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Considerations in Designing Statewide Programs to Monitor the Effects of Oil and Gas Development on Groundwater Resources

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Four Core Concepts

- Legacy effects
- Vulnerability
- Proximity as first approximation of vulnerability
- Complexity

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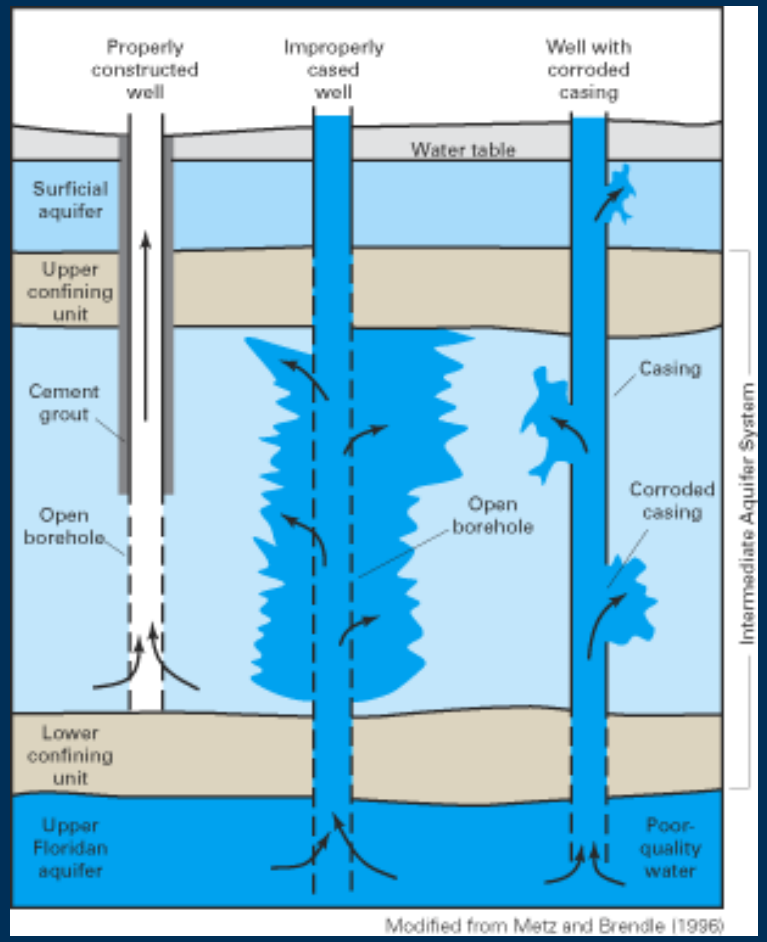
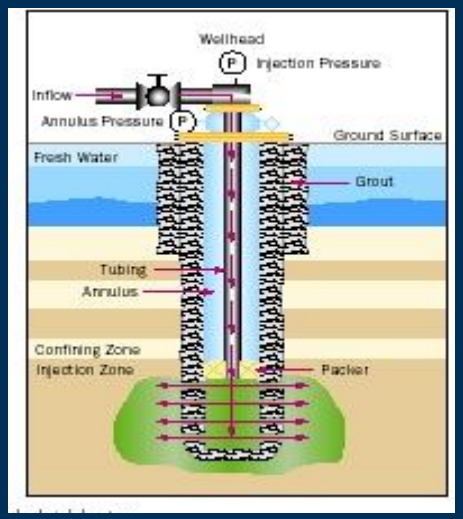
Pathways through which Oil- and Gas-related Constituents Might Travel

Improper and Compromised Wellbores



Percolation from Surface Disposal

Wastewater Injection



Past practices may have resulted in more migration than do current practices

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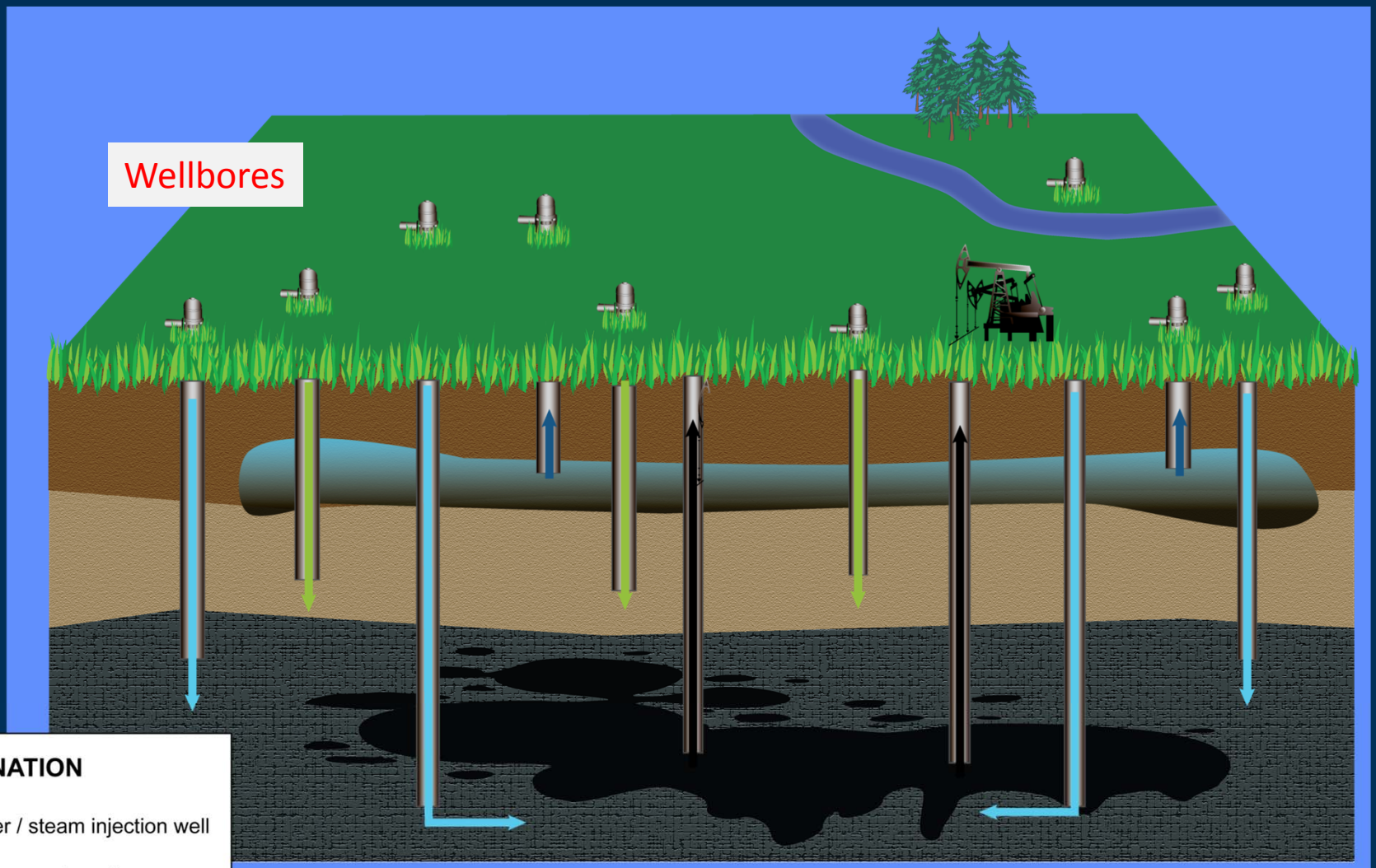
Factors that Determine Vulnerability



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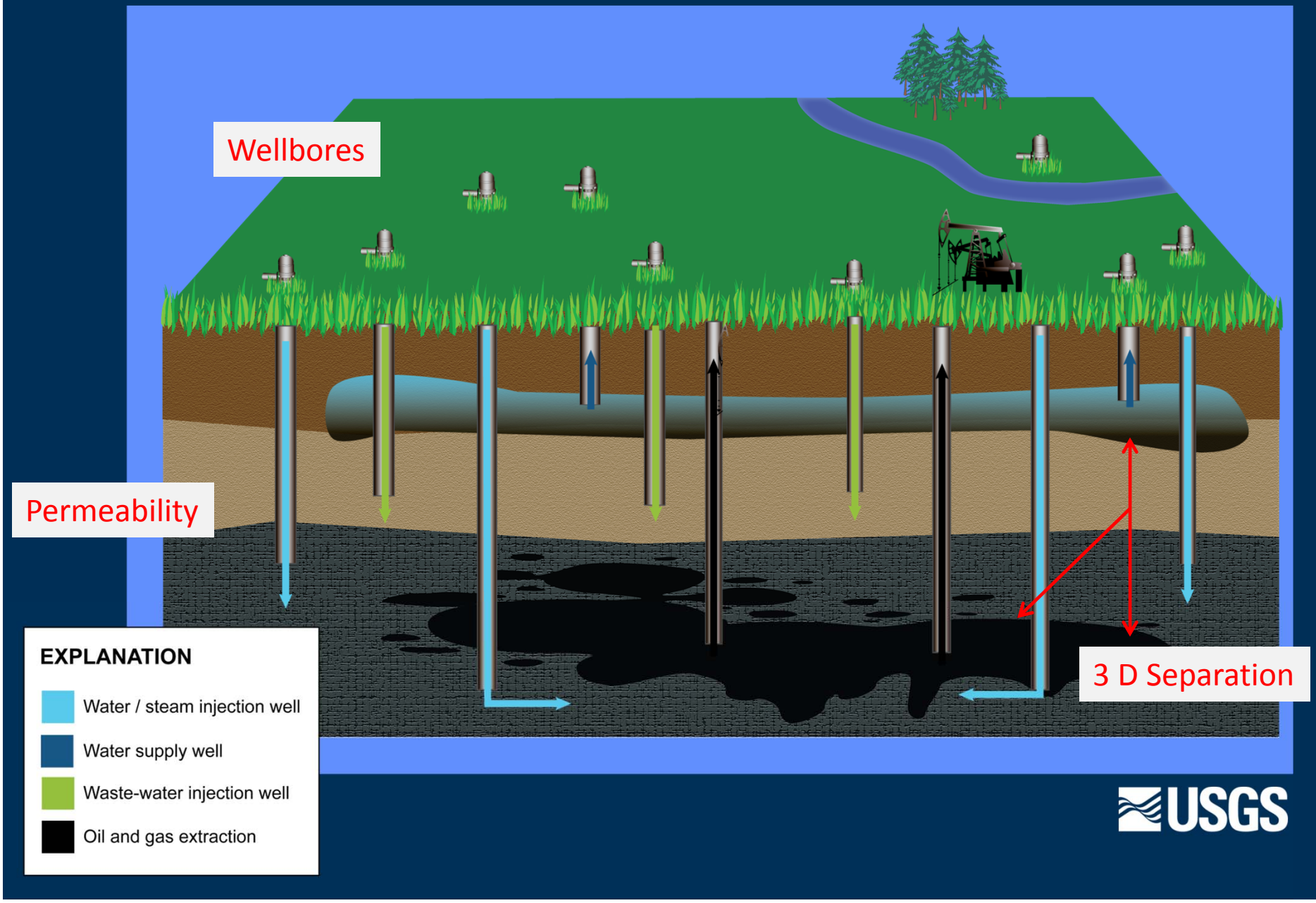
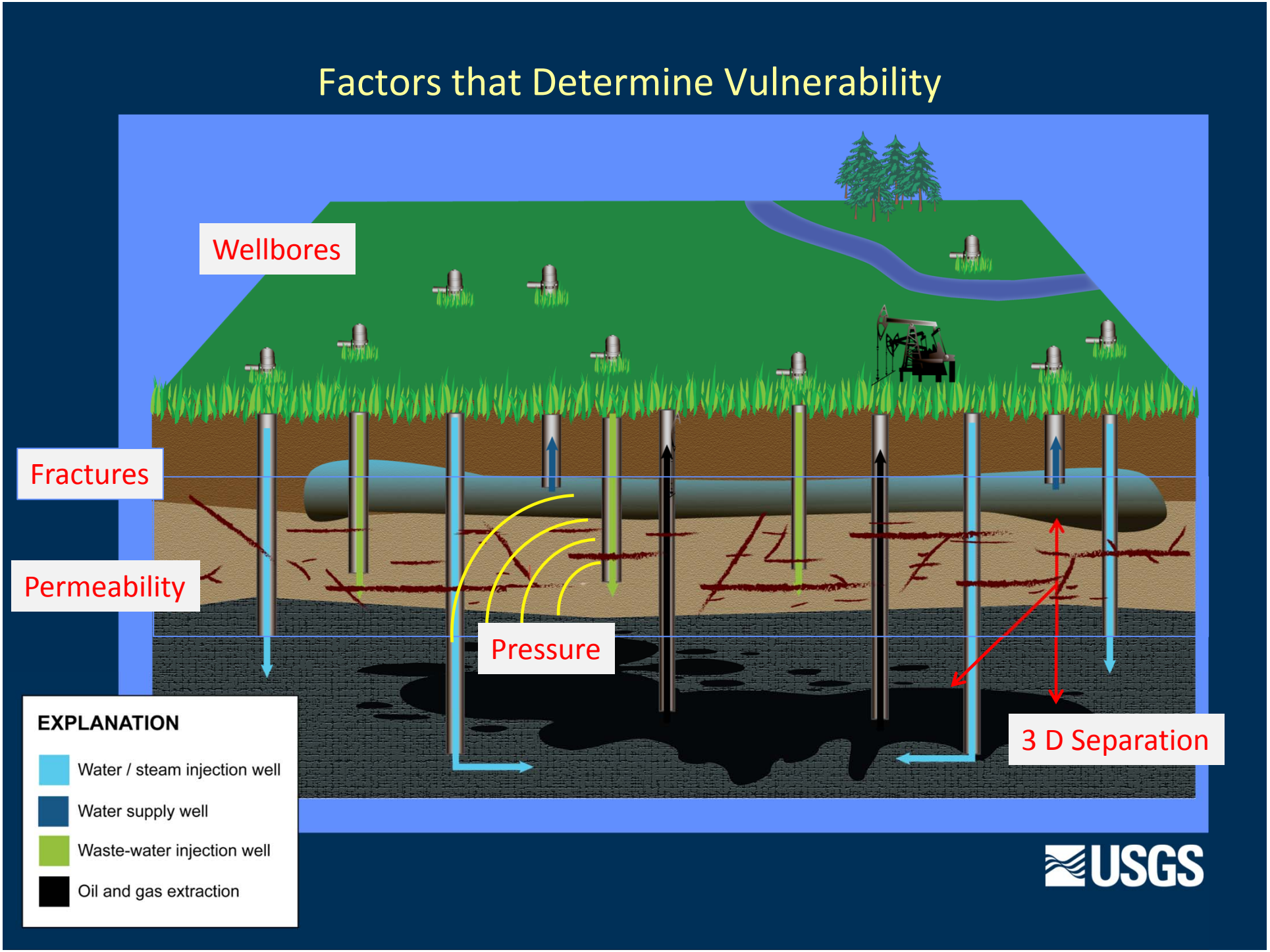
Factors that Determine Vulnerability



Factors that Determine Vulnerability



Overlap of Locations of Oil and Gas Wells and Drinking Water Wells

Oil and Gas Wells in California

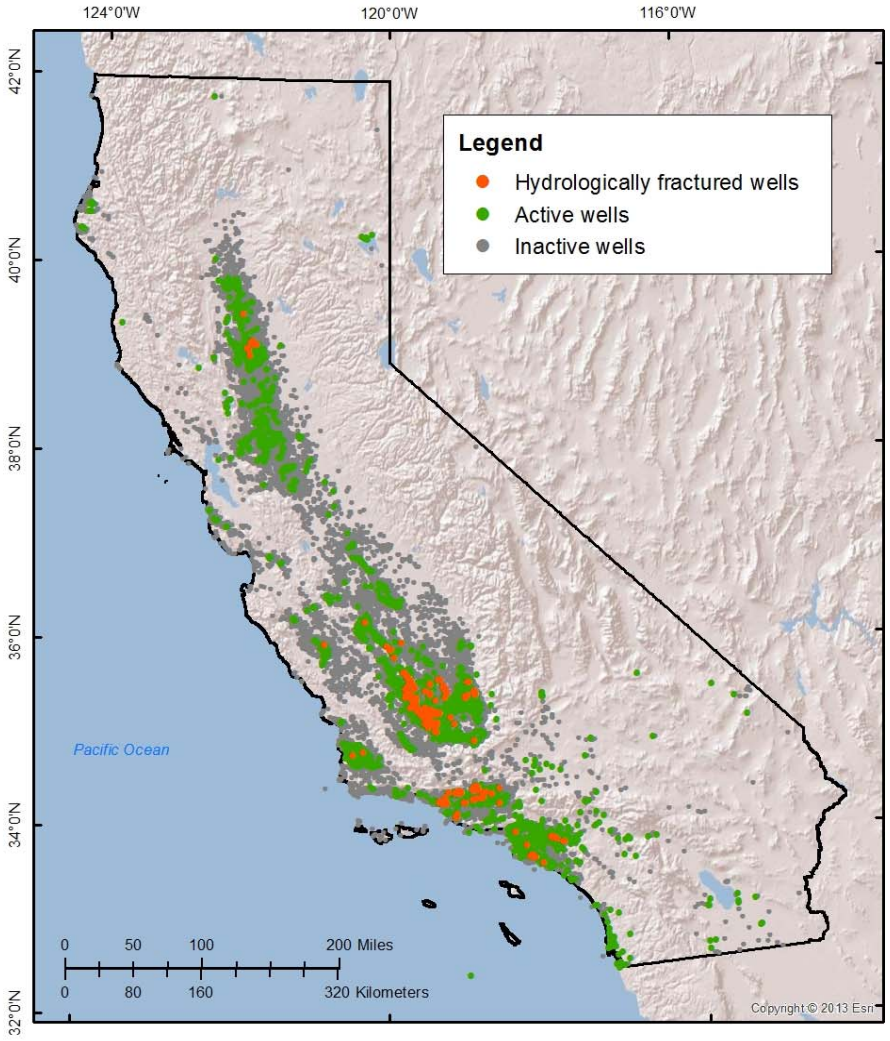


Figure 1a.

Drinking Water Supply Wells in California

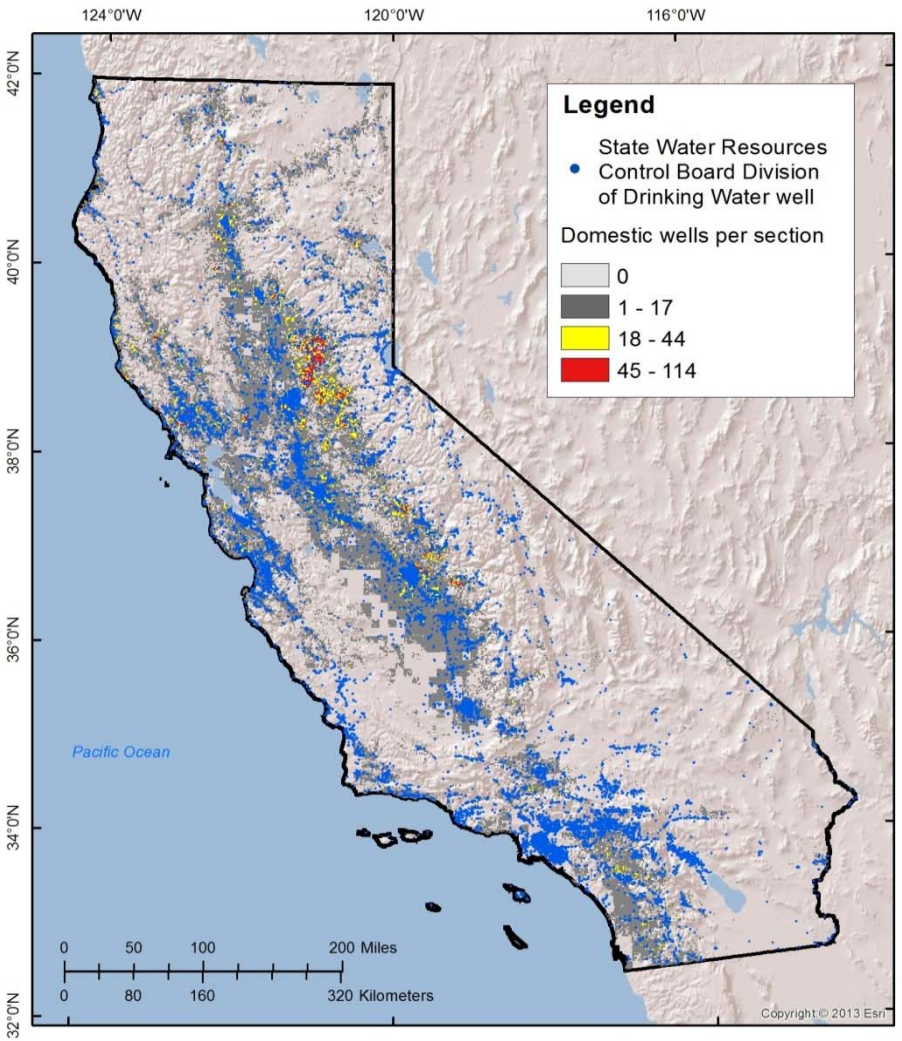


Figure 1b.

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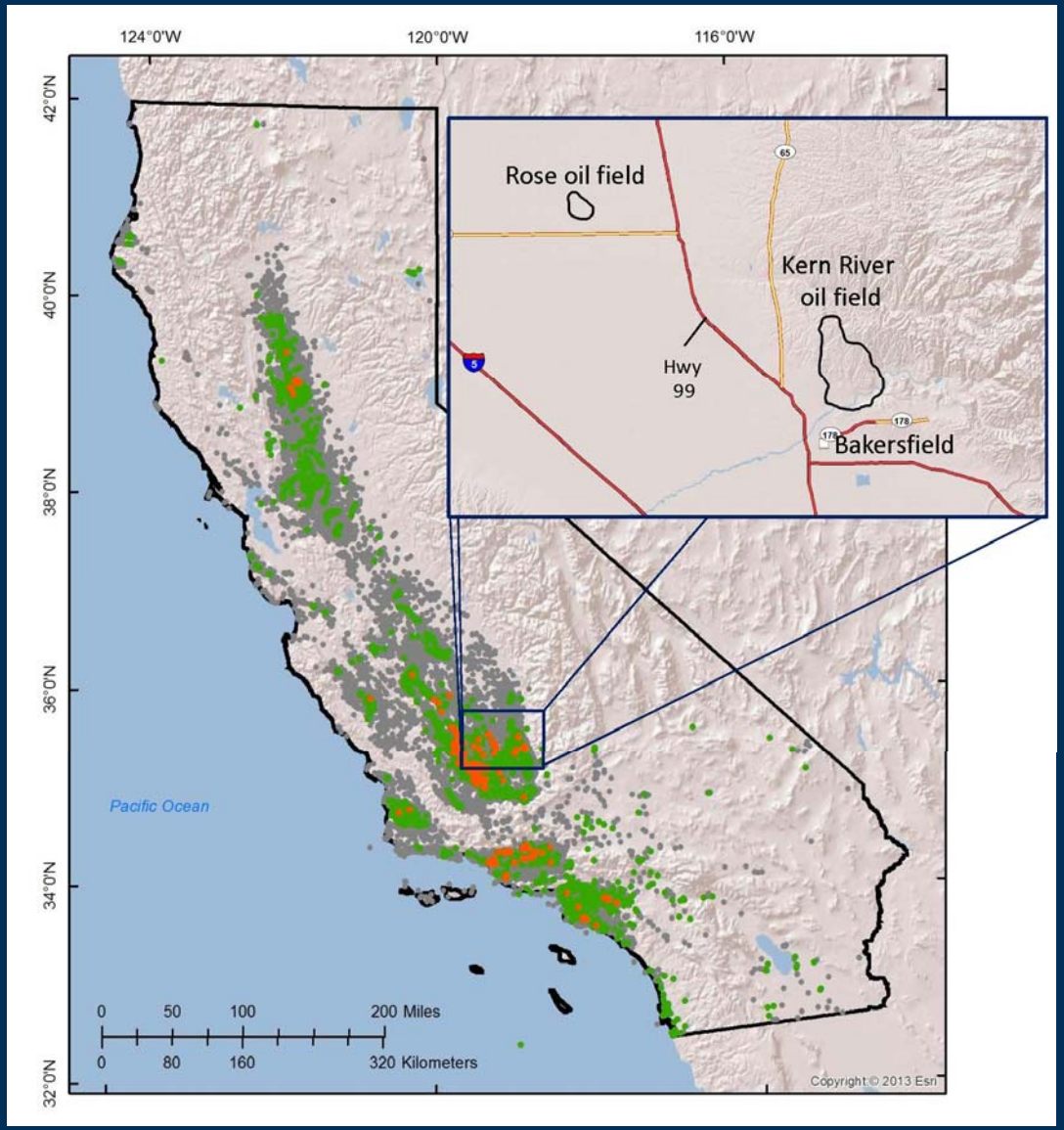
Proximity Example: Kern River and Rose Oil Fields



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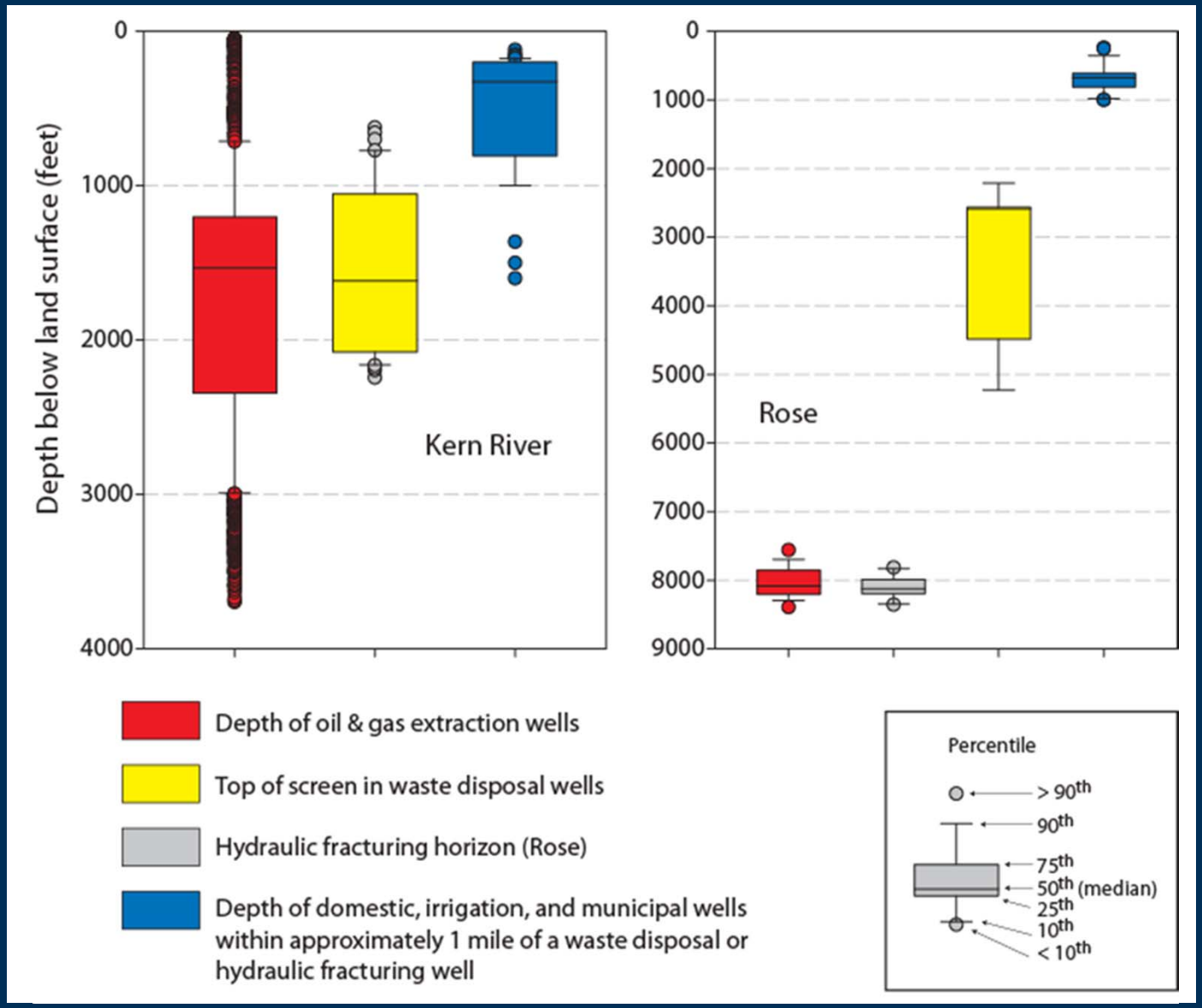
Proximity Example: Kern River and Rose Oil Fields



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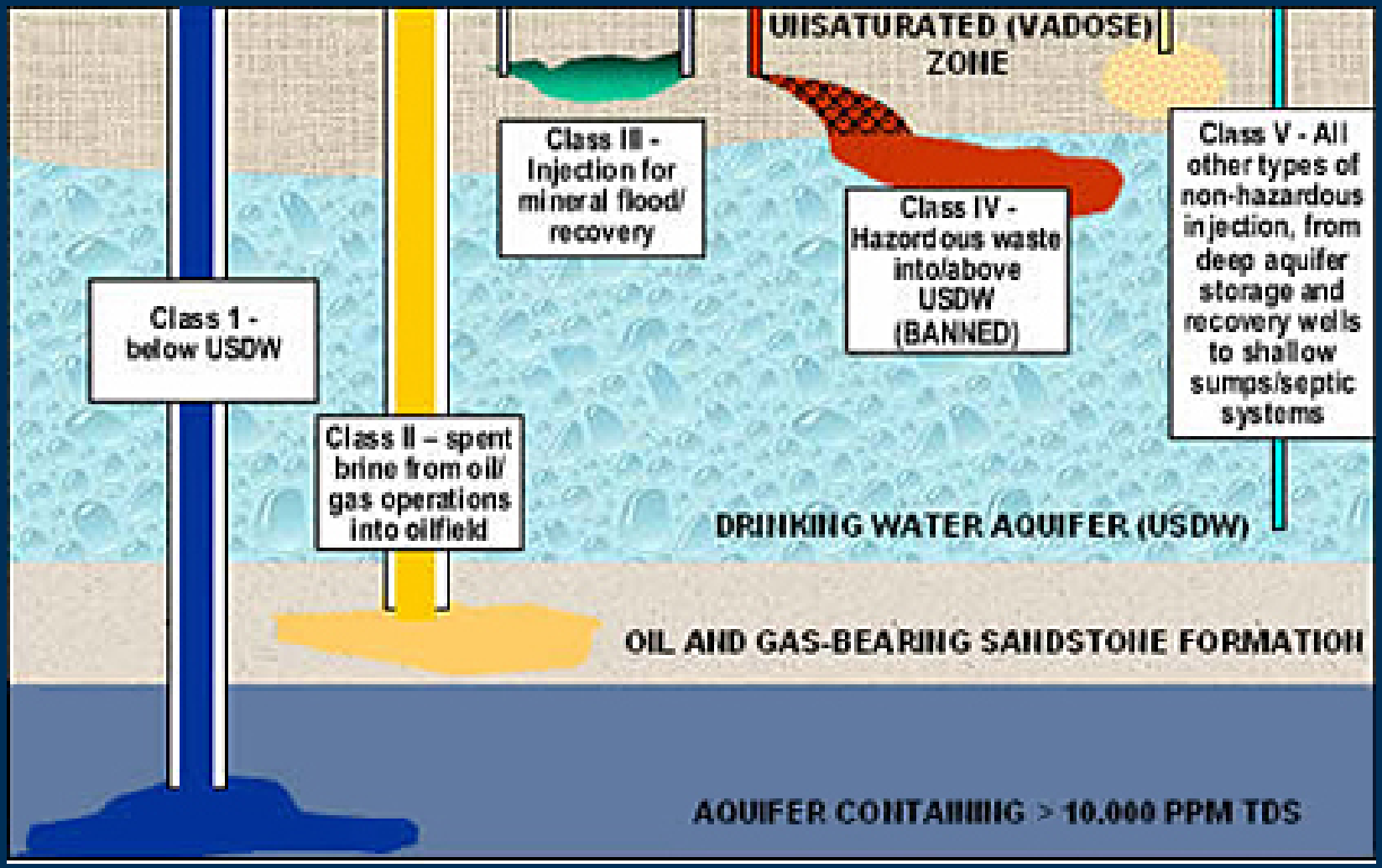
Complexity



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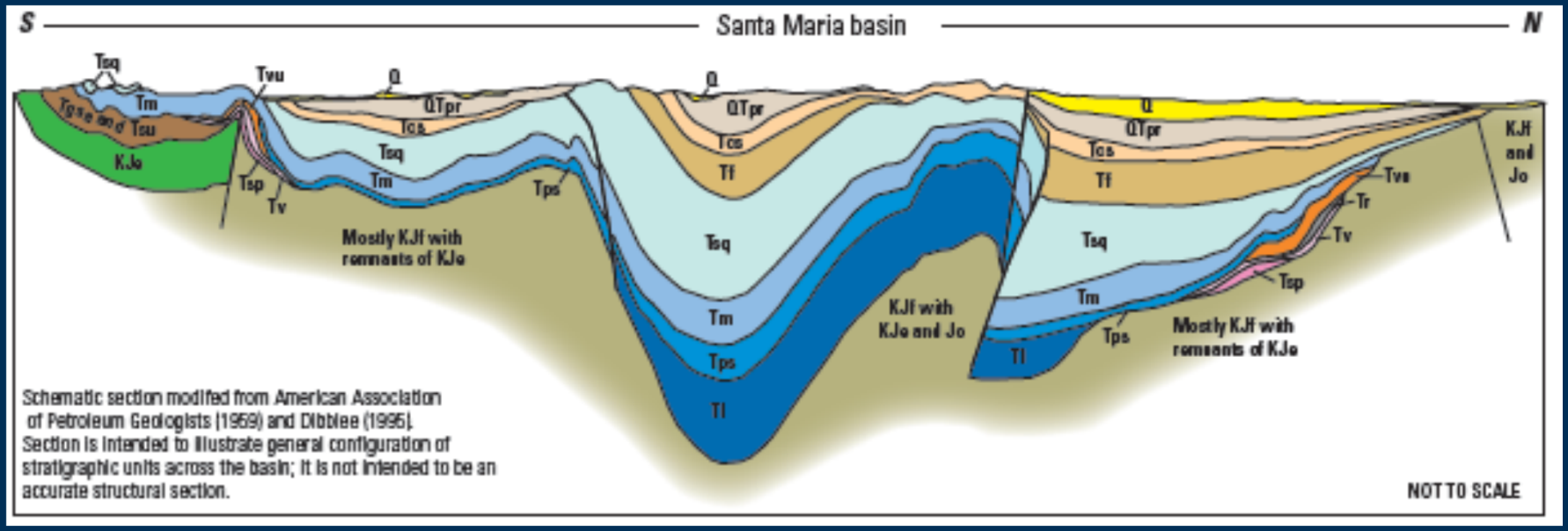
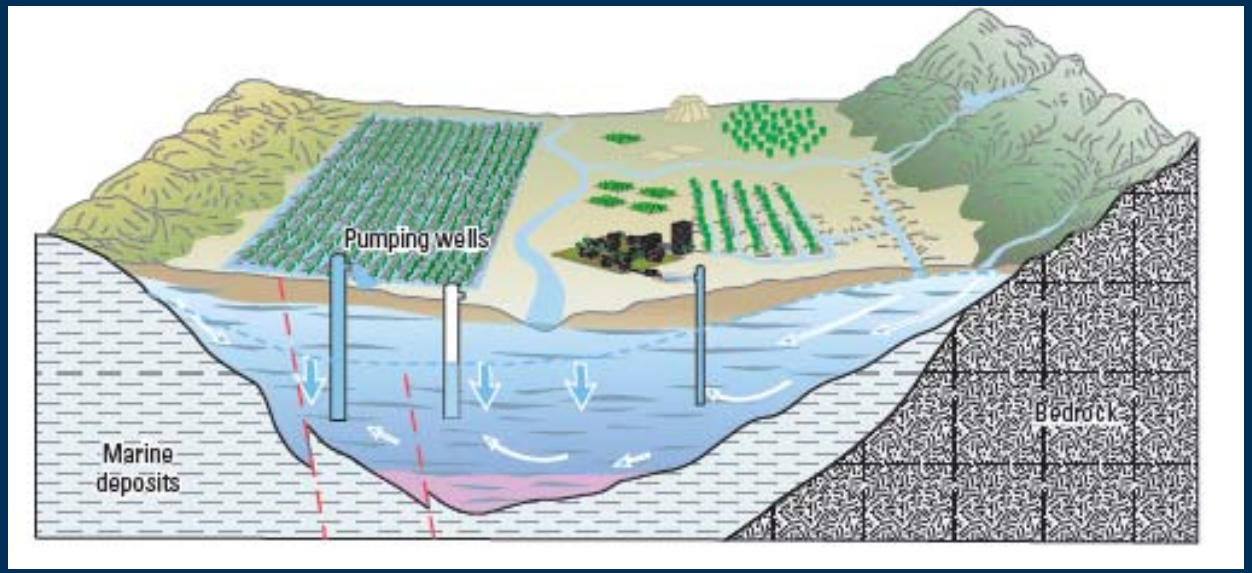
Examples of Complexity





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Complexity