

Joint Minerals Committee July 30, 2025



WY - EOR



Lon Whitman, Director

Lon.Whitman@uwyo.edu

307-760-0577

eoriwyoming.org



Enhanced Oil
Recovery Commission



Enhanced Oil
Recovery Institute

1. Concerns related to Aquifer Damage associated with CO₂ – EOR

- I am unaware of any aquifer damage associated with CO₂ – EOR in Wyoming.

2. Concerns related to “Frac’ing” associated with CO₂ – EOR

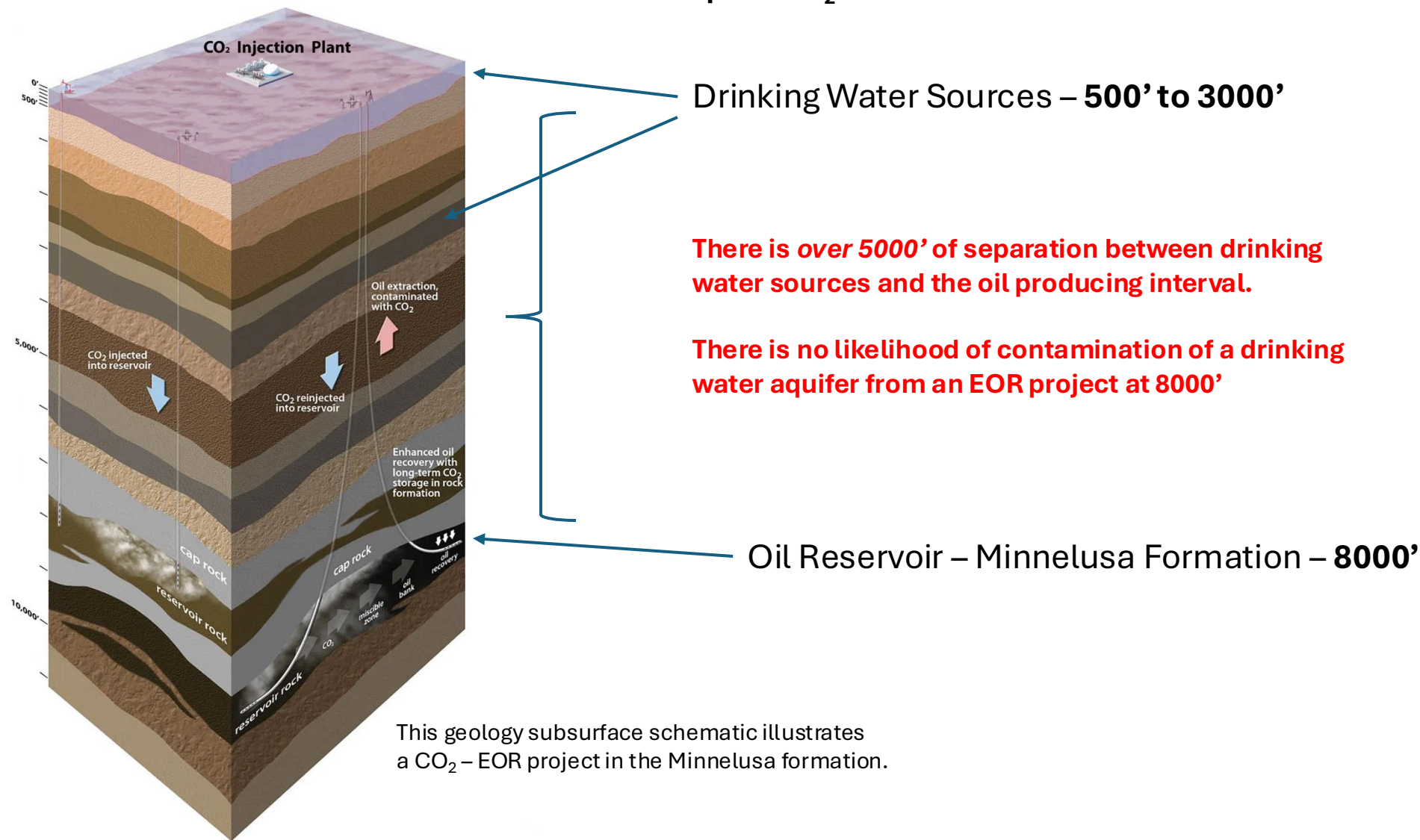
- There is no frac’ing involved with CO₂ – EOR in conventional fields.

Let’s briefly look at both these questions that were raised during the May 21, 2025, Joint Minerals Interim Committee meeting.



NO Aquifer Damage Associated with CO₂ - EOR

Let's look at one example - CO₂ - EOR in the Minnelusa Formation

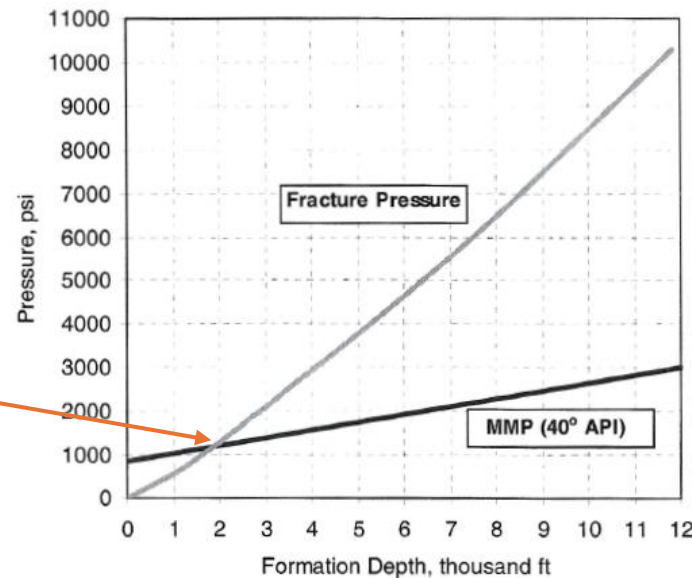


Key Parameters of the CO₂ – EOR Process

Maintaining the integrity of the Reservoir is Paramount

- **Current CO₂ – EOR projects in Wyoming are all in “Conventional Reservoirs” – There is NO Frac’ing involved.**
 - **We are not** in “*Unconventional*” reservoirs that require formation frac’ing to increase permeability to improve flow rate
- For EOR projects in Conventional reservoirs, **injection pressures are always maintained below “frac” pressure**
- There are two components of importance: Minimum Miscibility Pressure and the Fracture Pressure
 - Using cores, you can determine the Frac Pressure of the reservoir
- **While injecting into the reservoir, you maintain the reservoir pressure below the frac pressure of the formation**

This graph illustrates Fracture Pressure vs Minimum Miscibility Pressure in a formation with 40-degree API oil



The intersection point of the two lines indicates the pressure **limit** above which the formation will “fracture” due to injection.

Miscibility is the property of two substances to mix and form a homogeneous mixture.

Let’s look at CO₂:

- **CO₂ acts as a solvent**
- **It is miscible with crude oil**

Imagine that you get oil on your tools while working on your car’s engine. Water will get a little of the oil off, soap and water will do a better job, but a solvent will remove every trace.

This is because a solvent can mix with the oil, form a homogeneous mixture, and carry the oil away from the tool’s surface.

CO₂ is one of the most effective EOR technologies to assist in minimizing stranded oil following primary and secondary recovery.



Oil Pools, Reservoirs and Subsurface Reality

Common “lingo” in the oil business can lead to misunderstandings.

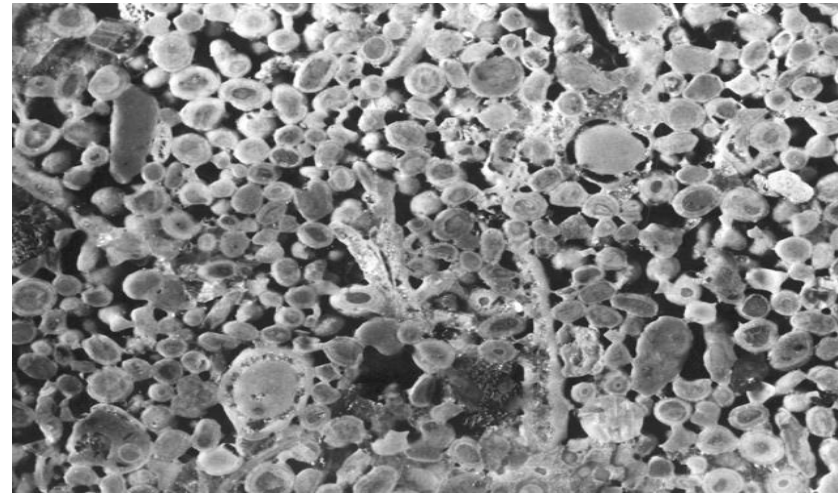
Oil “Pools”



Oil “Reservoirs”



What you will find subsurface is a container of sorts that has kept oil trapped within the formation for millions of years.



Oil is trapped in pore spaces within the rock and by implementing EOR technologies (e.g. CO₂) we are mobilizing the oil that was stranded following primary and secondary recovery.



Incentivizing EOR in Wyoming – Next Steps

Federal 45Q Tax Credits and the Big, Beautiful Bill

- **Federal 45Q Tax Credit (prior to July 3, 2025)**
 - **45Q Tax Credits are designed for the “capturer” – not an EOR operator**
 - \$60/tonne for captured CO₂ stored through enhanced oil recovery
 - \$85/tonne for captured CO₂ stored in Dedicated Storage projects
- **The Big, Beautiful Bill**
 - **Levelized 45Q Tax Credits for EOR and Dedicated Storage at \$85/Tonne**
 - CO₂ - EOR is now in “Parity” with Dedicated Storage
 - The Big, Beautiful Bill raises the tax credit for CO₂ - EOR to same rate as geological storage **to \$85/ton (for qualified projects)**
 - Parameters
 - **Begin construction by 2033** (no change)
 - Begin inflation adjustment in 2027 (no change)
 - Transferability maintained (subject to Foreign Entity of Concern (FEOC) restriction)
 - FEOC restriction



Incentivizing EOR in Wyoming – Next Steps

- SF 0017** – Developed and passed in the Wyoming Legislature was designed to Levelize the Federal 45Q Tax Credit (\$60/tonne for EOR vs. \$85/tonne for Dedicated Storage)
- Provided \$10/ton **to the capturer** for CO₂ captured in Wyoming that is sold for EOR
 - There is language in the bill which nullifies/voids SF 0017 if the federal 45Q program reaches parity between EOR and Dedicated Storage.
 - With the passage for the Big, Beautiful Bill, SF 0017 is null and void.

Next Steps in Wyoming to Incentivize EOR

- ?? Reconsider SF 0018, or a new bill, to directly **support operators** developing EOR projects in Wyoming
- Reduce severance taxes on incremental production from EOR projects
 - "Risk" to the State is minimized
 - There is no effect to the State's revenue unless the EOR project moves forward but your "investment" in the project will be paid back multi-fold
 - No "upfront" payments
 - **In 2003, the Wyoming Legislature passed HB 0054 which exempted "tertiary production" from Severance Taxes**
 - Tertiary production is EOR production and is more specifically, **Incremental production**
 - Exemption of Severance taxes was explicitly for 5 years – 2003-2008 for NEW projects
 - The severance tax exemption supported the start up of two major Wyoming CO₂ – EOR projects:
 - Salt Creek and Patrick Draw (Monell) Fields



Salt Creek and Patrick Draw CO₂ – EOR Projects

Injection of CO₂ in both the Patrick Draw and at Salt Creek Fields was initiated in 2003.

This table shows the **Severance Tax Revenue** from the actual incremental production from each field from 2003-2008 if the severance tax had been collected.

So, \$29,383,990 was the “lost revenue” to the State due to the severance tax exemption.

(The severance tax revenue is calculated using the average Wyoming oil price between 1986 and 2024 of \$51.57/barrel and the standard Wyoming Severance tax rate of 6%)

Field	Incremental Oil Produced from 2003 through 2008, bbl	\$/bbl	Standard WY Severance Tax Rate	(Lost) Severance Tax Revenue, \$
Patrick Draw Field	3,861,387	51.57	6%	11,947,904
Salt Creek Field	5,635,087	51.57	6%	17,436,086
Total	9,496,474 bbl			\$29,383,990



Salt Creek and Patrick Draw CO₂ – EOR Projects

The severance tax exemption did cause a loss of revenue for the State but to evaluate whether the State made a wise choice, you need to consider the overall value of these 2 projects to the State.

This table shows the Severance Tax Revenue from Incremental Production for Patrick Draw and Salt Creek Fields from 2009-2024.

\$236,330,036

Field	Incremental Oil Production: 2009-2024, bbl	\$/bbl	Severance Tax Rate	Severance Tax Revenue, \$
Patrick Draw Field	26,975,278	51.57	6%	83,466,905
Salt Creek Field	49,403,119	51.57	6%	152,863,131
Total	76,378,397 bbl			\$236,330,036



Salt Creek and Patrick Draw CO₂ – EOR Projects

In summary, Wyoming HB0054, signed into law in 2003, legislated a **Severance Tax Exemption for Incremental production for a 5-year period between 2003 and 2008.**

Two CO₂ – EOR projects were initiated during that time frame: **Salt Creek and Patrick Draw Fields.**

Considering the lost revenue of **\$29.4 Million** due to the severance tax exemption as an **“Investment”** by the State of Wyoming to support development of CO₂ – EOR in the state, this investment generated **revenues of \$263.3 Million** and a **Net Profit of \$207 Million** from that investment.

Investment:
\$29,383,990

Revenue:
\$236,330,036

Net profit:
\$206,946,046



THANK YOU

Lon Whitman
Director

307-760-0577

Lon.Whitman@uwyo.edu

2435 King Blvd, Ste 313
Casper, WY 82604



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WY-EOR: TR Operating CO₂-EOR Project

Raven Creek Field:

Estimated Recovery: ~35 Million Barrels of Incremental Oil

Start Date: 3rd Quarter 2026

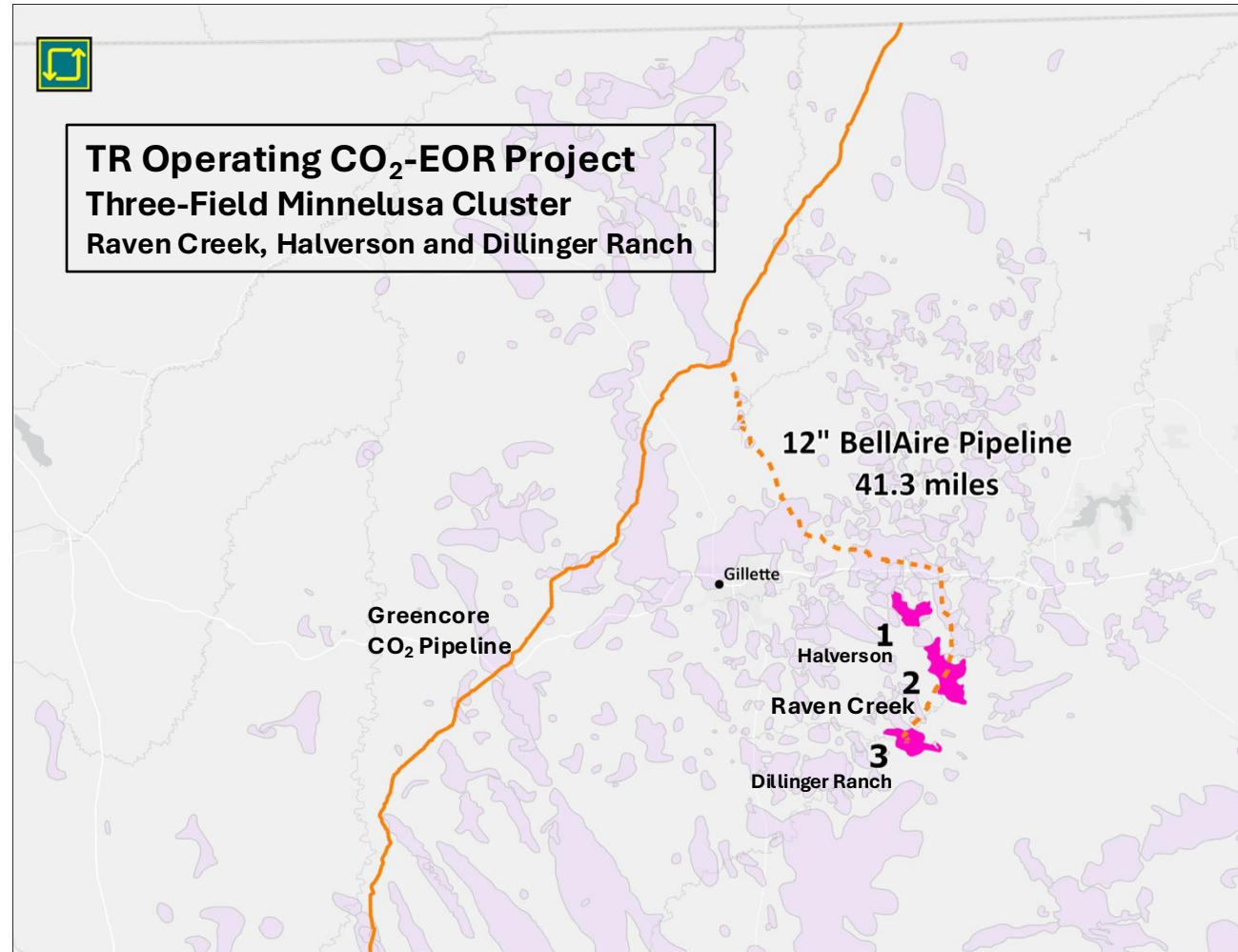
Estimated Capex: \$175,000,000

CO₂ Pipeline Spur: \$ 50,000,000
\$ 225,000,000

Planned *Initial* CO₂ Purchase: 50 MMcfd (Million Cubic Feet per Day)

CO₂ Injection Start: October 2026

Estimated Payout: ~60 months



EORI is collaborative partner with TR Operating on this project.



WY-EOR: Glenrock Energy CO₂-EOR Project

Big Muddy Field

South Glenrock B Unit (SGBU):

(Three reservoirs within the Unit will be flooded)

Estimated Recovery: ~37.8 Million Barrels of Incremental Oil

Estimated capex: \$349,500,000

CO₂ pipeline spur \$ 96,800,000

\$ 446,300,000

Estimated Payout Time: ~60 months

