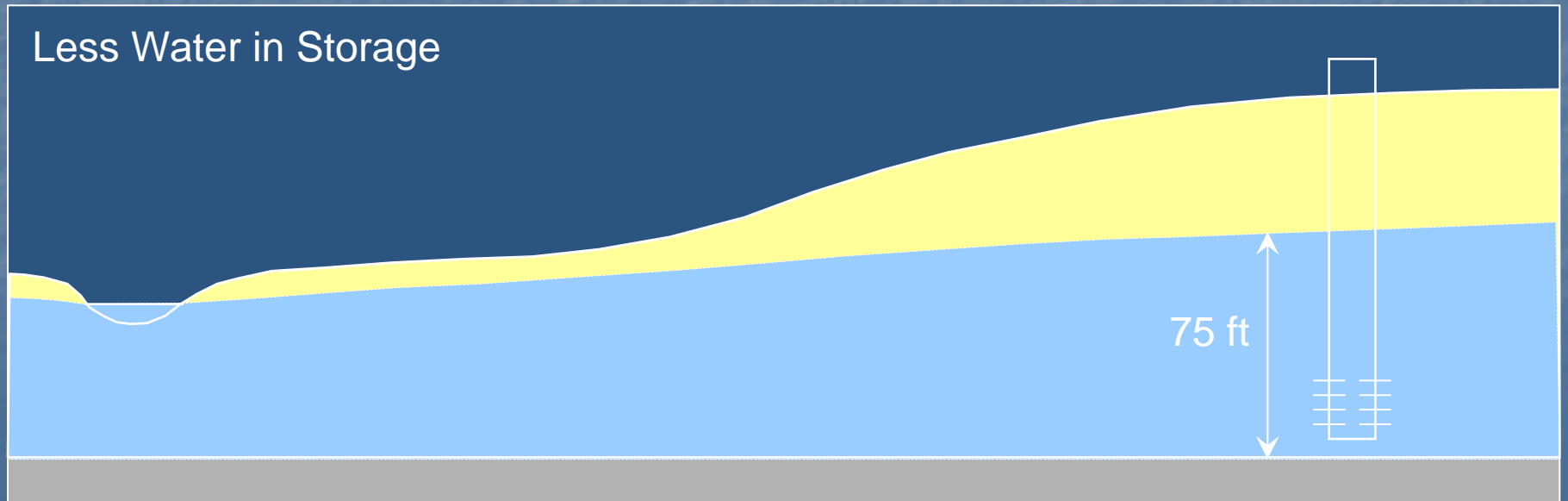


Basin Study: Amount of groundwater in storage

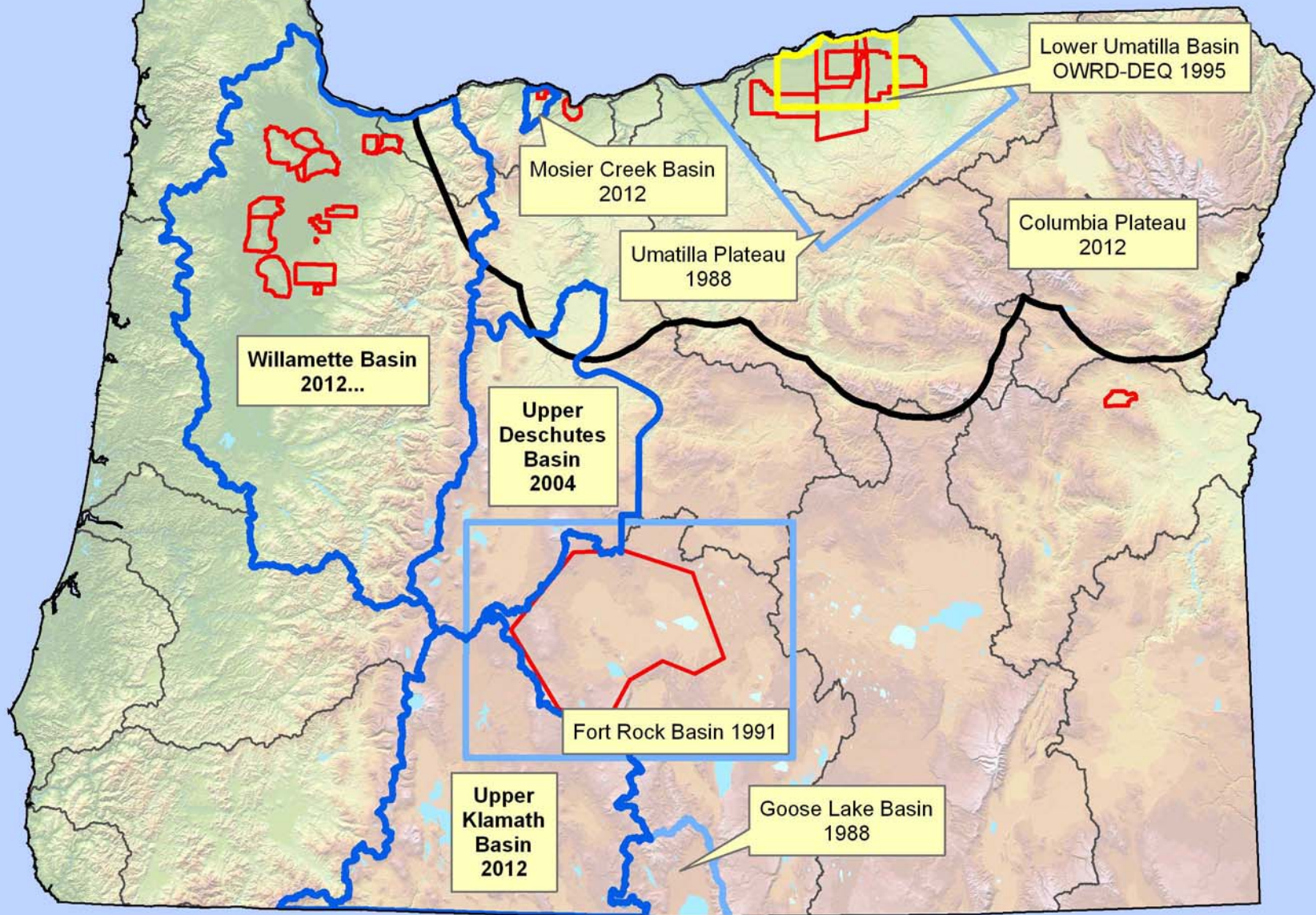
More Water in Storage



Less Water in Storage



Basin Studies in Oregon



Data Sources for Aquifer Properties

- Groundwater permit holders are required to submit pump test data prior to certification (specific capacity and transmissivity)
- Aquifer tests conducted by groundwater staff
- Well log data critical to assessing aquifer location, thickness and geometry, and historical water levels
- AR and ASR projects are providing new and useful aquifer data
- Basalt well cuttings sample analyses of CRBG
- Geological mapping from DOGAMI and USGS

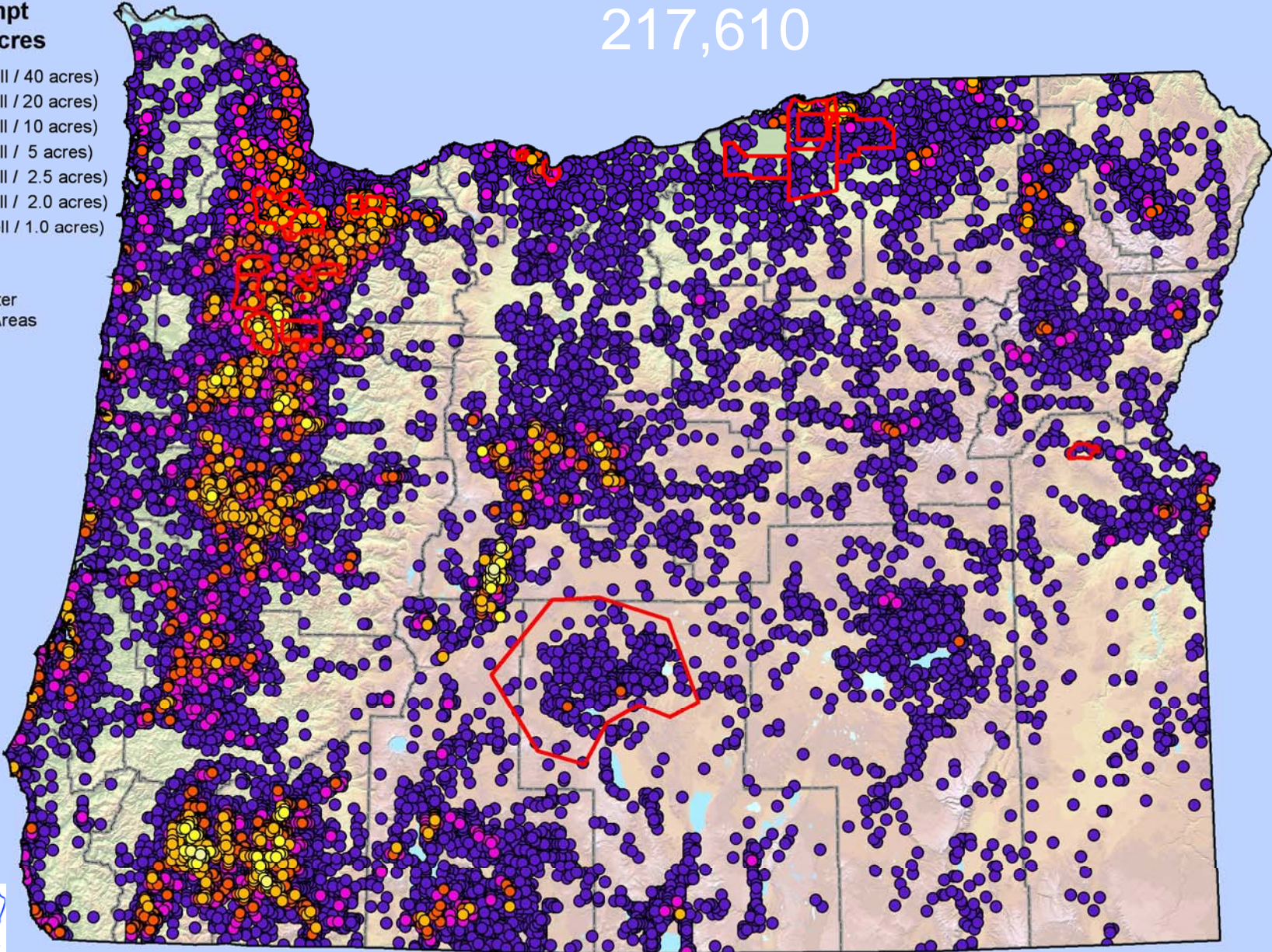
Exempt Use Well Density – 2010

217,610

Density of Exempt Wells per 640 Acres

- 1 - 16 (<= 1 well / 40 acres)
- 17 - 32 (<= 1 well / 20 acres)
- 33 - 64 (<= 1 well / 10 acres)
- 65 - 128 (<= 1 well / 5 acres)
- 129 - 256 (<= 1 well / 2.5 acres)
- 257 - 320 (<= 1 well / 2.0 acres)
- >320 (<= 1 well / 1.0 acres)

- Counties
- Ground Water Restricted Areas



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0 30 60 120 Miles

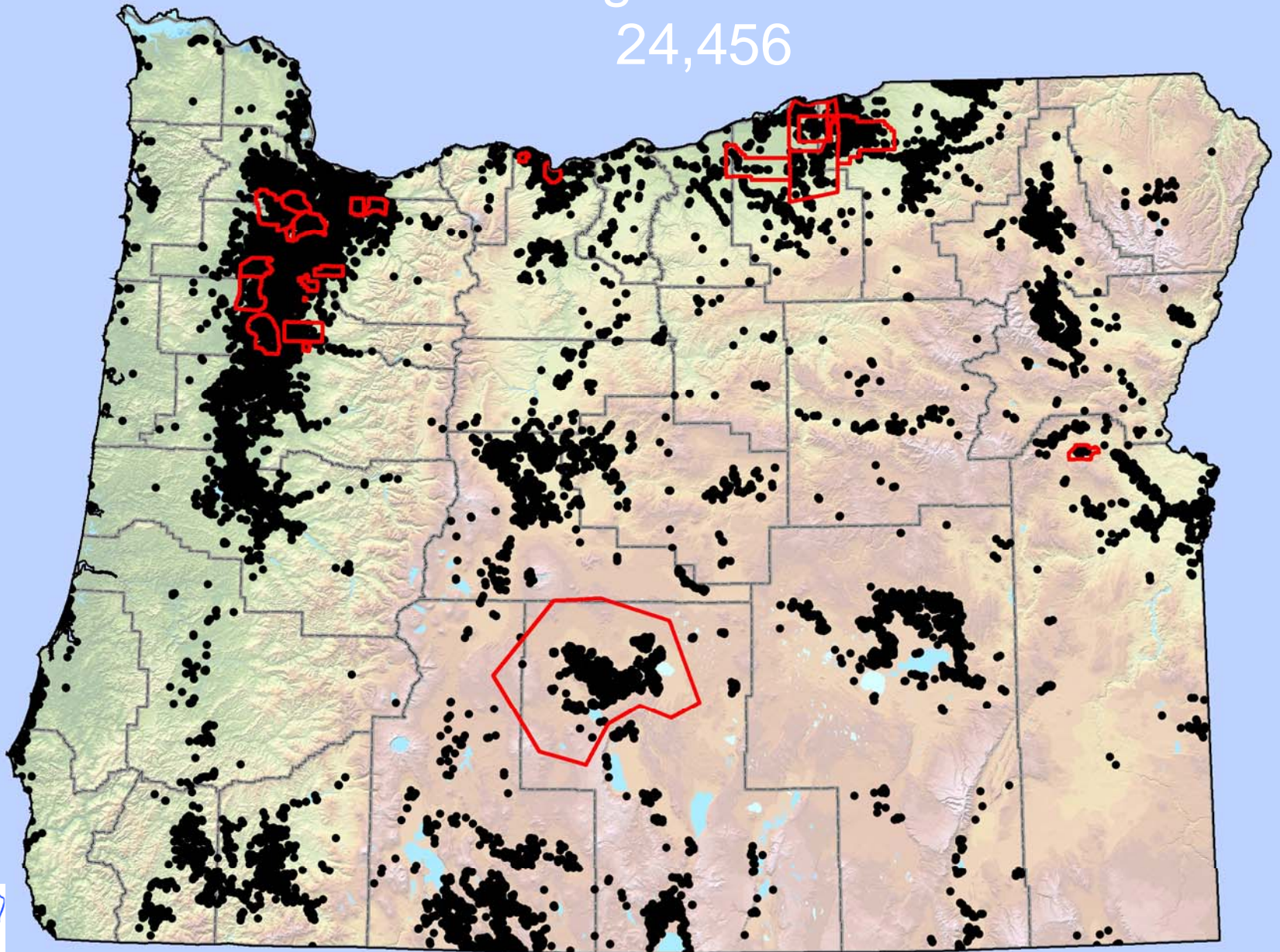


Groundwater Use in Oregon

- Like surface water rights, newer groundwater rights are conditioned to require water use measurement
- Water rights for governmental entities are required to have a measuring device and report water use per OAR 690-085
- Groundwater users in groundwater management areas may be required to measure and report water use
- In certain basins OWRD staff collect water use data (Umatilla and Klamath basins)

Water Right Wells – 2010

24,456



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0 30 60 120 Miles



Factors Influencing Monitoring Network Development:

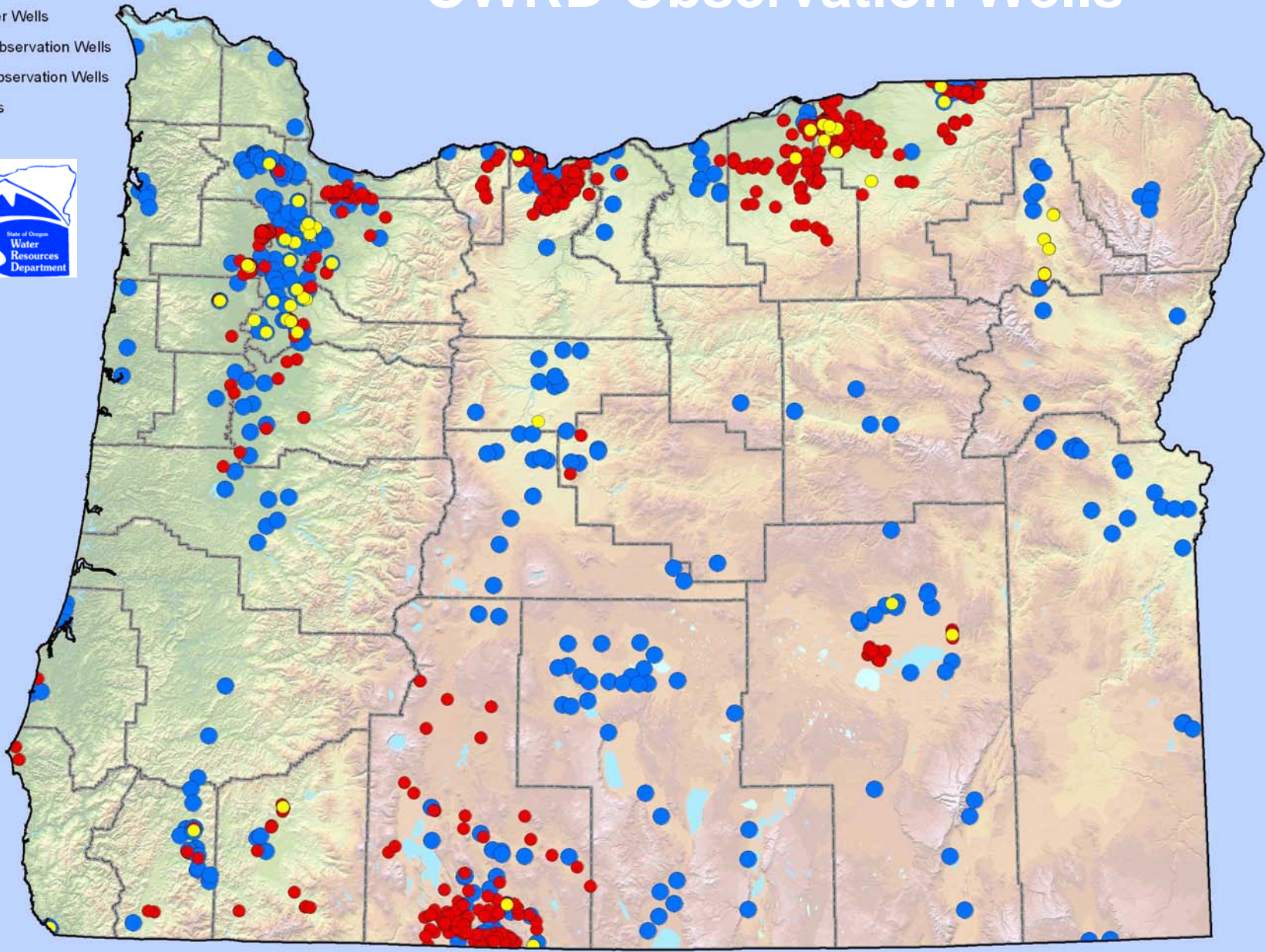
- **Increasing Demand**
- **Resource Constrained**
(cooperator funding = increased monitoring)
- **Groundwater/Surface Water Interaction**

Factors Influencing Monitoring Network Development:

- **New technologies**
(artificial recharge/aquifer storage and recovery)
- **New laws**
(mitigation programs, net environmental benefits)
- **Increased water right complexity**
(permit conditions commonly related to limited supply)

OWRD Observation Wells

- Recorder Wells
- Other Observation Wells
- State Observation Wells
- Counties

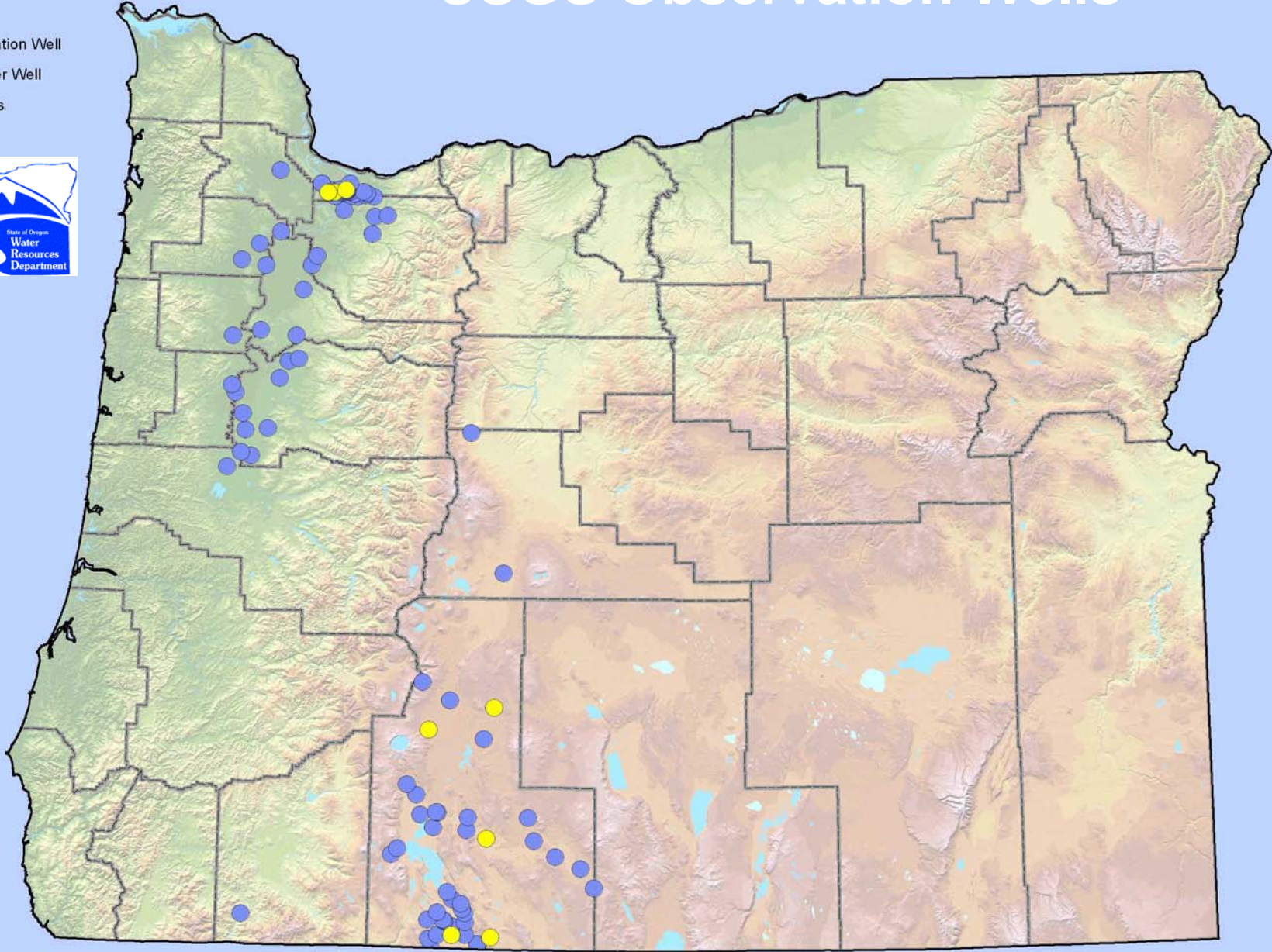


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USGS Observation Wells

- Observation Well
- Recorder Well
- Counties

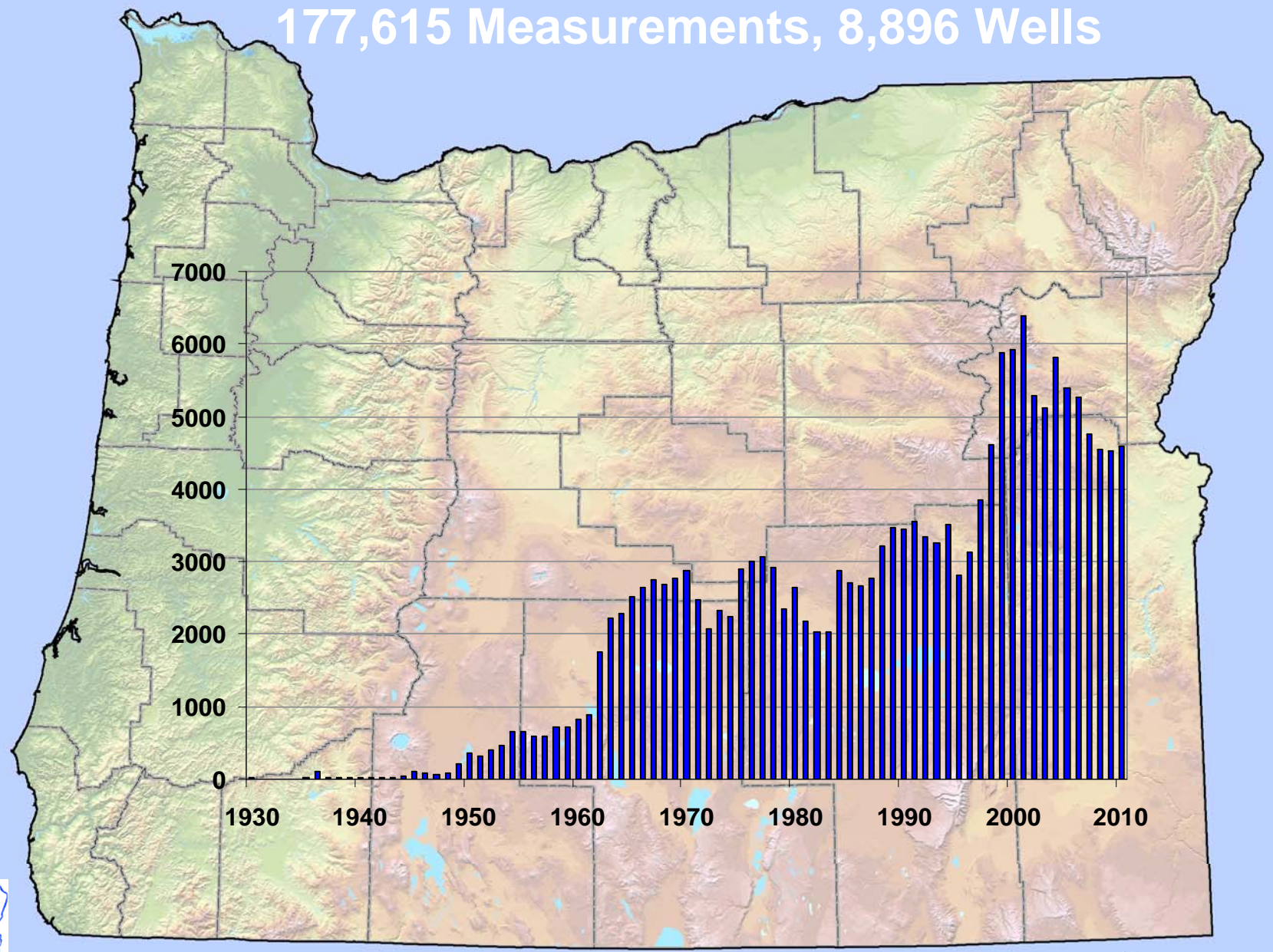


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Water-Level Measurements per Year

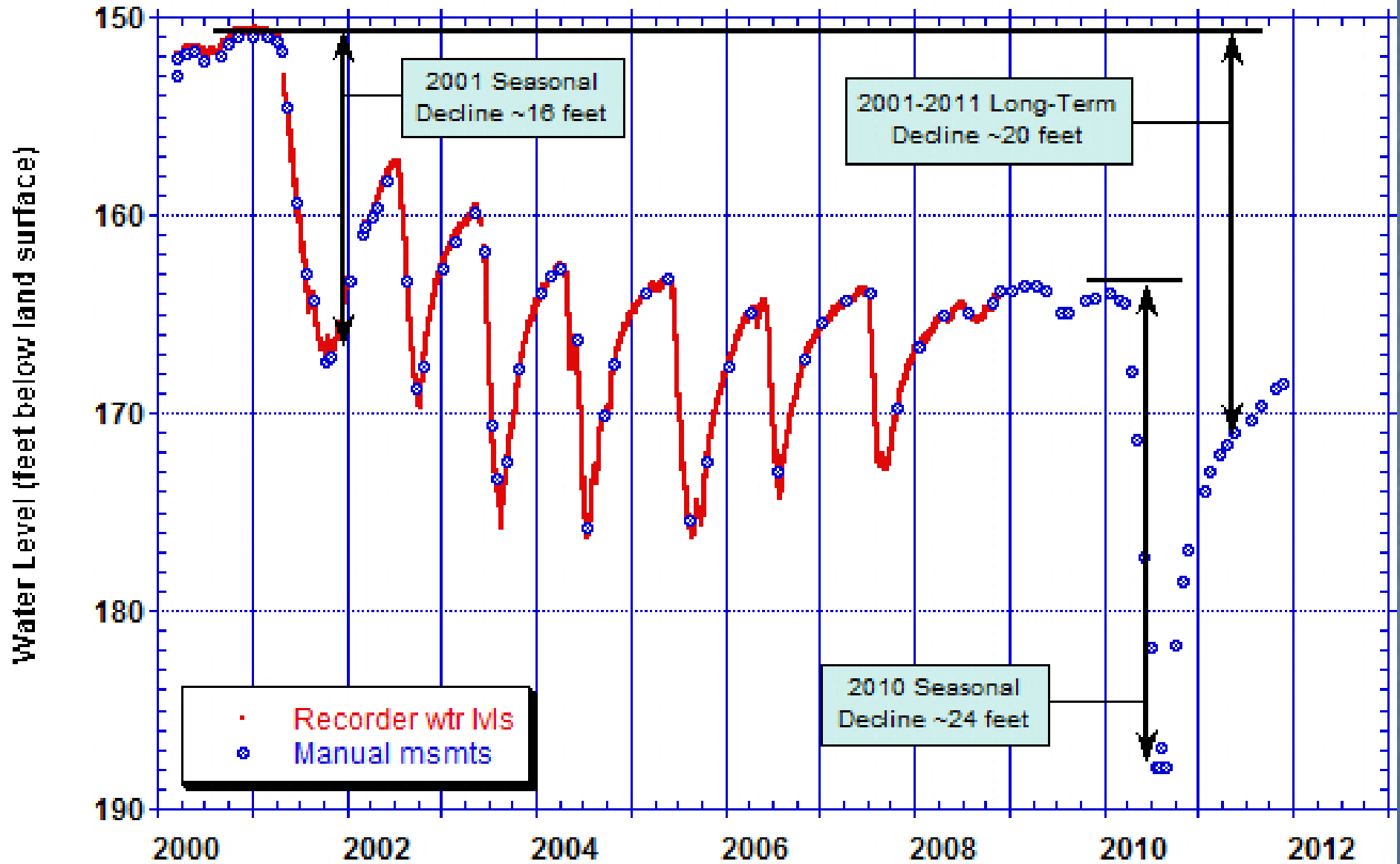
177,615 Measurements, 8,896 Wells



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40.00S/12.00E-32CDB01 KLAM 52194
Depth 447 feet Volcanic Rock



Conclusions

- Aquifer property and groundwater use data help us better understand our groundwater resources
- Ongoing data collection today can save money, time, and provide more insight/understanding, for future basin studies
- Improved water use measuring can improve water management; may lead to improved efficiency and conservation

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