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# Long Term Geological Storage

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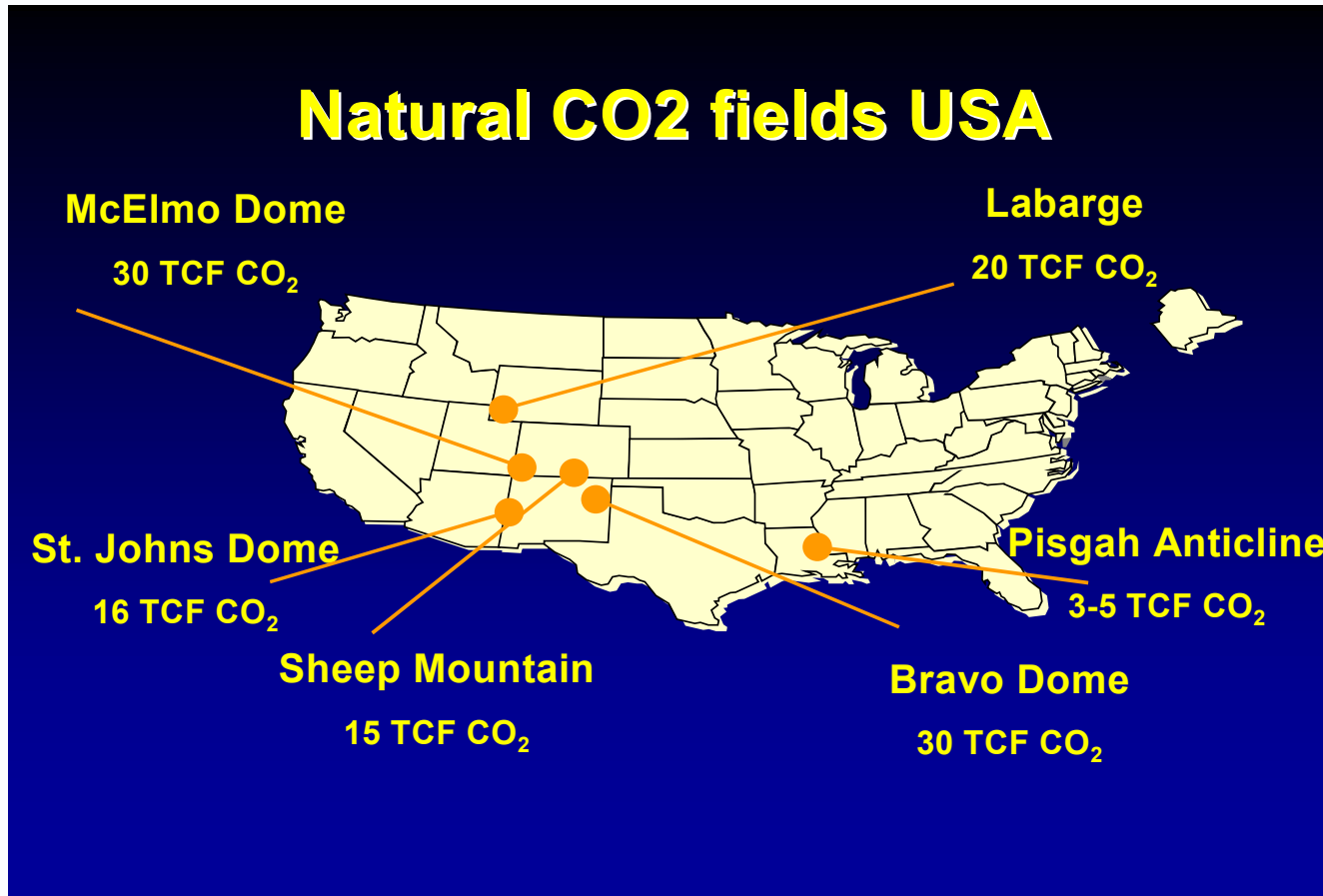
## Why store CO<sub>2</sub>?

- To avoid ocean acidification and possible induced climate change we need to prevent CO<sub>2</sub> reaching the atmosphere urgently

## Why Long Term?

- Geological storage offers the potential to take a significant amount of CO<sub>2</sub> and lock it away for thousands-millions of years-well beyond the world's period of fossil fuel dependency

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CO<sub>2</sub> accumulations occur naturally; some are millions of years old.  
We can emulate this.

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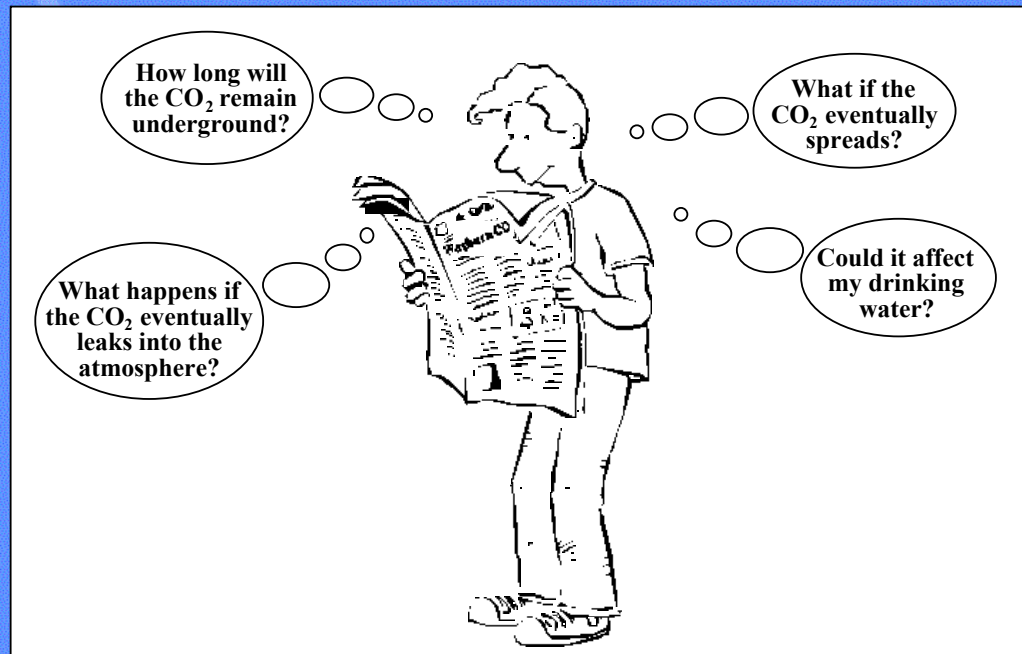
## Geological Storage Targets

- Saline Aquifers
- Disused hydrocarbon fields
- Operating hydrocarbon fields
- Coal Seams
- Mineral carbonation

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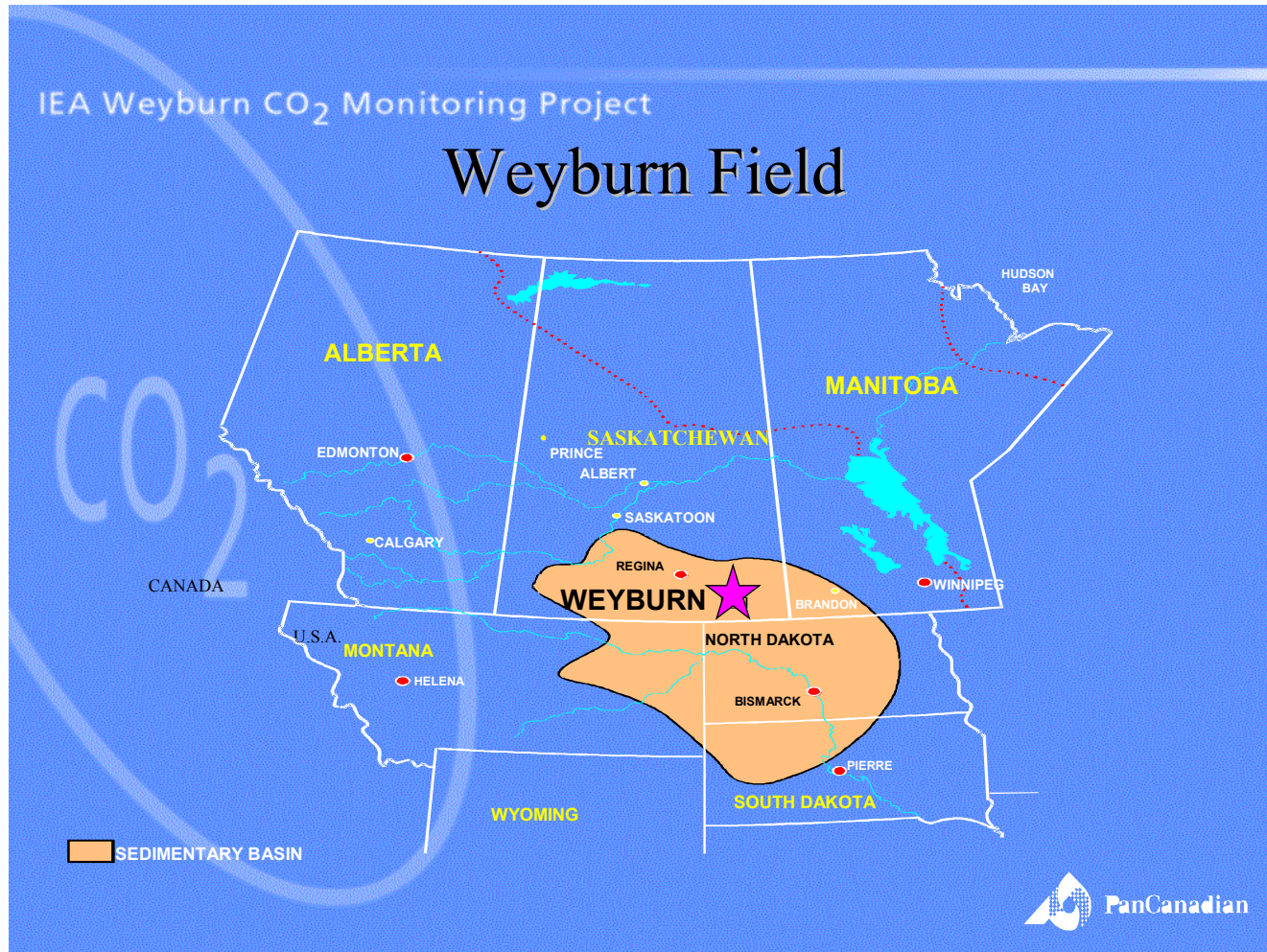
IEA Weyburn CO<sub>2</sub> Monitoring Project

## Long-term CO<sub>2</sub> Assessment

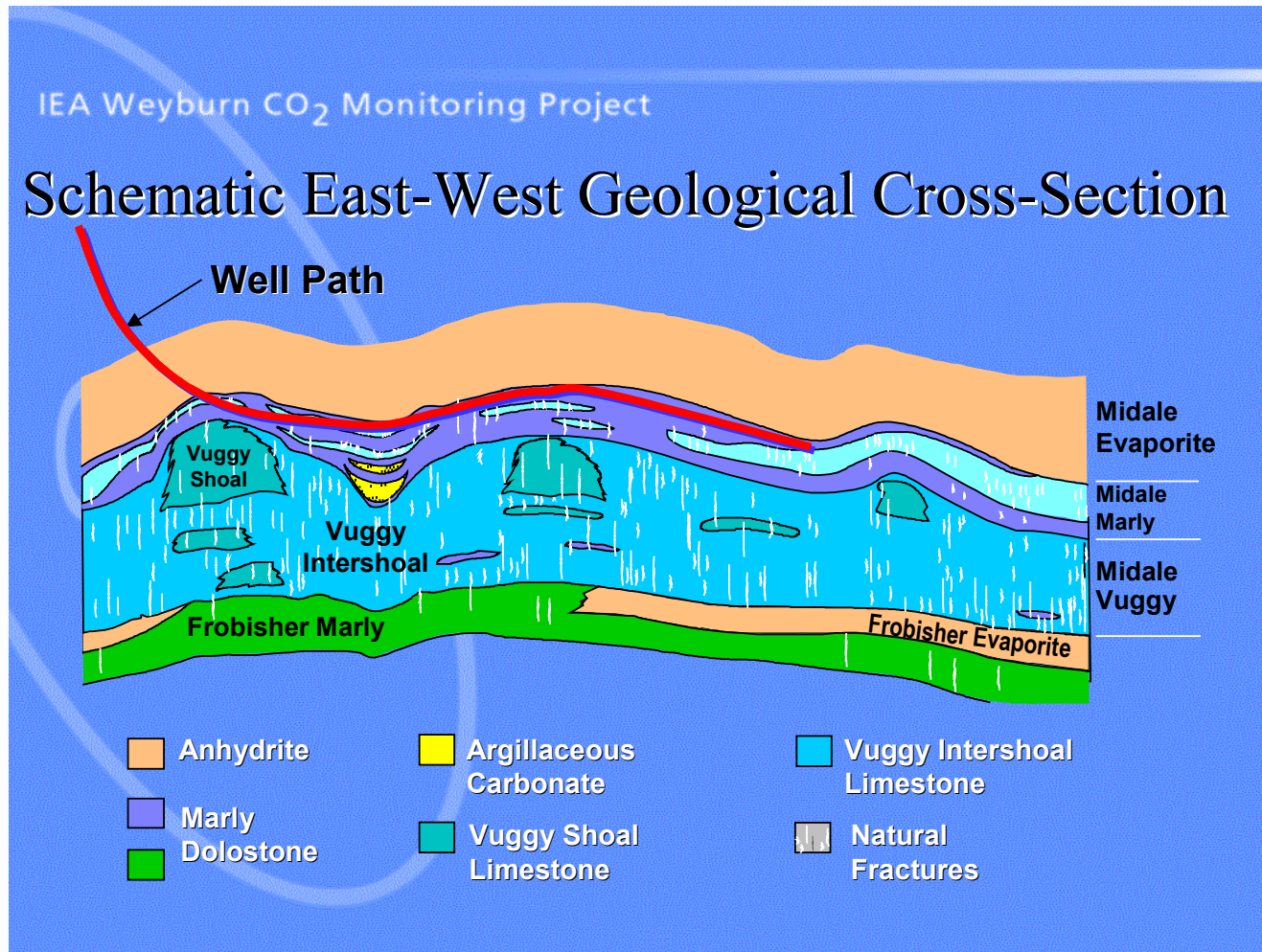


**OBJECTIVE:** To determine quantitatively the long-term fate of CO<sub>2</sub> injected into the Weyburn reservoir.

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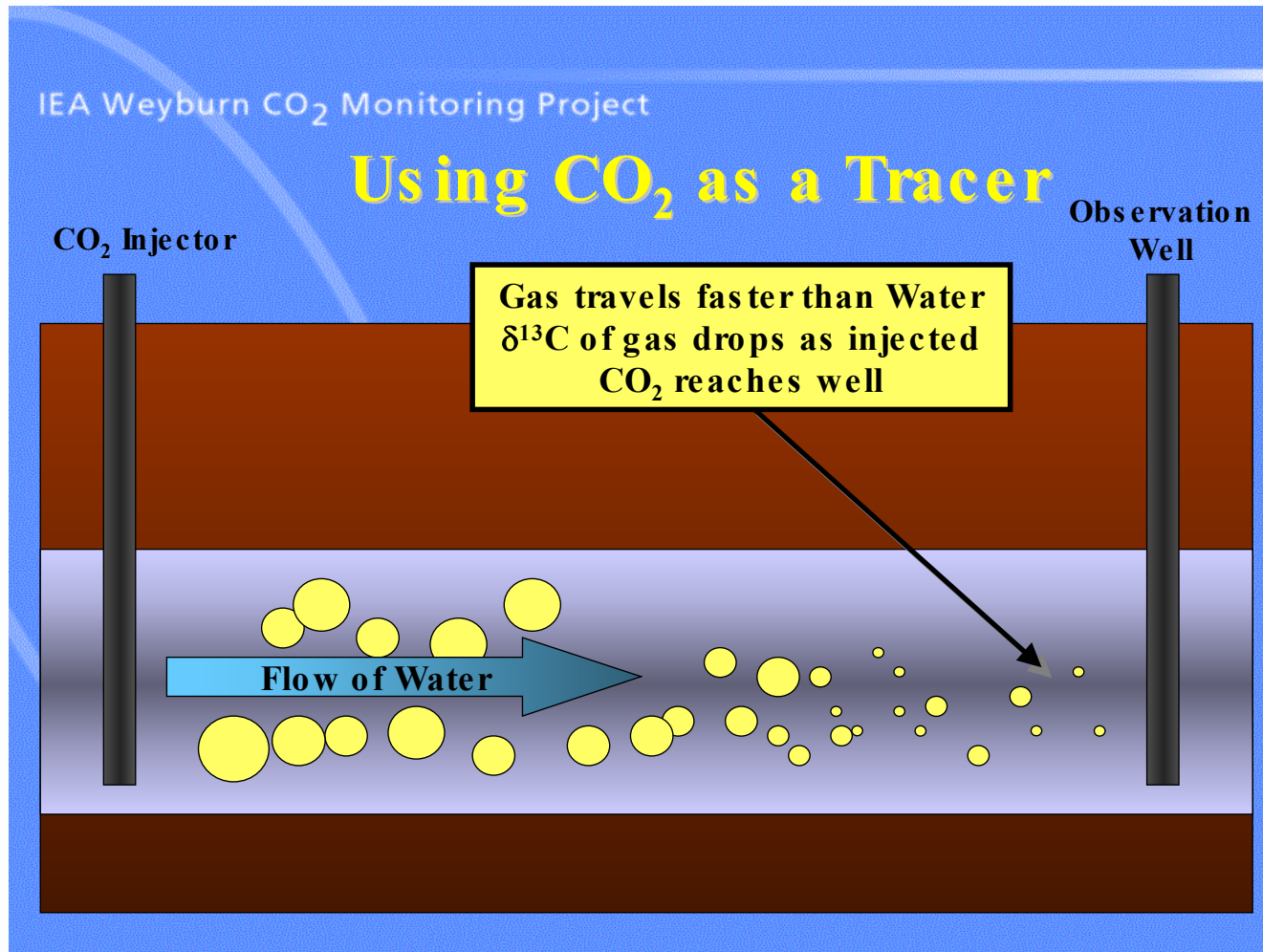
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- 4D, 3C surface seismic
- 4D, 9C surface seismic
- 3D, 3C VSP seismic
- Cross-well seismic





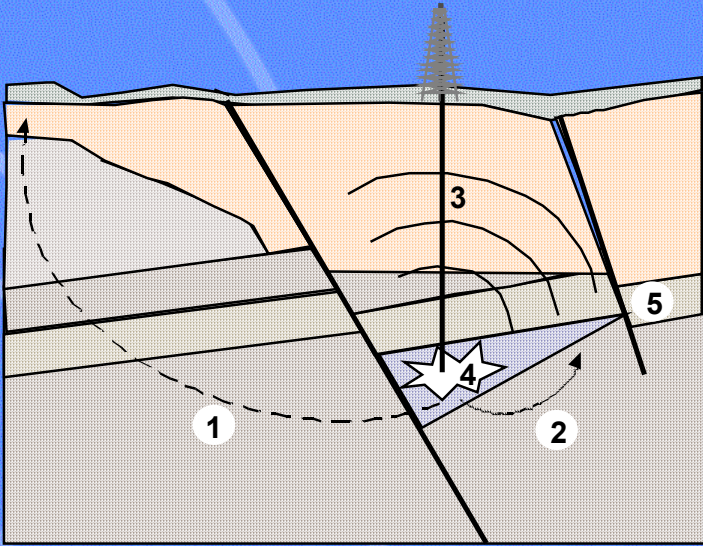
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## Scenarios: “What if...?” Events



The diagram shows a cross-section of a geological storage well. A central well is shown with a tree on top. Five numbered scenarios are illustrated: 1. A dashed line shows CO2 escaping from the wellbore into the surrounding rock. 2. A dashed line shows CO2 escaping from the wellbore into a nearby fault. 3. A starburst indicates seismic activity around the wellbore. 4. A starburst indicates a fracture in the host rock. 5. A dashed line shows CO2 escaping from the wellbore into an aquifer below the host rock.

- 1. Potential long-term release
- 2. Rapid “short-circuit” release
- 3. Induced seismic event
- 4. Disruption of host rock
- 5. Release to aquifer

“What if” events are formally described as scenarios