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## Brackish Ground Water - an untapped resource for energy development?

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# **Brackish Ground Water— an untapped resource for energy development?**

**John Shomaker**

**John Shomaker & Associates**

**Albuquerque**

# Why brackish water for energy?

- **Development near energy source, rather than market—remote?**
- **Finite life?**
- **Water quality not so important?**
  - **High-value use**
  - **Some uses don't require quality**
- **Some energy developments PRODUCE brackish water.**

# **Lots of brackish water in NM**

- **As an example—319 million acre-feet in San Juan and Tularosa Basin!**
- **NM consumptive use ~ 2 million/year, so—**
- **Is this information meaningful? No.**
- **Cost**

# **Brackish water resources are important, but--**

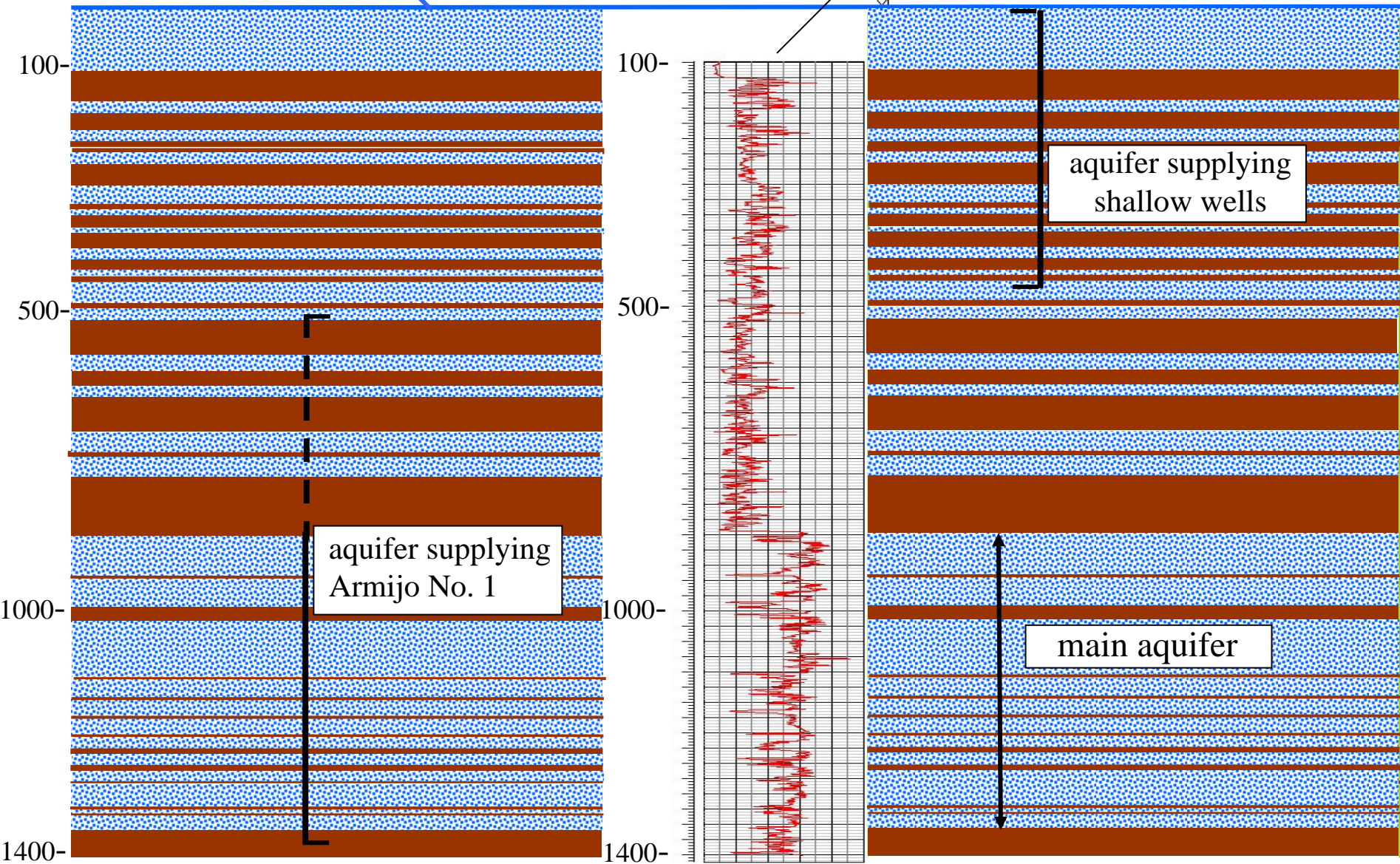
- Not newly discovered, nor undescribed.**
- If undeveloped, it's because of cost.**
- Not disconnected from fresh-water realm, nor beyond OSE administration.**
- The familiar constraints apply!**


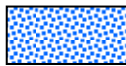
# Connection with Existing Fresh-Water Supplies

- **Streams**
  - **Some is directly tributary: Malaga Bend, Capitan Reef**
  - **More subtle connections: Rio Grande, San Juan**
- **Potable ground water**
  - **Drawdown in overlying aquifer**
  - **§72-12-25: where is the “top?”**
  - **Ticking bomb of unrealized depletions**

water table

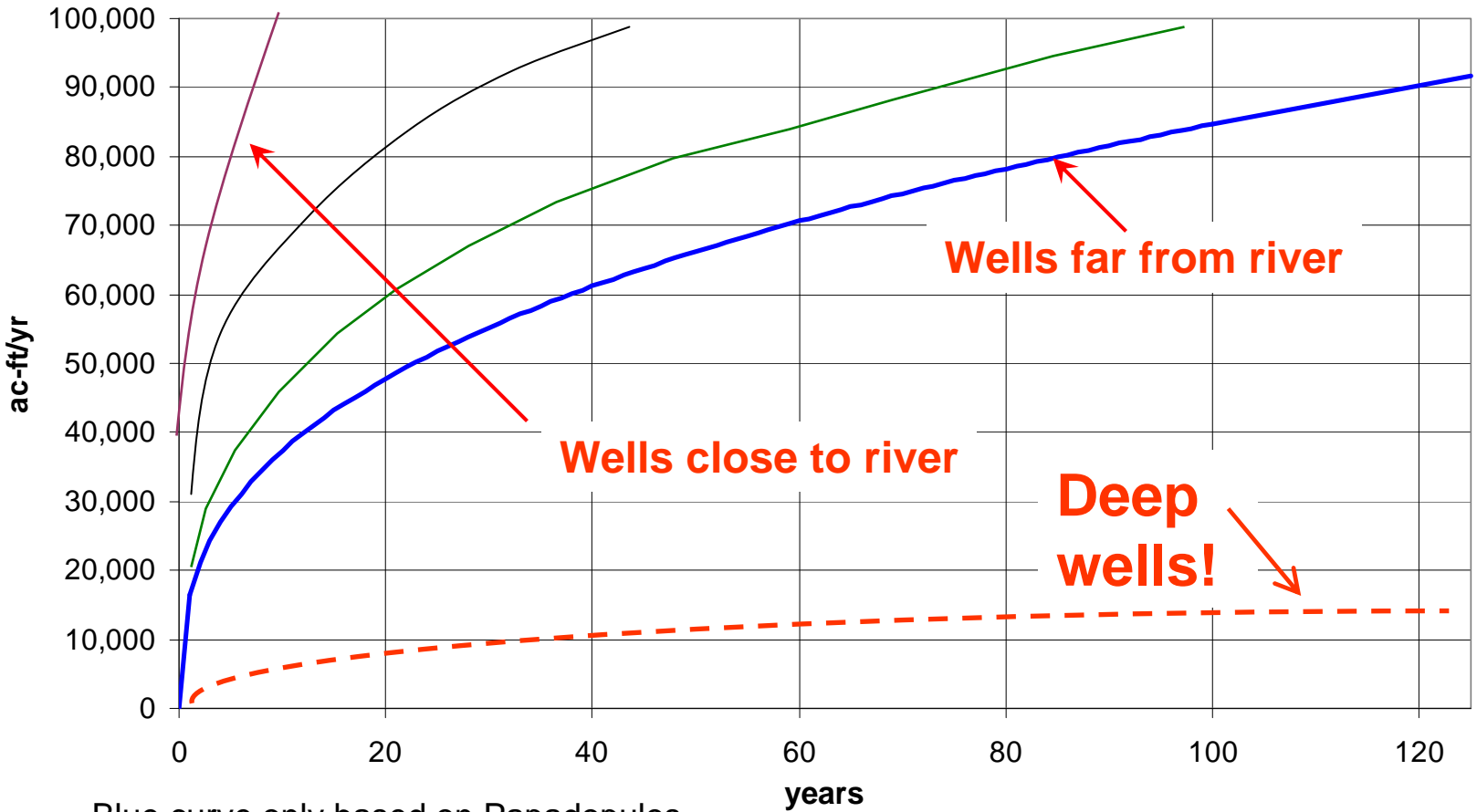
geophysical log of nearby Atrisco No. 5



-  low-permeability silt and clay
-  high permeability sand and gravel

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# Streamflow depletion due to pumping from a hypothetical 100,000 ac-ft/yr well field south of Albuquerque



Blue curve only based on Papadopoulos & Assoc (2000).



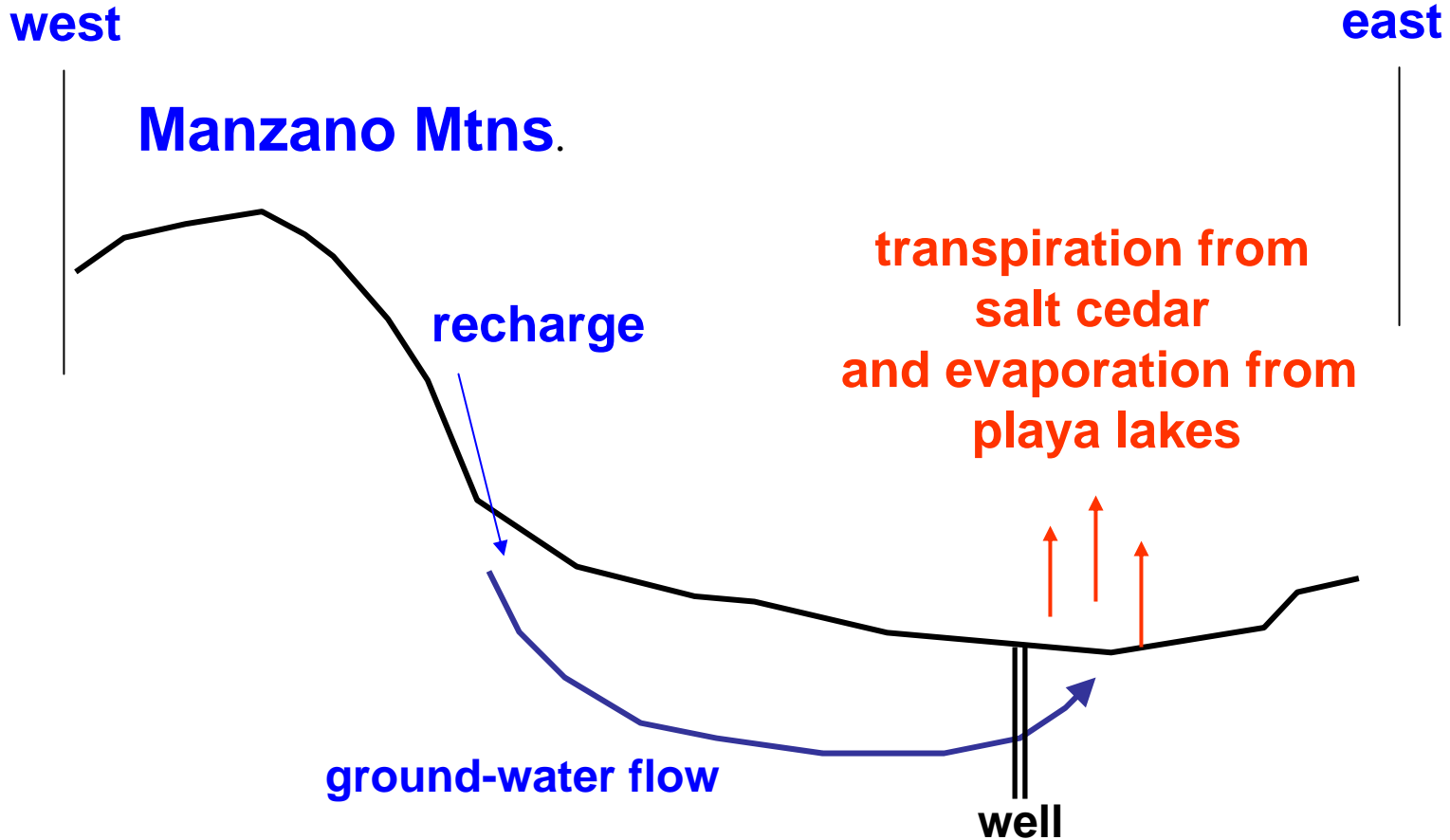
# Dependency

- **High Plains aquifer, Gallup**
- **Plan B (or C, etc.)?**
- **Appropriate for energy development—  
mining water to support mining.**
- **Salt concentration**

# Salvage

- **Interception of water destined for ET**
- **Drawdown effects**
- **Environmental issues**
  - **Habitat**
  - **Dust**

# Estancia Basin



# Whose water is it, anyway?

- **OSE role**
- **Threat of compact violation**
- **Scrutiny of §72-12-25**
- **Produced water—OSE and OCD**
- **Administered as if it were fresh water, where there isn't any.**

# Uncertainty

- **Effects can always be calculated, but--**
- **Wide divergence of opinion: Zuni Salt Lake**
- **Data even more sparse for brackish resources.**
- **“Worst-case,” or litigation?**