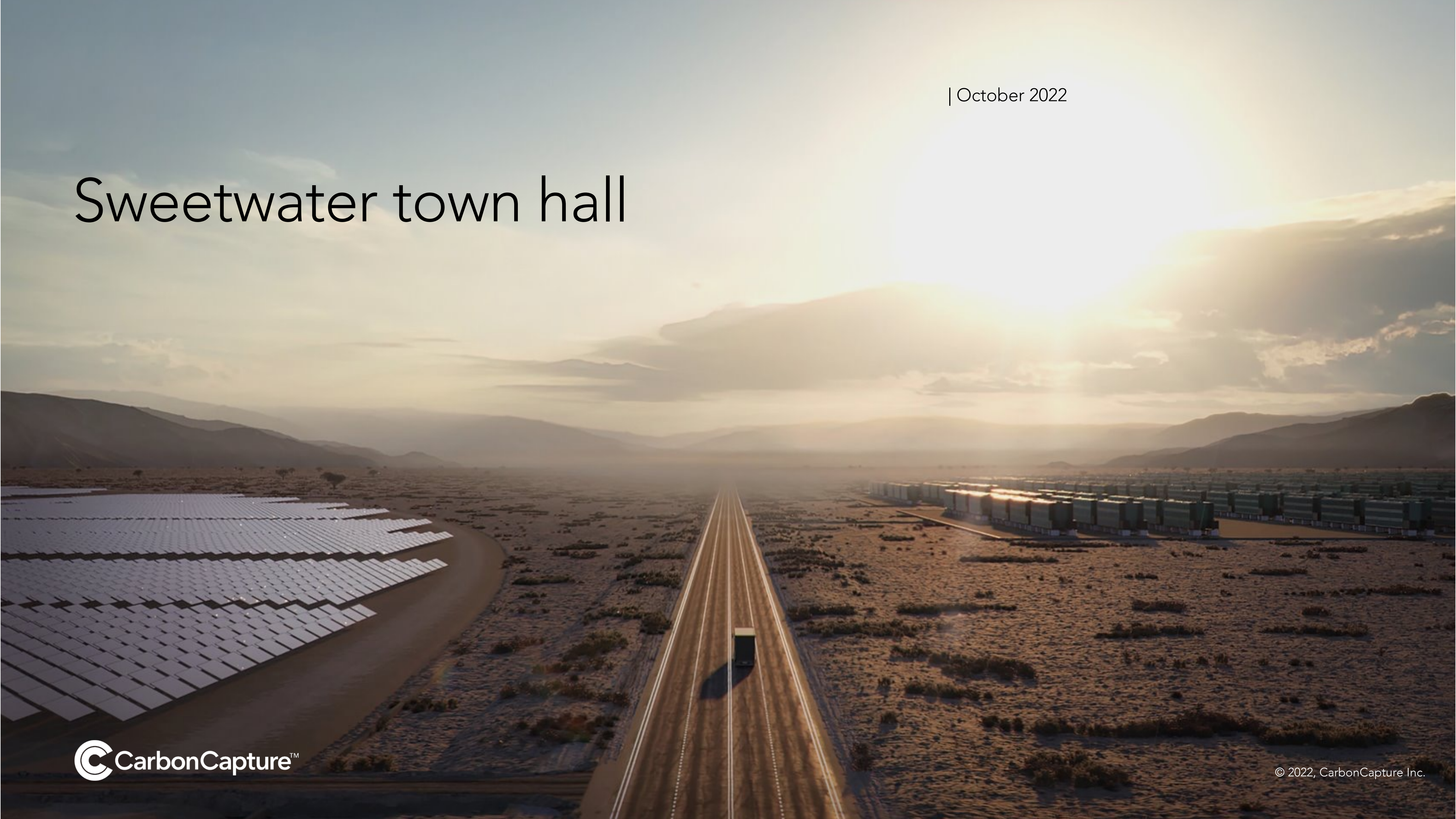
| October 2022

Sweetwater town hall



CarbonCapture™

Team

Robert Whyte
VP, Projects

Patricia Loria
VP, Business Development

Meghan Kenny
Director, Projects & Strategy

Jason Miller
Project Manager

Jeremy Hinds
Senior Project Engineer

Report out from October 5 town hall event

On October 5, 2022, CarbonCapture Inc. (CarbonCapture) and Frontier Carbon Solutions (Frontier) held a town hall at Western Wyoming Community College in Rock Springs, WY to answer questions about Project Bison.

Invitations were sent to all households in Sweetwater County (17,416) and an advertisement was placed in the online publication Sweetwater Now.

The event lasted from 5:30 to 9:00 pm and over 130 people attended.

Presenters

Patricia Loria
VP, Business Development, CarbonCapture Inc.

Justin Loyka
Energy Programs Manager, Wyoming Chapter of The Nature Conservancy

J Fred McLaughlin
Director for the Center for Economic Geology Research, School of Energy Resources, University of Wyoming

Robby Rocky
President, Frontier Carbon Solutions

CCUS in Wyoming: Lessons Learned and Case Studies

Public Outreach Meeting, Gillette Community College
October 5, 2022

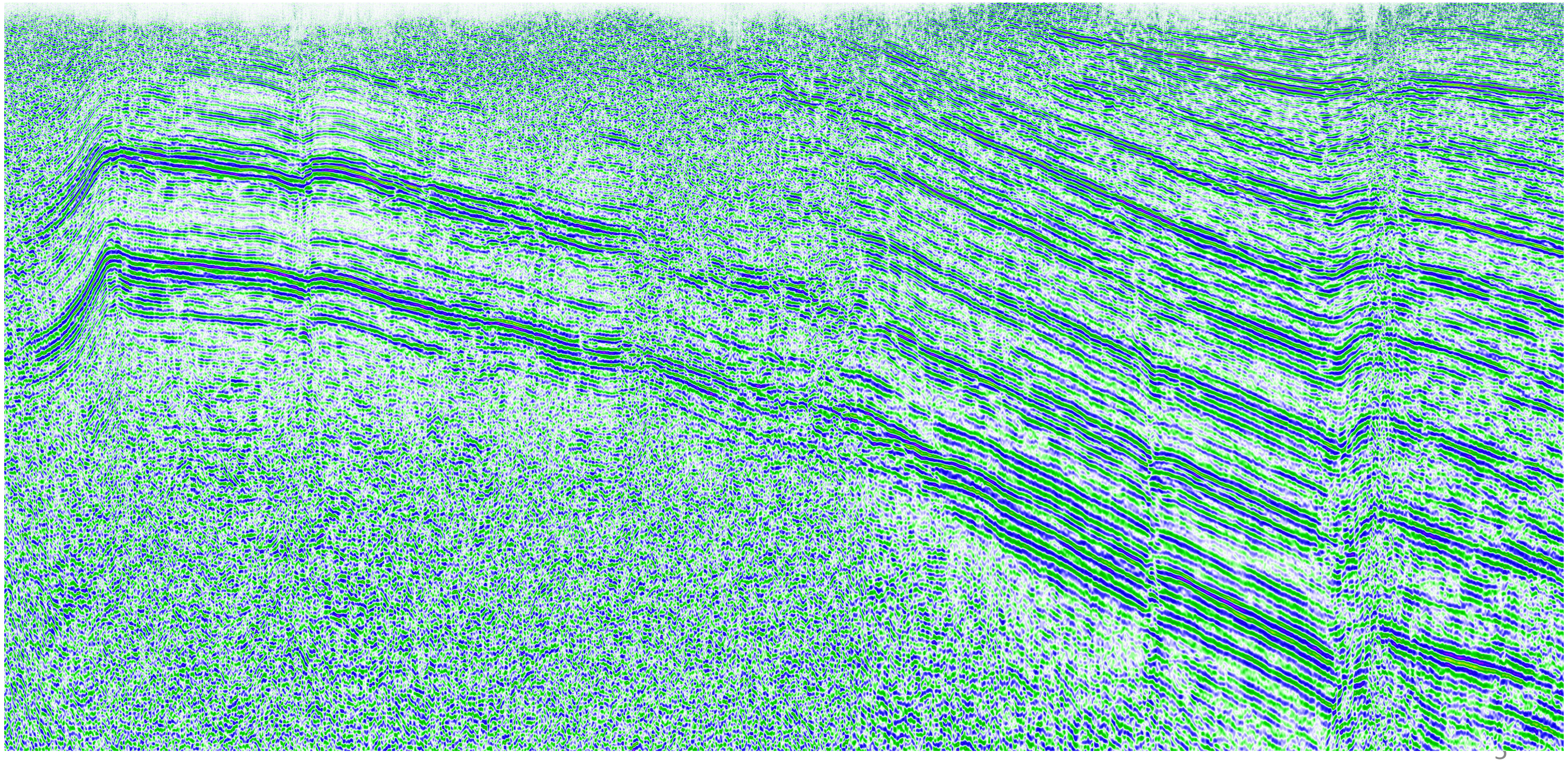
Fred McLaughlin
Director for the Center of Economic Geology Research
School of Energy Resources
derf1@uyo.edu

THE WORLD NEEDS MORE COWBOYS.

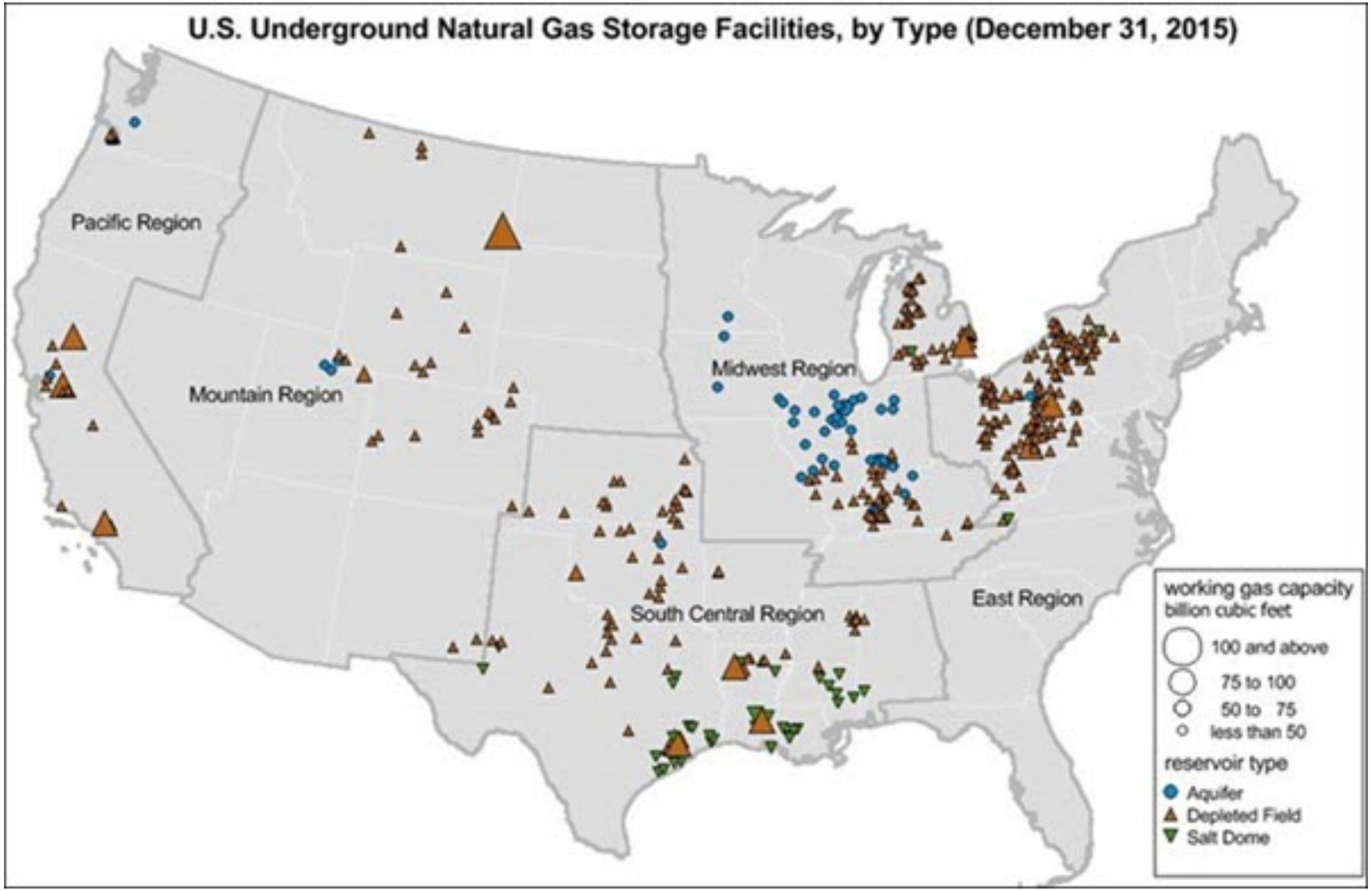
University of Wyoming | School of Energy Resources

Talk Outline

1. **Gas Storage: Historical Background**
2. **Introduction to CCUS**
3. **CCUS in Wyoming**



Commercial Natural Gas Storage



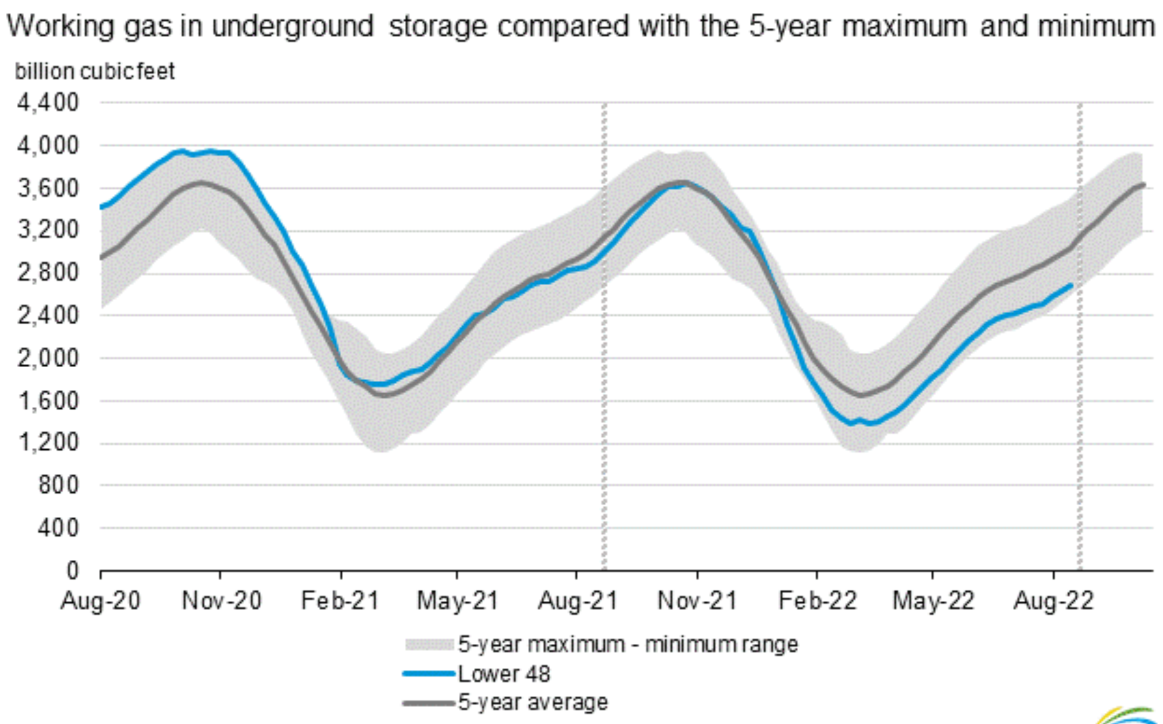
Commercial Natural Gas Storage

Working gas in underground storage, Lower 48 states

Summary text CSV JSN

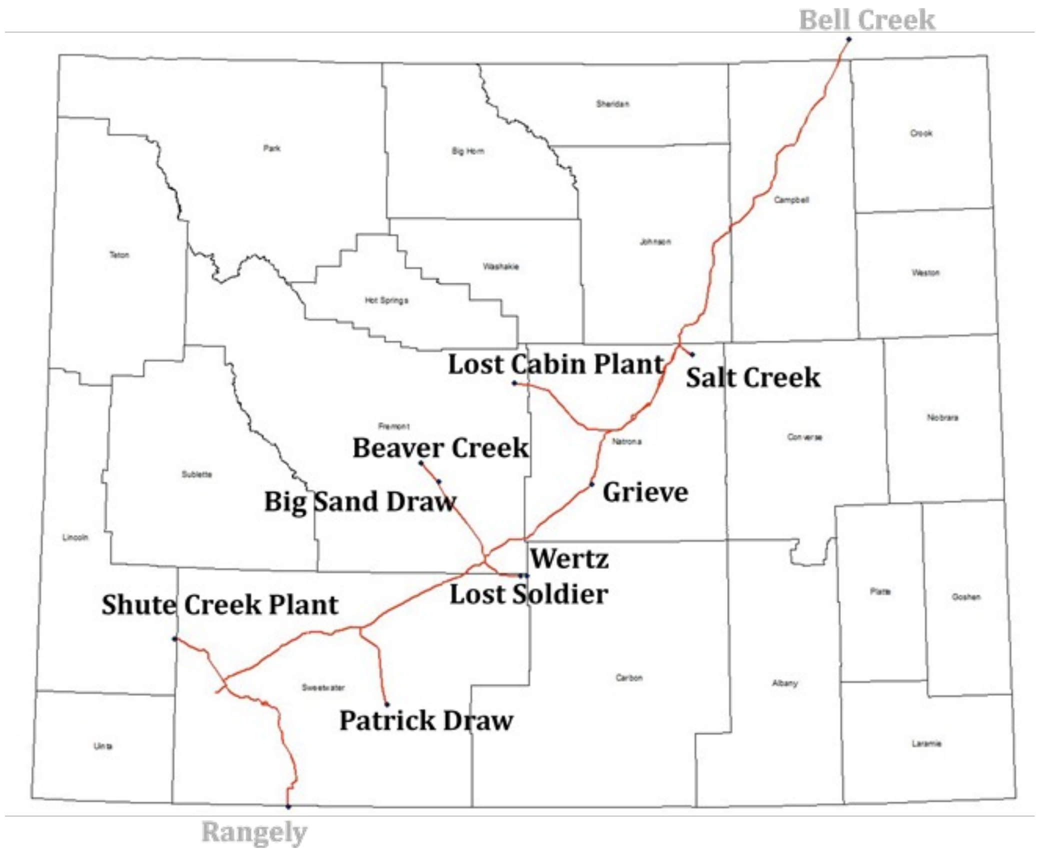
	Stocks billion cubic feet (Bcf)				Historical Comparisons			
					Year ago (09/02/21)		5-year average (2017-21)	
Region	09/02/22	08/26/22	net change	implied flow	Bcf	% change	Bcf	% change
East	635	614	21	21	699	-9.2	735	-13.6
Midwest	776	747	29	29	838	-7.4	843	-7.9
Mountain	159	157	2	2	191	-16.8	191	-16.8
Pacific	238	241	-3	-3	243	-2.1	274	-13.1
South Central	887	881	6	6	944	-6.0	1,001	-11.4
Salt	182	185	-3	-3	209	-12.9	238	-23.5
Nonsalt	705	696	9	9	735	-4.1	762	-7.5
Total	**2,694**	**2,640**	**54**	**54**	**2,916**	**-7.6**	**3,043**	**-11.5**

Totals may not equal sum of components because of independent rounding.



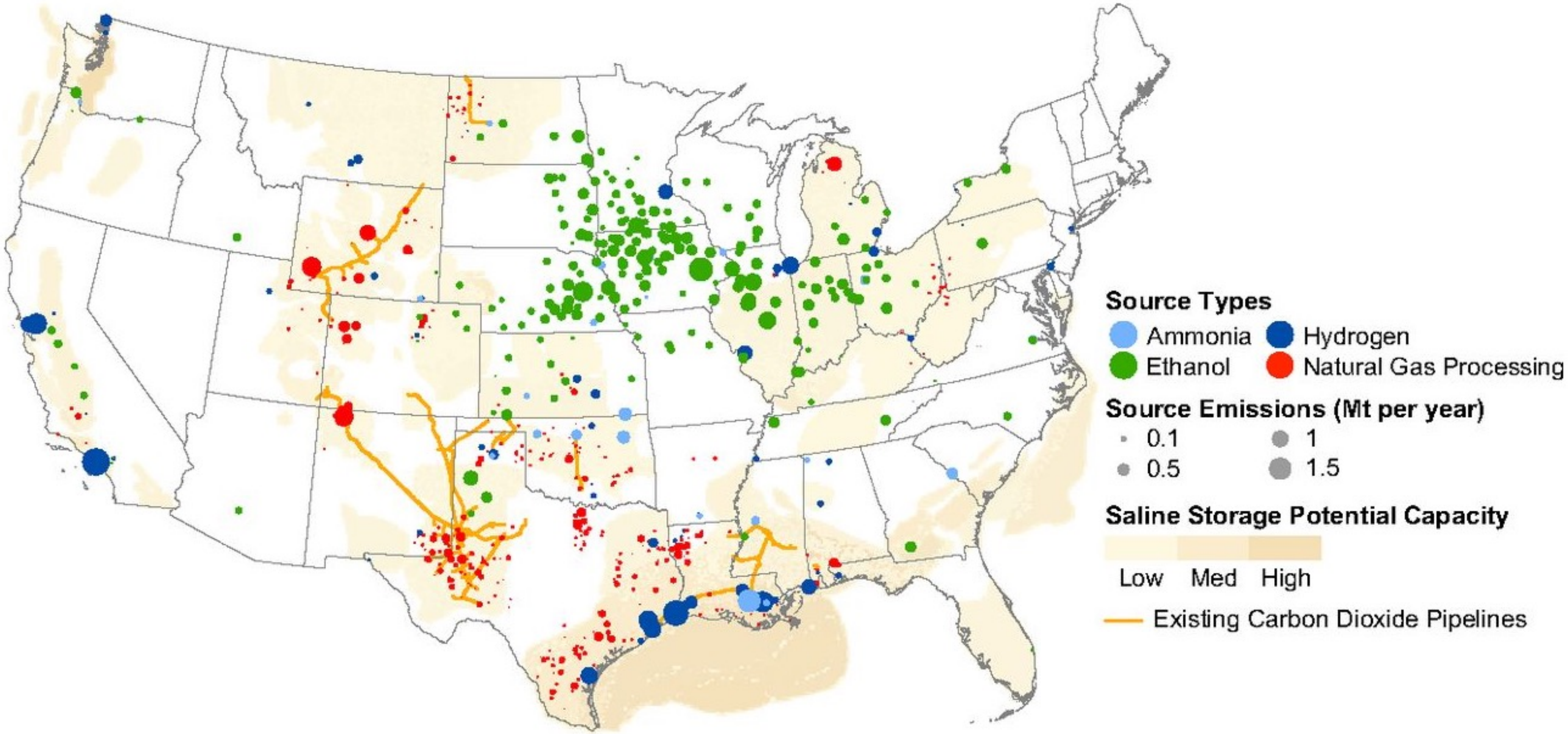
Source: U.S. Energy Information Administration

Commercial CO_2 Injection

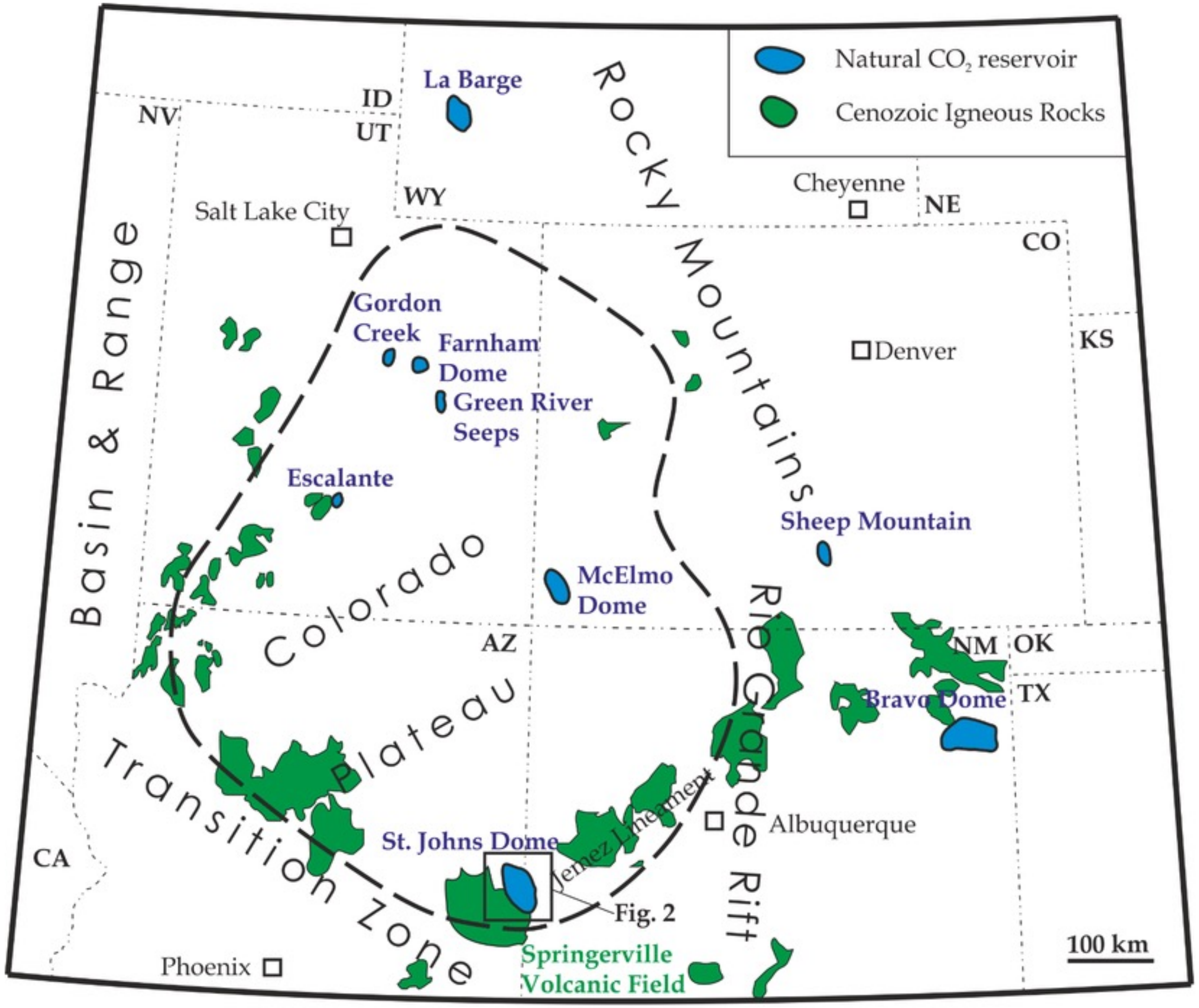


Field	Incremental Bbls of Oil	Cumulative CO_2 (tons)	Oil in place pre-CO_2 (Mmbo)	CO_2 UF Bbls/Ton
Wertz	24,727,444	11,620,842	92.6	2.13
Lost Soldier	50,334,968	38,632,741	211.1	1.3
Beaver Creek	9,678,676	10,534,704	59.3	0.92
Big Sand Draw	1,286,102	3,428,599	58.7	0.38
Grieve	-2,059	2,371,074	30.1	0
Patrick Draw	19,317,840	23,046,021	6.4	0.84
Salt Creek	28,859,762	130,200,372	667.4	0.22

Carbon Capture and Storage

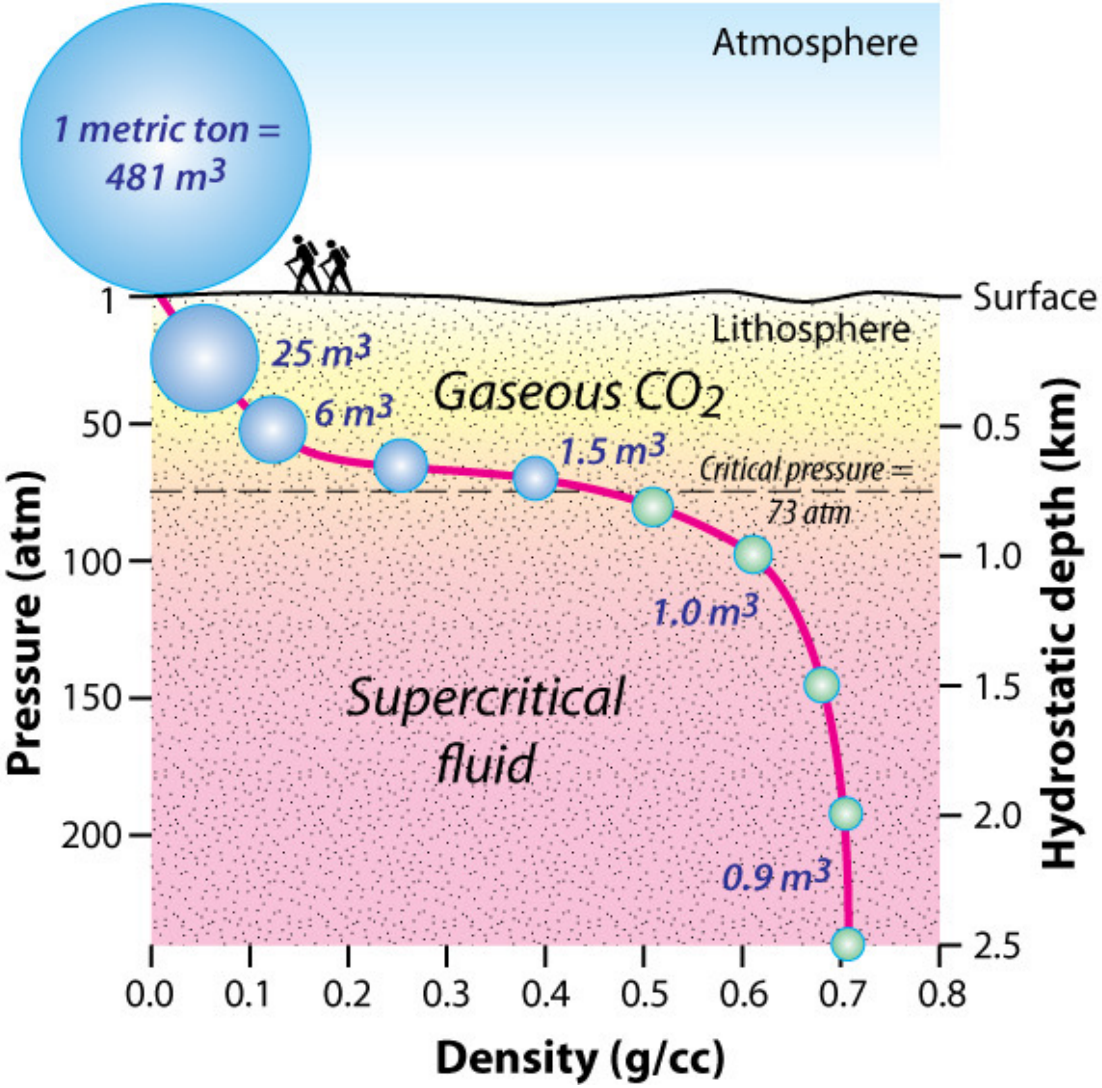


Natural CO_2 Storage



Visualizing Scale

US Emits ~6 Gt/yr (or 17 balloons/person)



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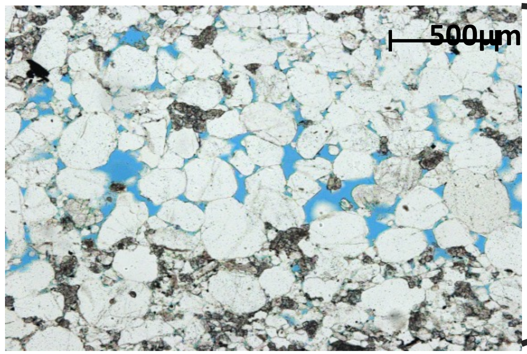
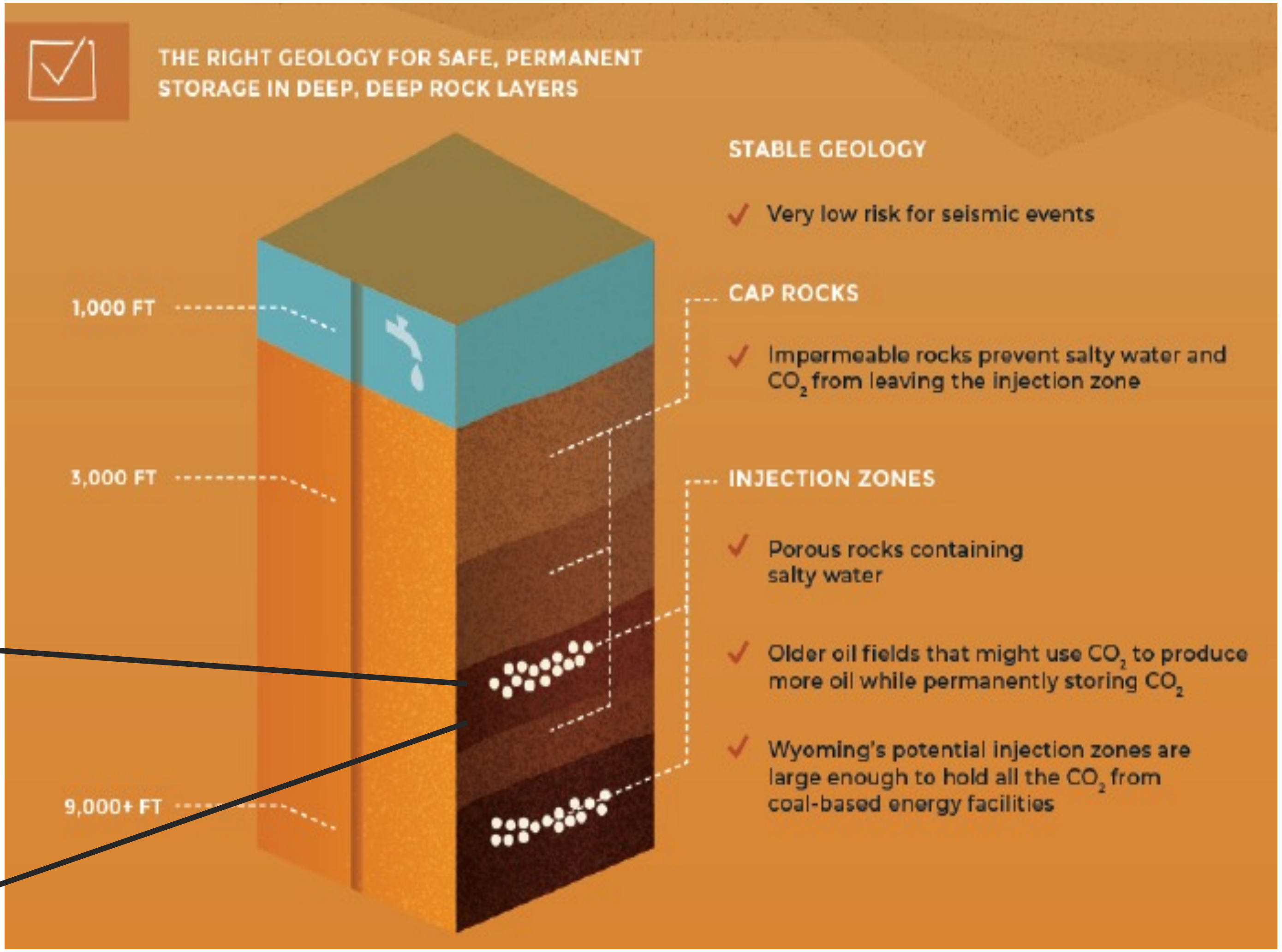
CCUS Introduction

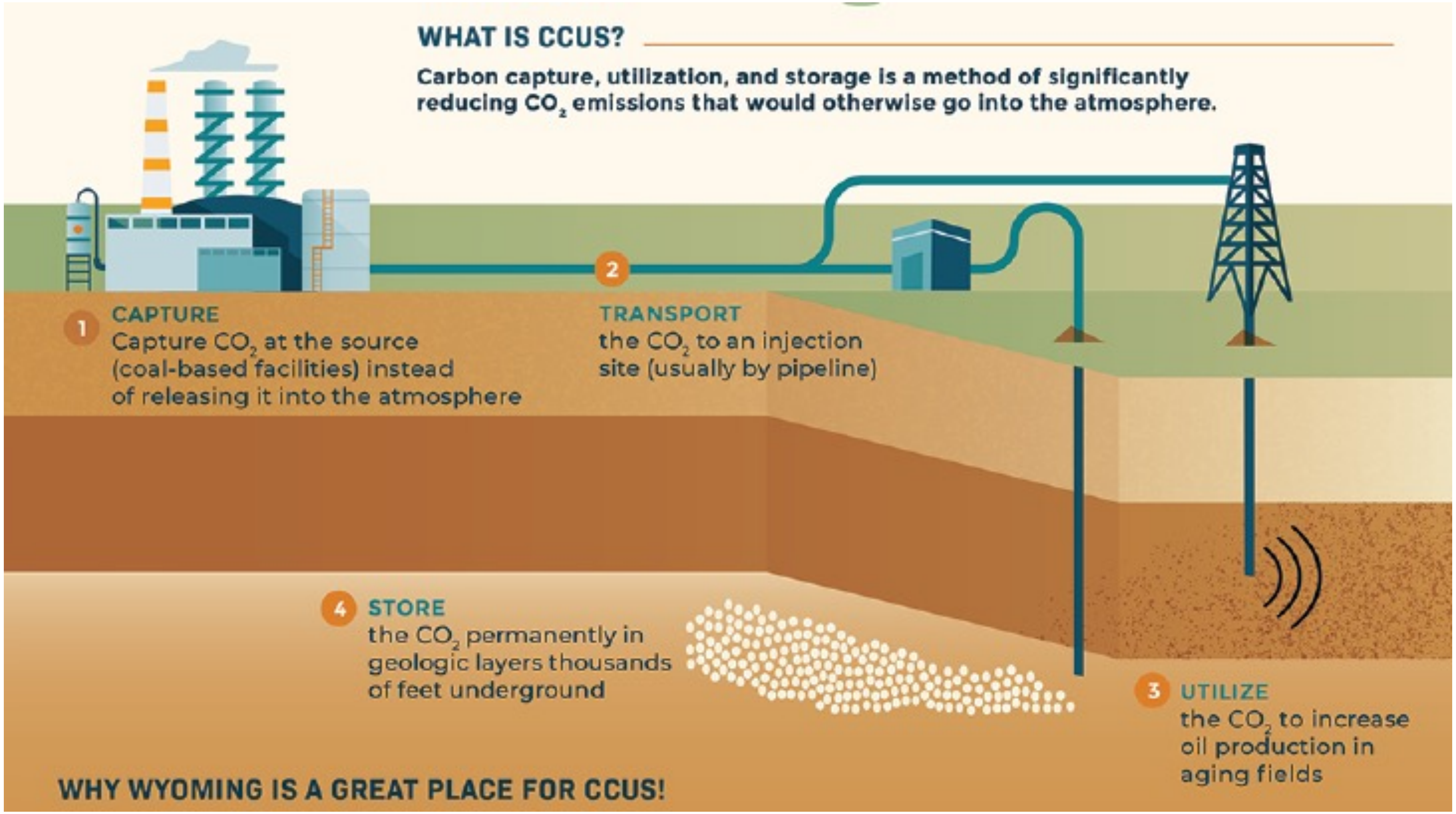
Carbon Capture and Storage (CCUS)

- Objective: the Long-term Storage of CO_2 in Deep Subsurface Reservoirs
- Multidisciplinary challenge, requiring Geology, Engineering, Environmental Sciences, Economics, Business, Regulation and Policy, Education, and Outreach
- Rigorous permitting requirements to ensure long-term safety, financial responsibility, and other
- Commercial-scale volumes?
  - A medium size ethanol plant could produce 150,000-300,000 MT of CO_2/yr
  - A medium coal power plant could produce 2.5 to 4.0 MMT of CO_2/yr



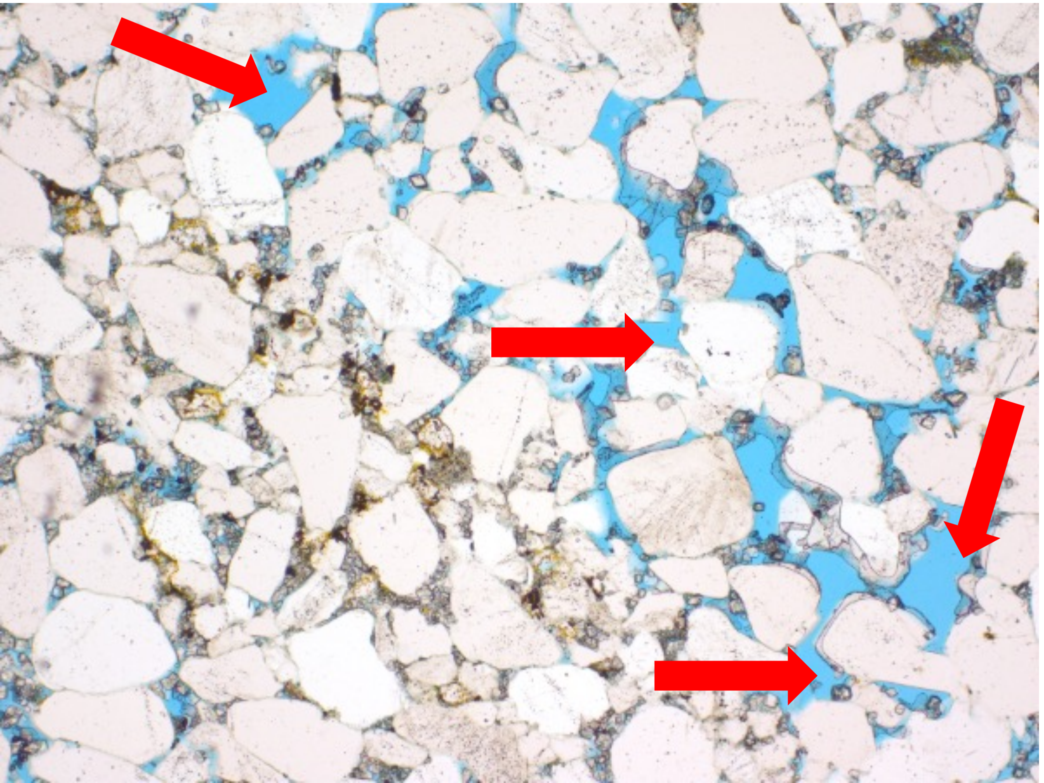


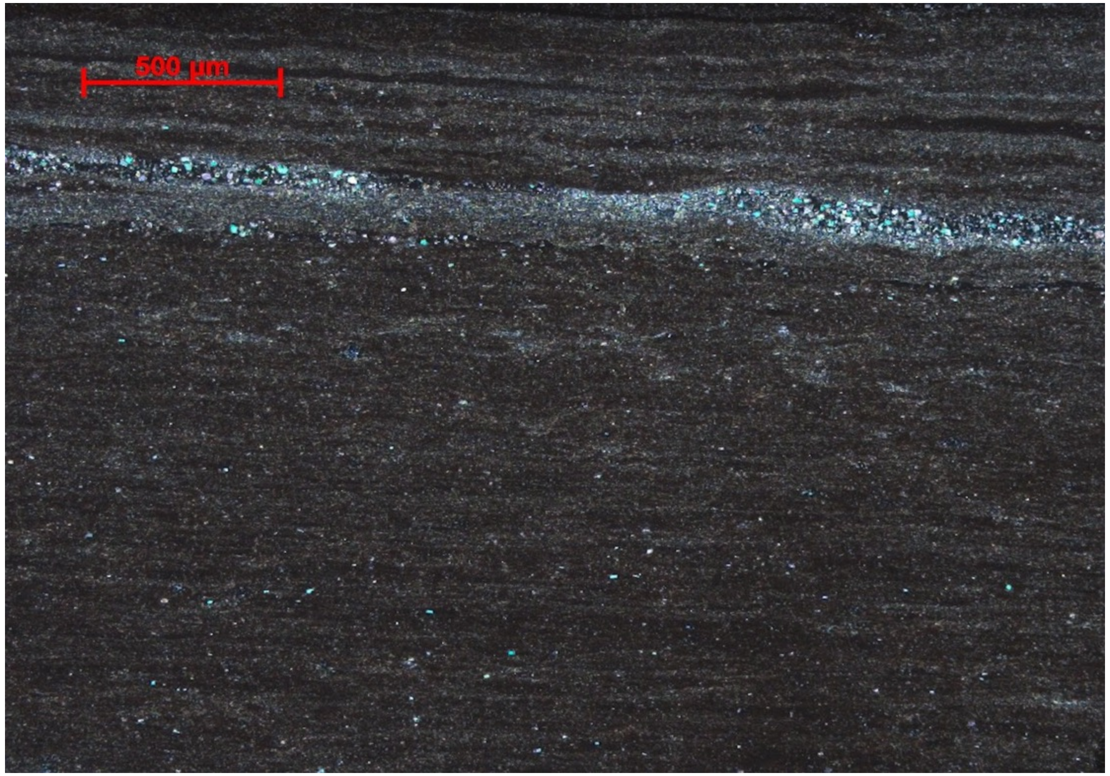
CCUS Introduction



What is the Geologic Resource Necessary for CCUS?

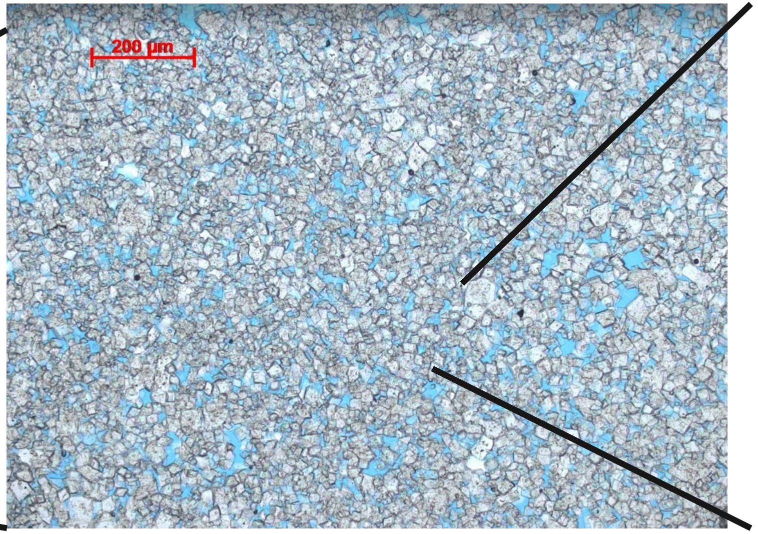
Pore Space with Associated Seal





Example of reservoir rock from Wyoming

Rock core collected from Wyoming Carbon Storage Project



The rock, but closer…

The rock, but even closer…

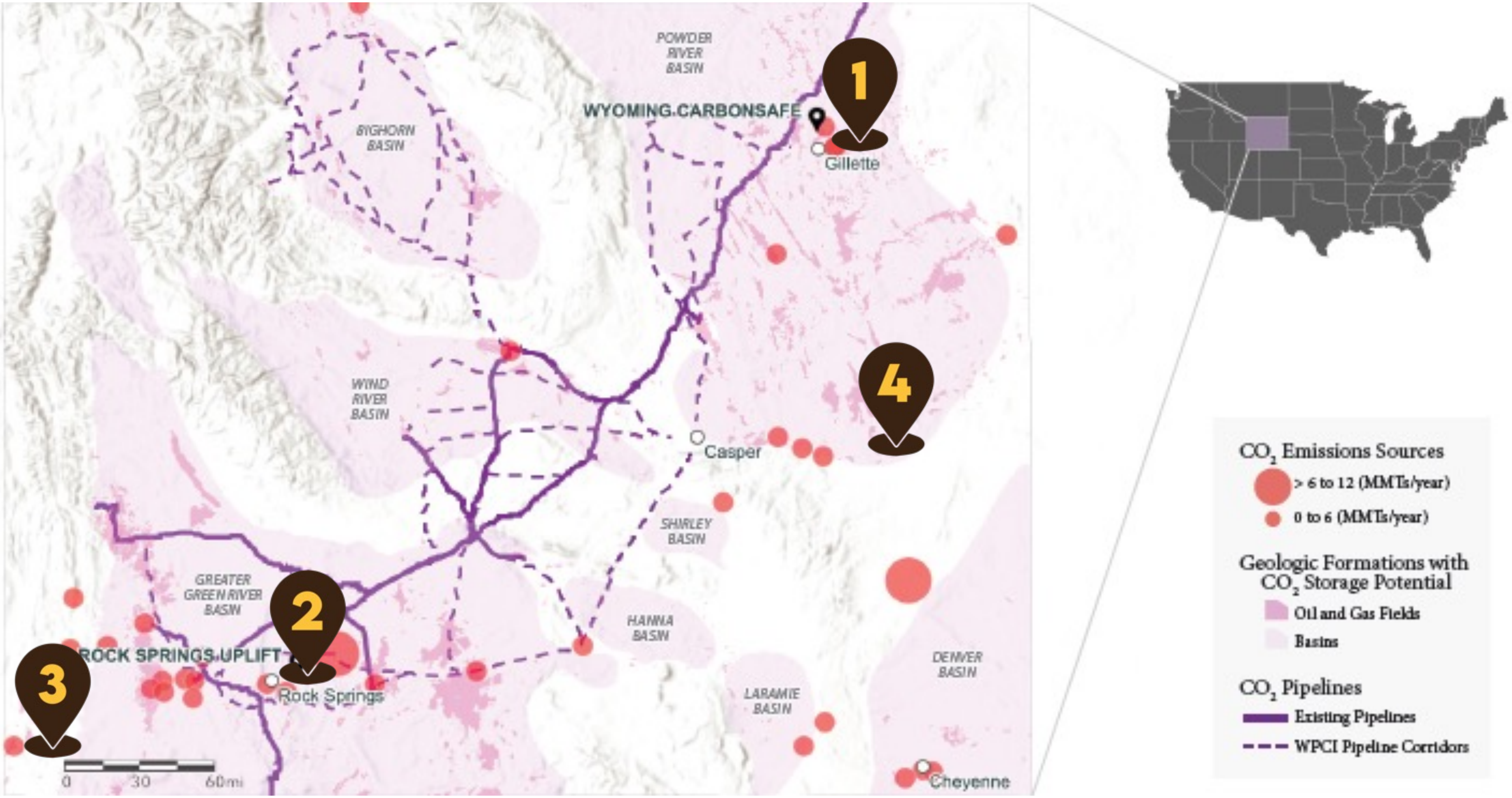
Porosity: Void space=rocks ability to hold fluid

Permeability: rocks ability to allow fluid to flow from pore to pore

UW Highlighted CCUS Projects

Carbon Capture and Storage (CCS) projects in Wyoming

1. Wyoming CarbonSAFE Project at Dry Fork Station
2. Rock Springs Uplift-Regional CCUS Hub
3. Depleted Gas Fields (Fold and Thrust)
4. Project Blue Bison (Blue Hydrogen)



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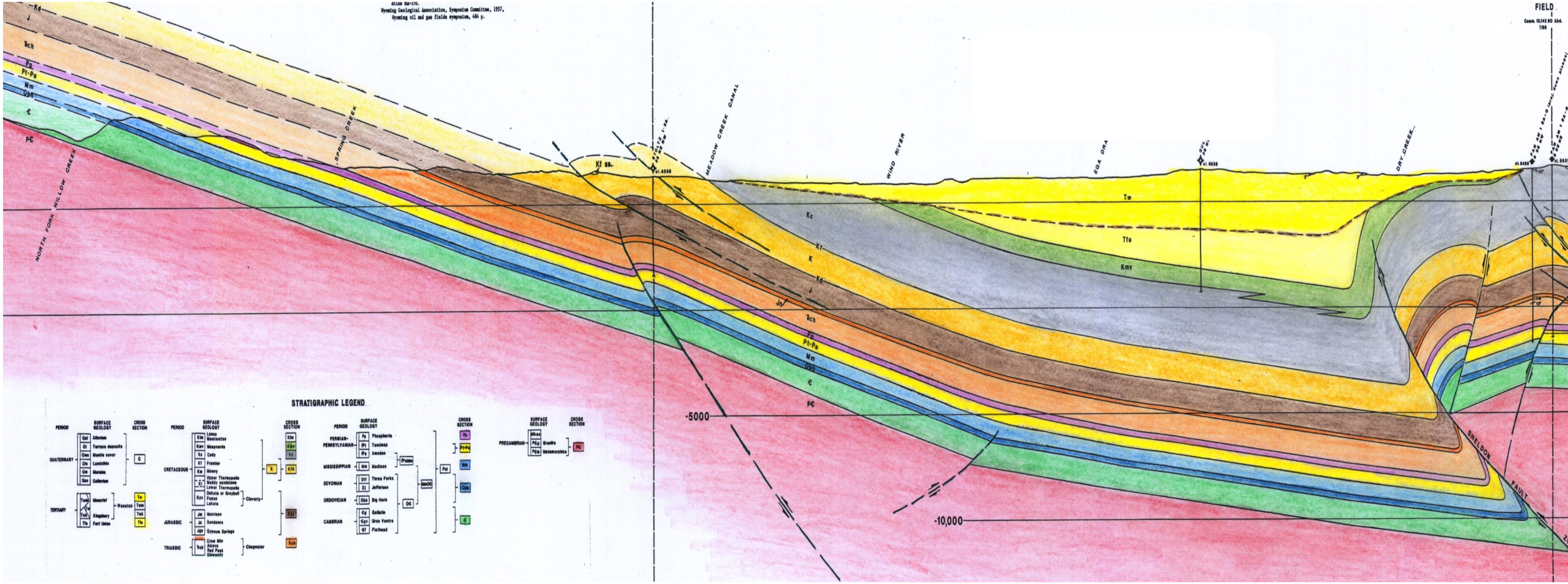
Where to store in Wyoming? Sedimentary basins

Basin petrology is controlled by deposition and diagenesis



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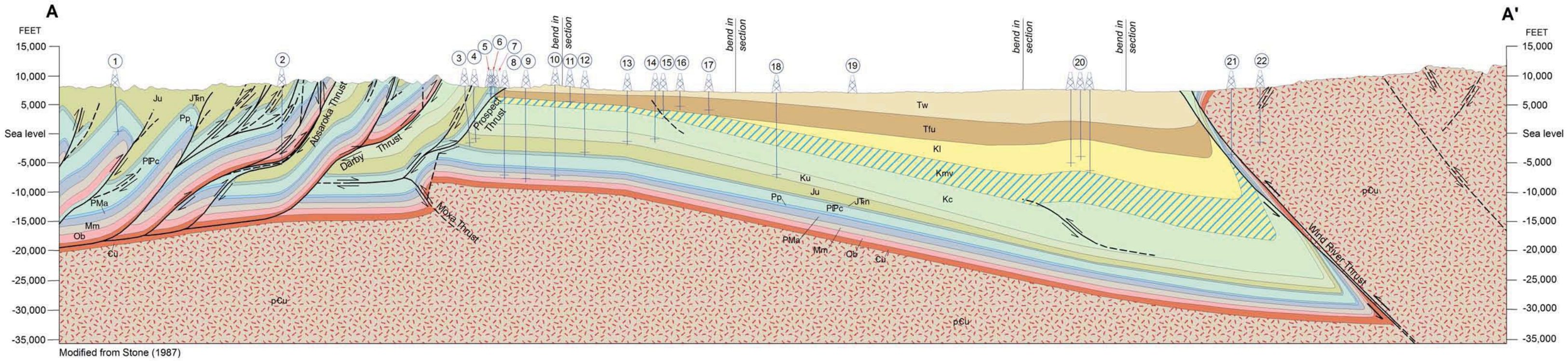
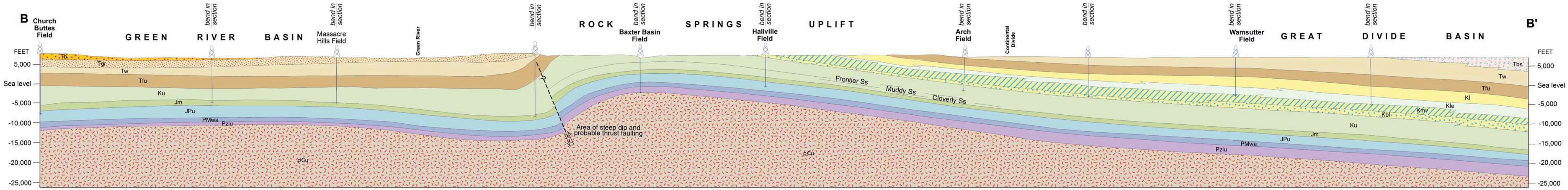
Green River Basin Cross Sections



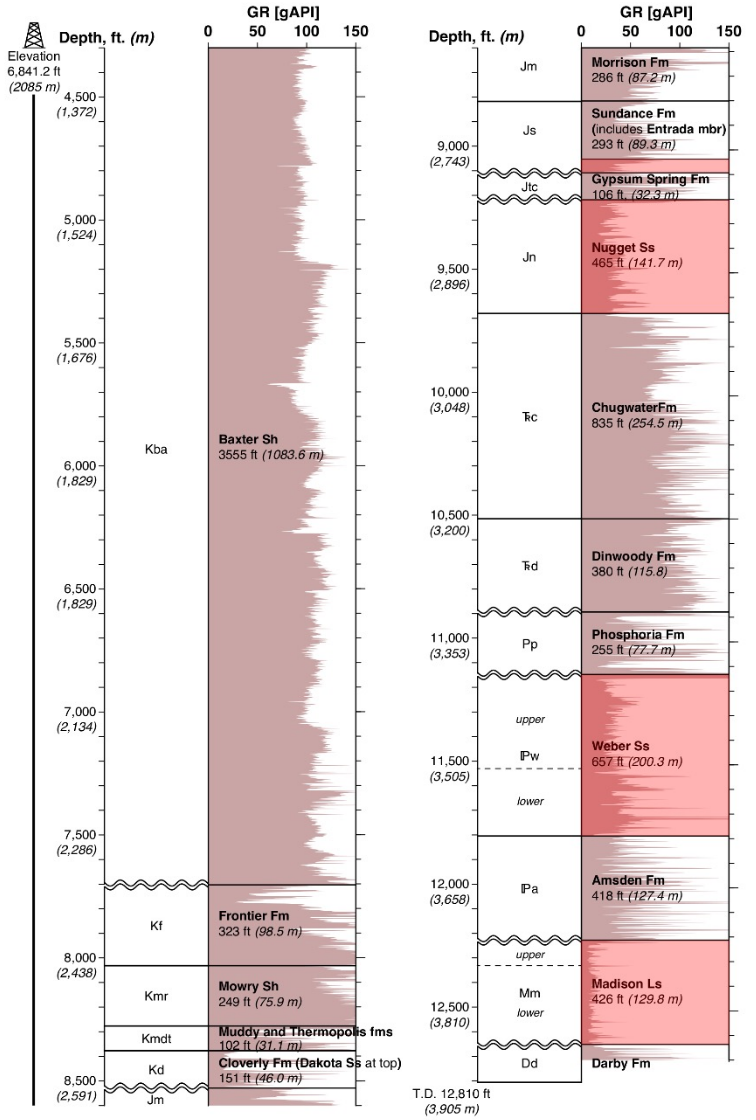
Modified from Stone (1987)



Modified from Root and others (1973)

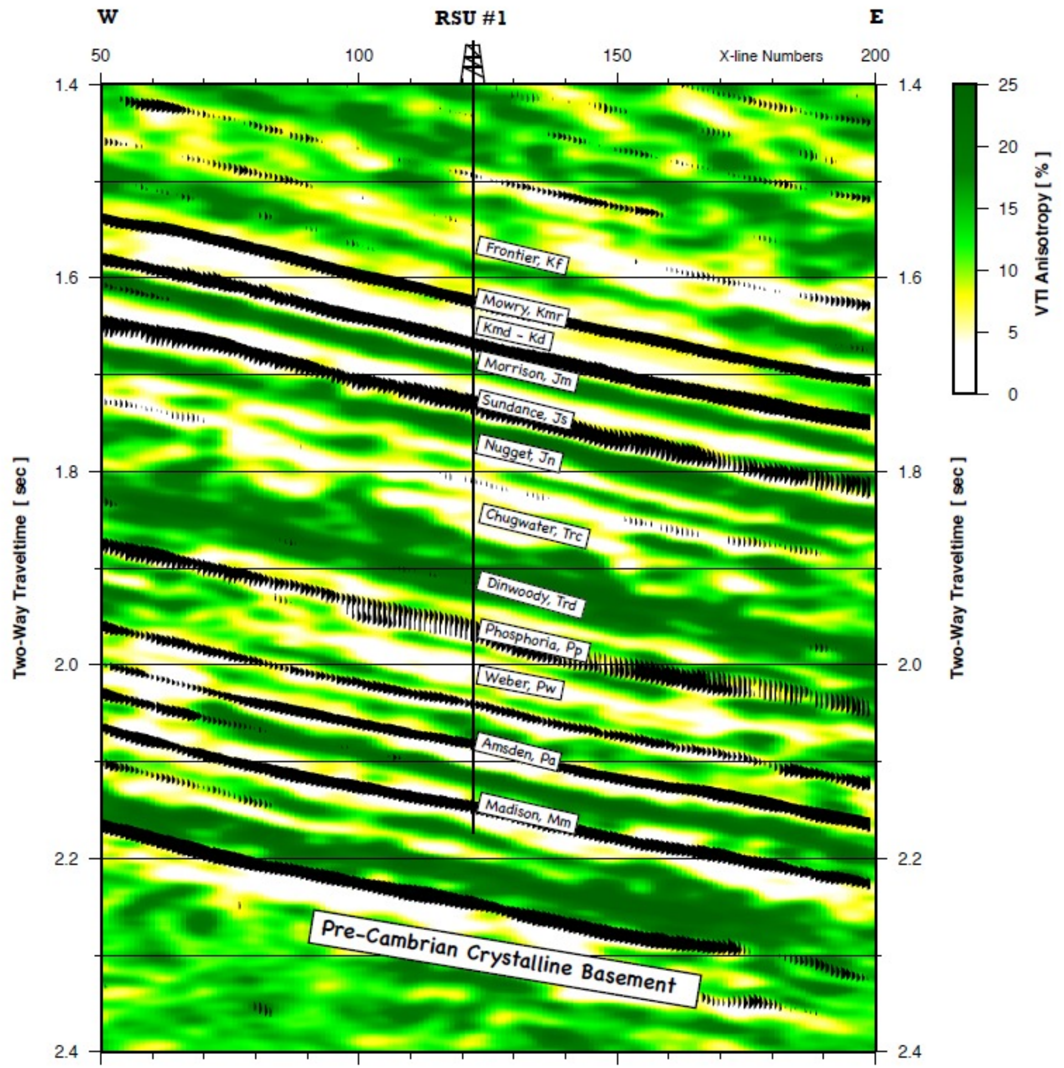
CCUS Case Study: Rock Springs Uplift

- Drilled a science-heavy stratigraphic test well
- Acquired a seismic survey
- Evaluated 4 reservoirs (red, figure on the right)
- Evaluated >8,000' of sealing formations



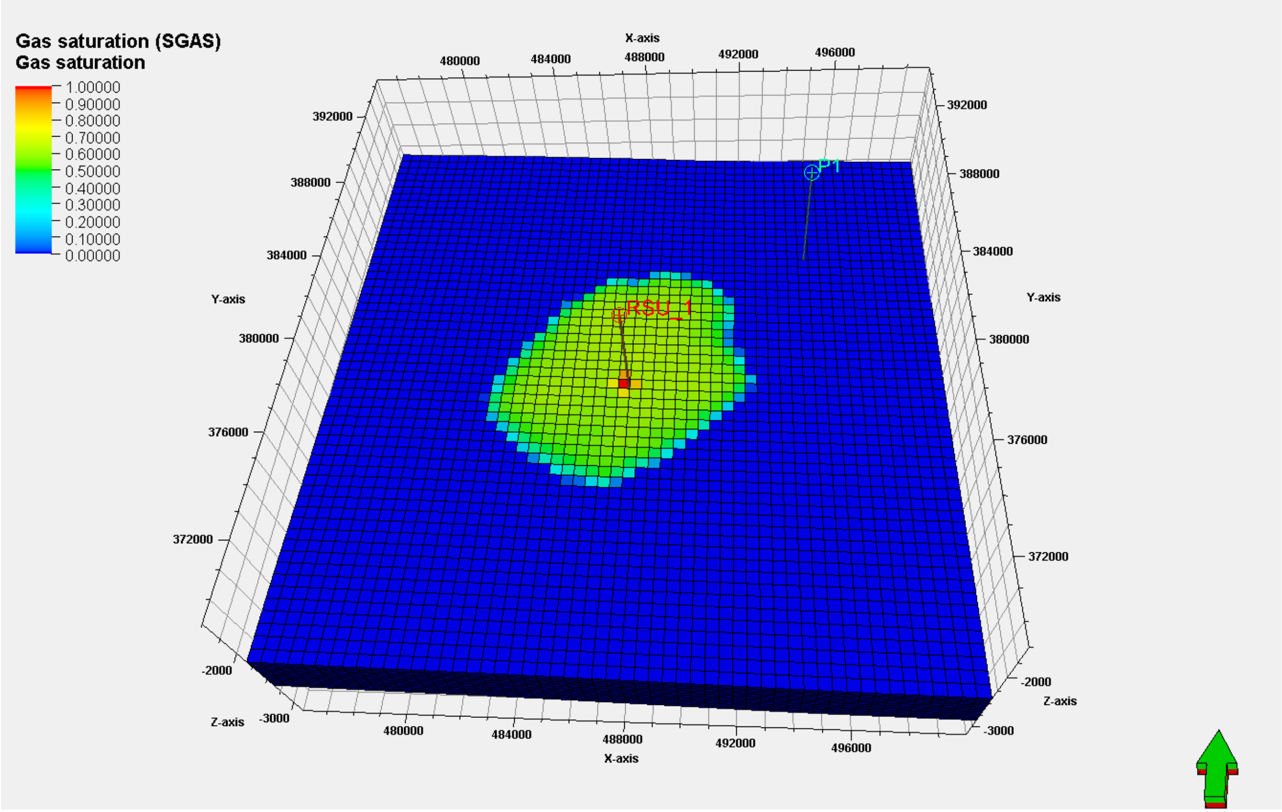
CCUS Case Study: Rock Springs Uplift

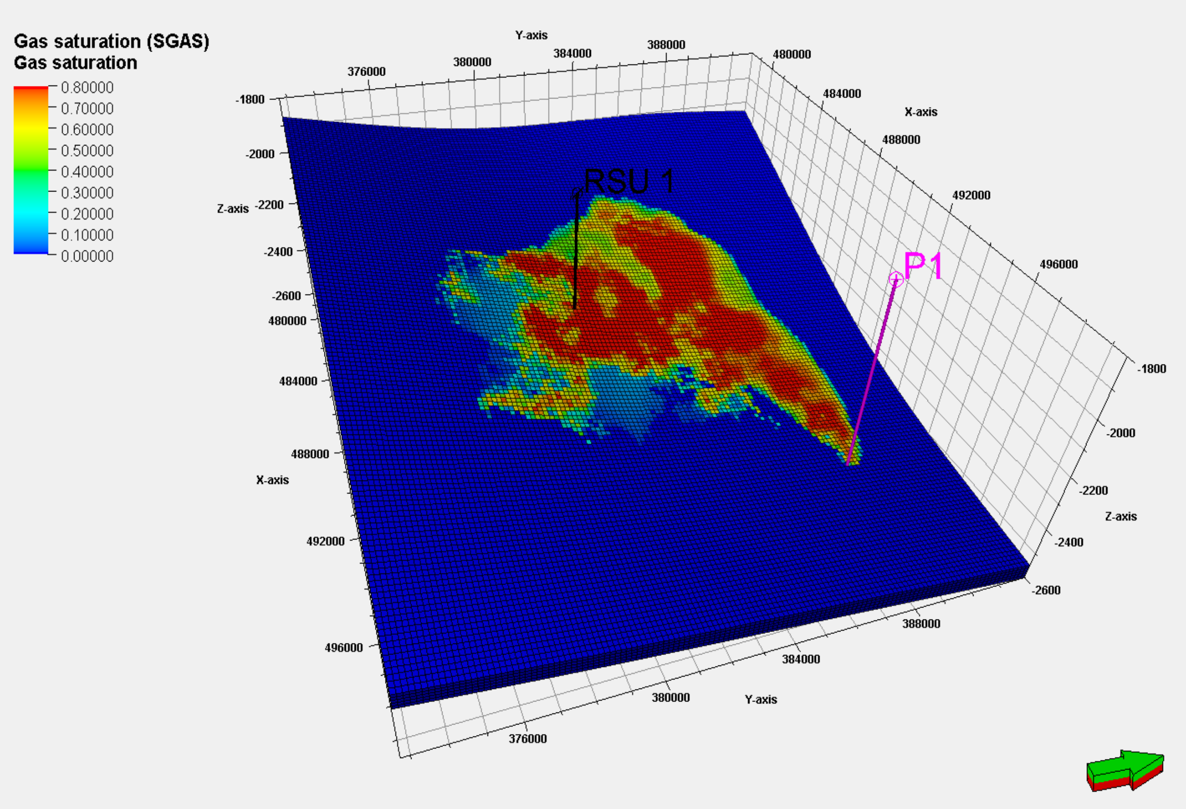
Feasibility and Data Assessment



CCUS Case Study: Rock Springs Uplift

Modeling Reservoir Heterogeneity





CCUS Case Study: Rock Springs Uplift

Storage Capacity

Injection Scenarios (Conservative), 1 well	**Total CO_2 Injected, ton**
Entrada Ss: 25 years injection	144,000
Nugget Ss: 25 years injection	8,370,000

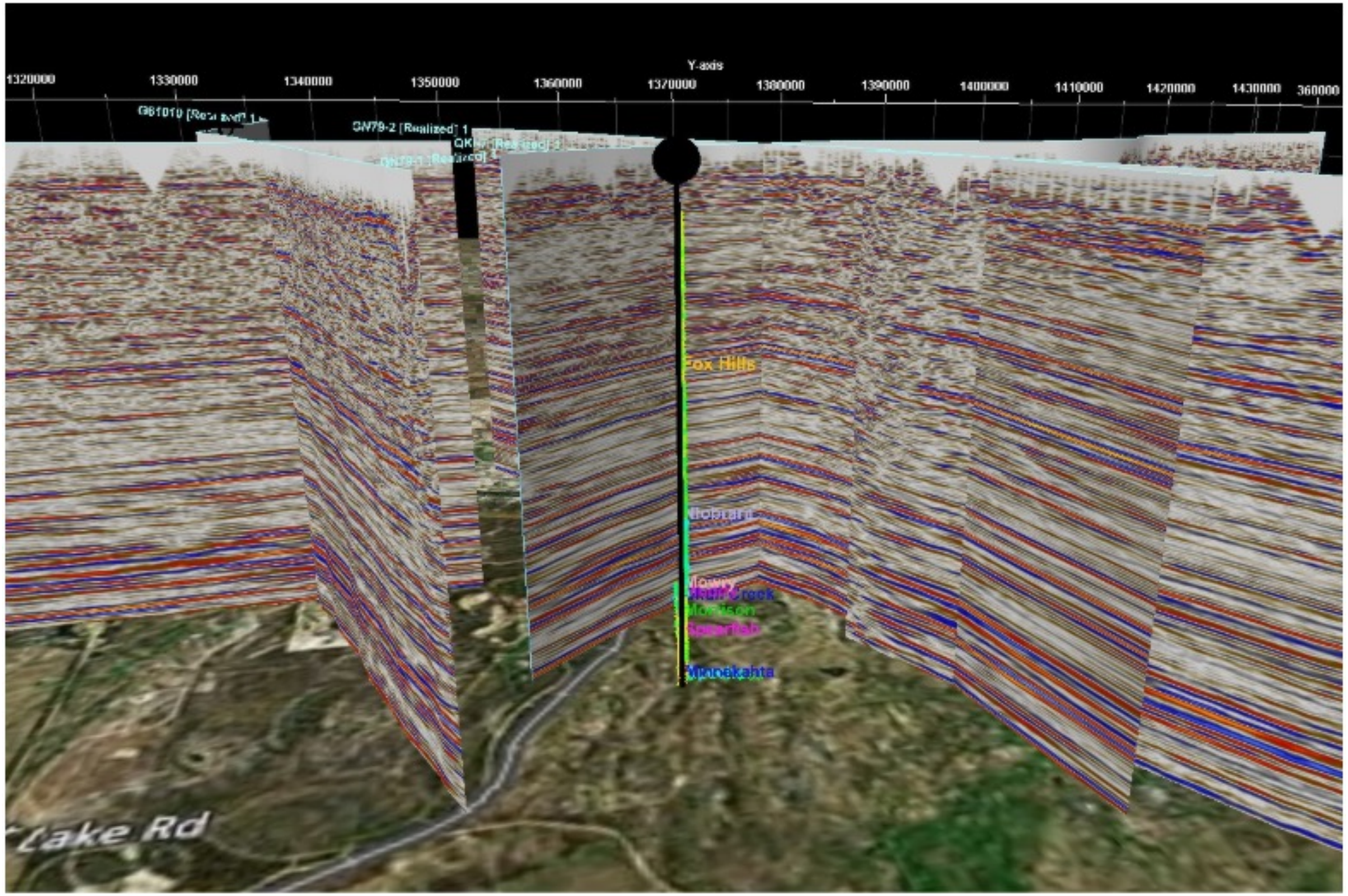
DOE CO_2 Screen Tool

Entrada Sandstone Storage Statistics (million metric tons/mi²)		
P10	*P50*	*P90*
.14	.27	.47

Nugget Sandstone Storage Statistics (million metric tons/mi²)		
P10	*P50*	*P90*
2.9	5.6	9.6

Goodman, A., Sanguinito, S. and Levine, J.S., 2016. Prospective CO2 saline resource estimation methodology: Refinement of existing US-DOE-NETL methods based on data availability. International Journal of Greenhouse Gas Control, 54, pp.242-249.

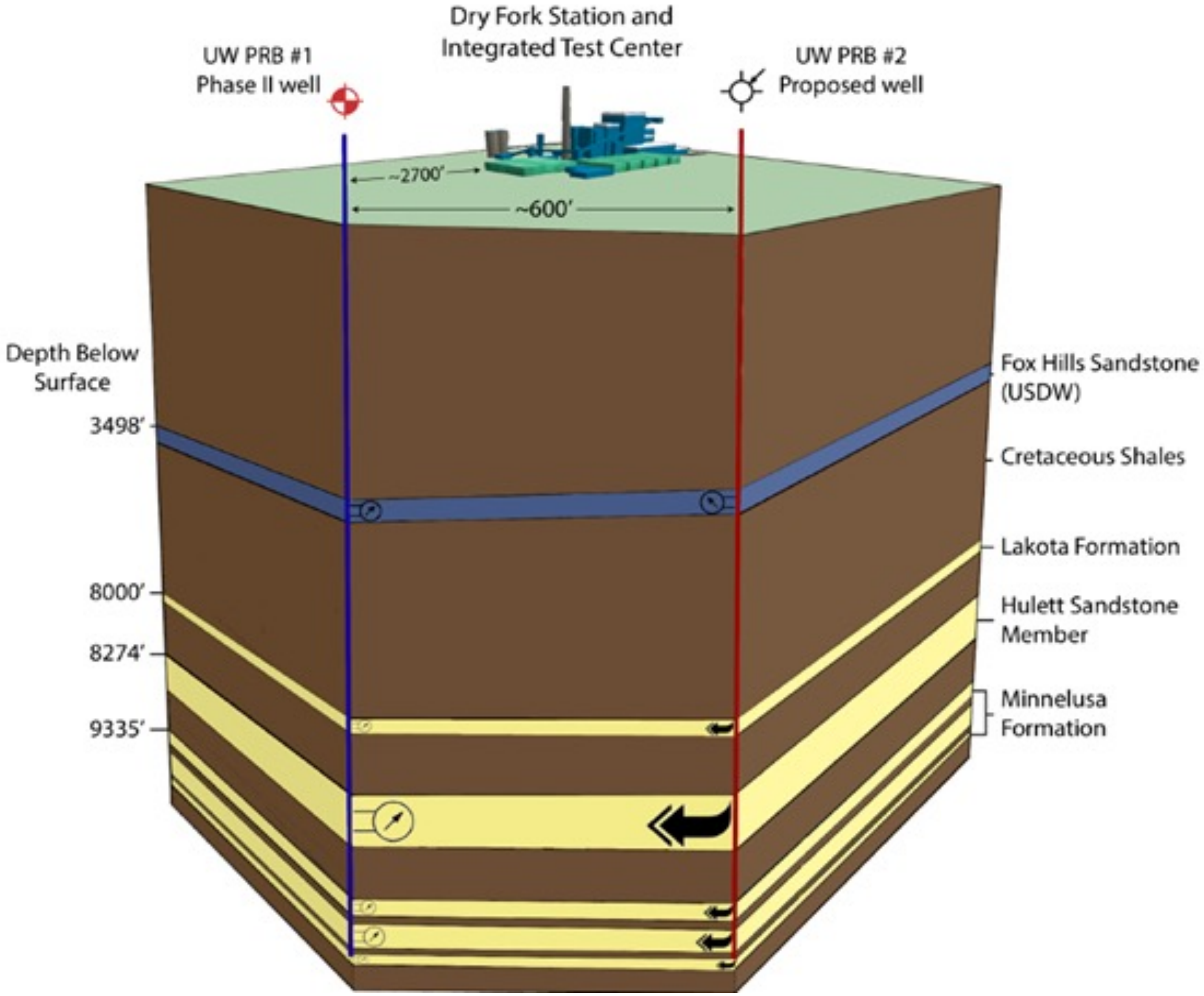
Questions


Y-axis
1320000
1330000
1340000
1350000
1360000
1370000
1380000
1390000
1400000
1410000
1420000
1430000
360000
GN79-2 [Realized] 1
Fox Hills
Minnekahta
Lake Rd

Elements of a Class VI Permit

Technical elements of the permit

- ✓ Subsurface
- ✓ Surface
- ✓ Completion and Operation
- ✓ Closure
- ✓ Others



Application approach – *Geologic and Technical*

General Technical Work Flow

- ❑ Legacy Data Collection and Analysis
- ❑ Underground Source of Drinking Water (USDW) Determination
- ❑ Modeling and CO_2 Injection Simulations
- ❑ Area of Review (AoR) Determination
- ❑ Risk Assessment and Corrective Action Strategy
- ❑ MVA Strategy
- ❑ Compile and Submit a Class VI Permit to Drill
- ❑ Site Specific Field Operations and Data Collection (Baseline Monitoring/Well Specific)
- ❑ Update Models and Strategies with Field/Operational Data (Project Life-Cycle)

Can be completed with legacy data and expertise

Need new field data to complete

Important Questions

1. Why CCUS?
2. What is our geologic resource?
3. Where may we look to store CO_2.
4. What are the two typical geologic storage reservoir formation types?
5. What constitutes a geologic seal?
6. What are other viable geologic storage formations?
7. What are available geologic data types and qualities?

Prove that safe, long-term CCUS storage is viable relative to the source.

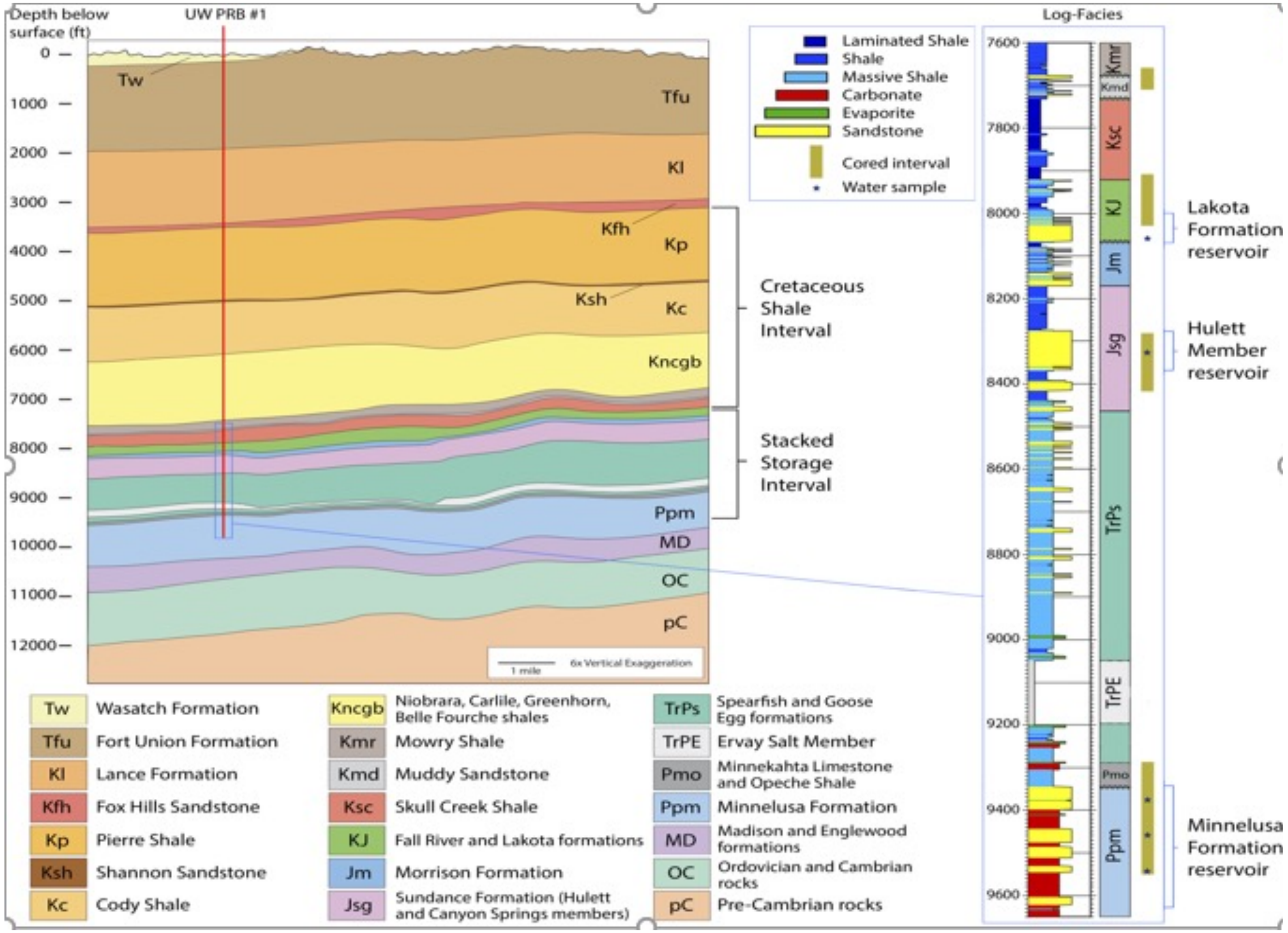
Application Requirements – *Geologic and Technical (cont.)*

General and Site Geology

- Geologic report from available sources
  - Injection and confining zones
- Structural and isopach maps, cross sections
- Faults and fractures: location and extent
- Seismic history
- Geomechanical and geochemical analysis

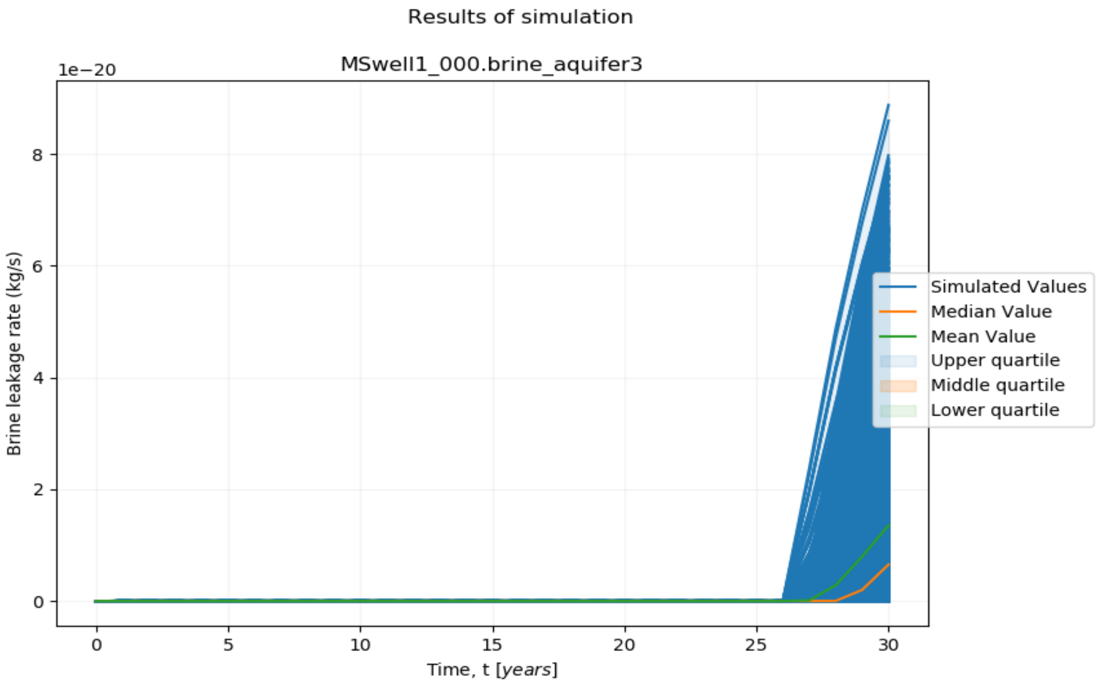
Data sufficient to demonstrate effectiveness of the injection and confining zone

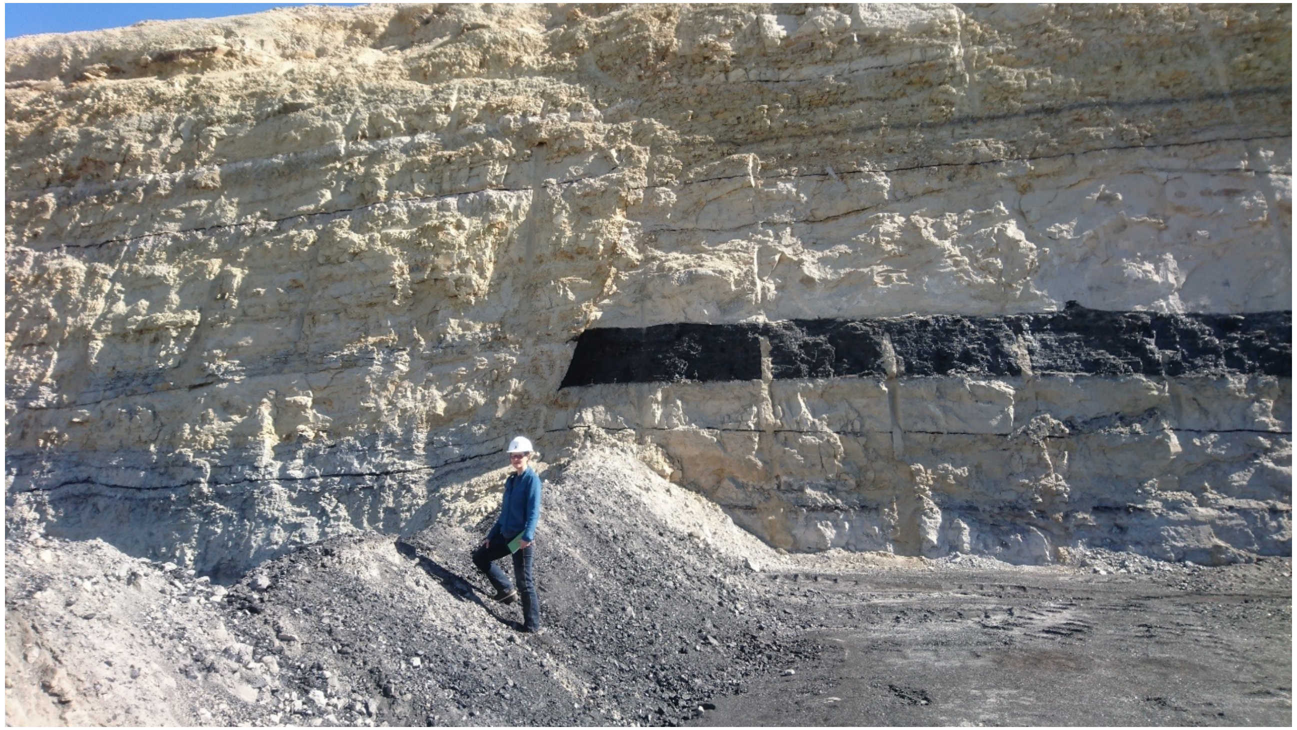
Example from Wyoming CarbonSAFE



Technical Characterization

Risk Assessment

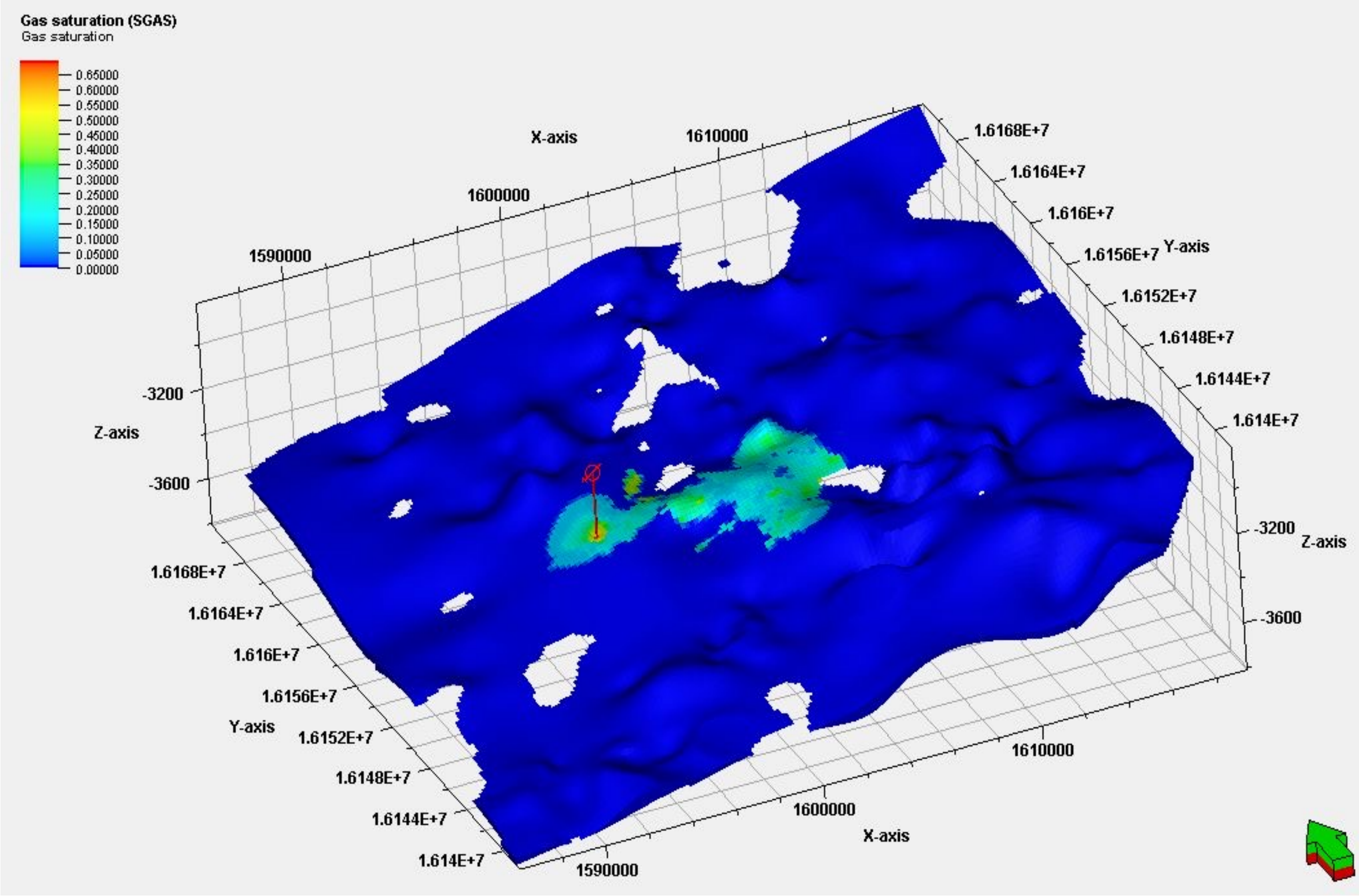




Application Requirements – *Geologic and Technical (cont.)*

Modeling and Simulations

- Life-cycle injection simulations (each well)
- Proof of confinement
- AoR (CO_2 and pressure plumes)
- Effects of pressure management
- Modeling and simulations through the project life-cycle
  - Updated with site well, MVA data
- Software not specifically stipulated
- Enough geologic data (legacy or new) to characterize injection/confining and other zones
  - Certified by P.G. and P.E.



Application Requirements – *Geologic and Technical (cont.)*

Determining Area of Review:

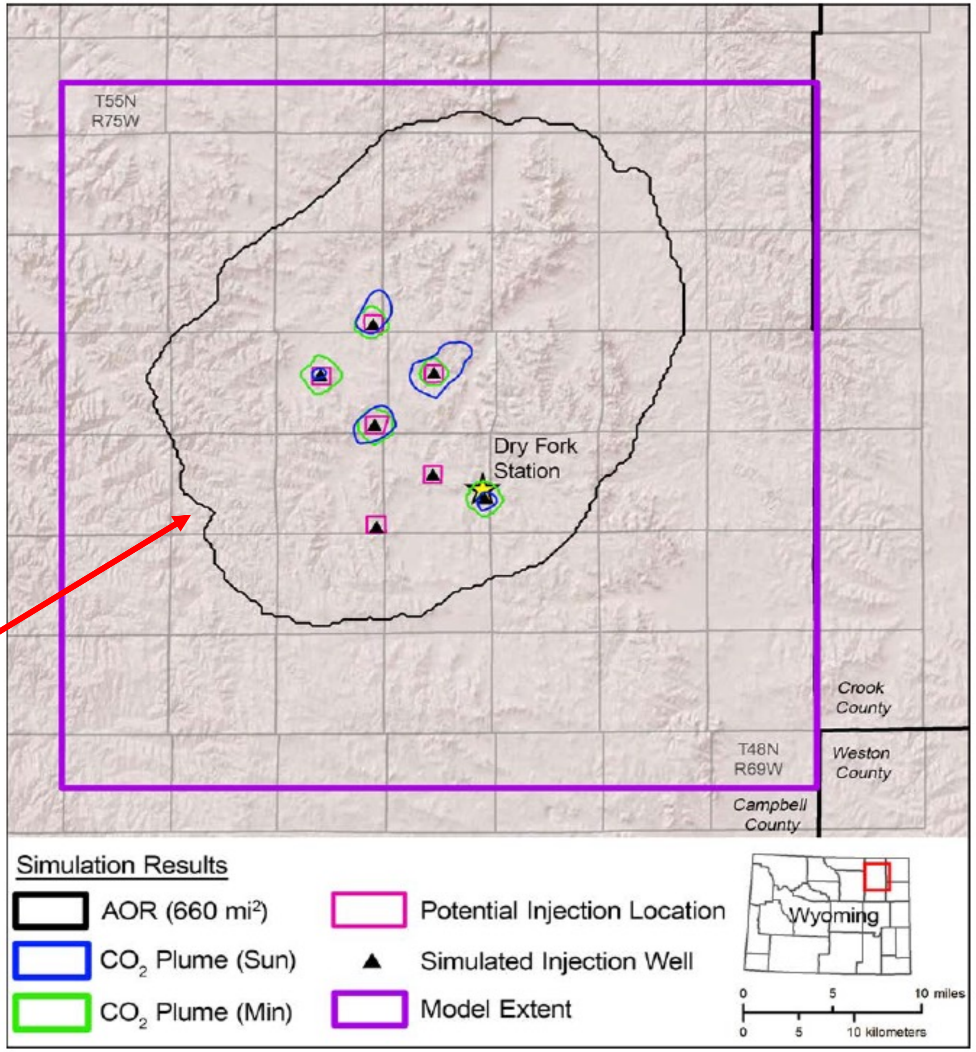
- Subsurface 3-D extent of CO_2 plume, pressure front, and displaced fluids
  - Area of review" means the subsurface three-dimensional extent of the carbon dioxide plume, associated pressure front, and displaced fluids, as well as the overlying formations, and surface area above that delineated region. The area of review is based on available site characterization, monitoring, and operational data.

- Include all available data from logging and testing (within 1 mile) of the AoR

- Based on modeling

Note that this is not a permit acceptable AoR: for research purposes only

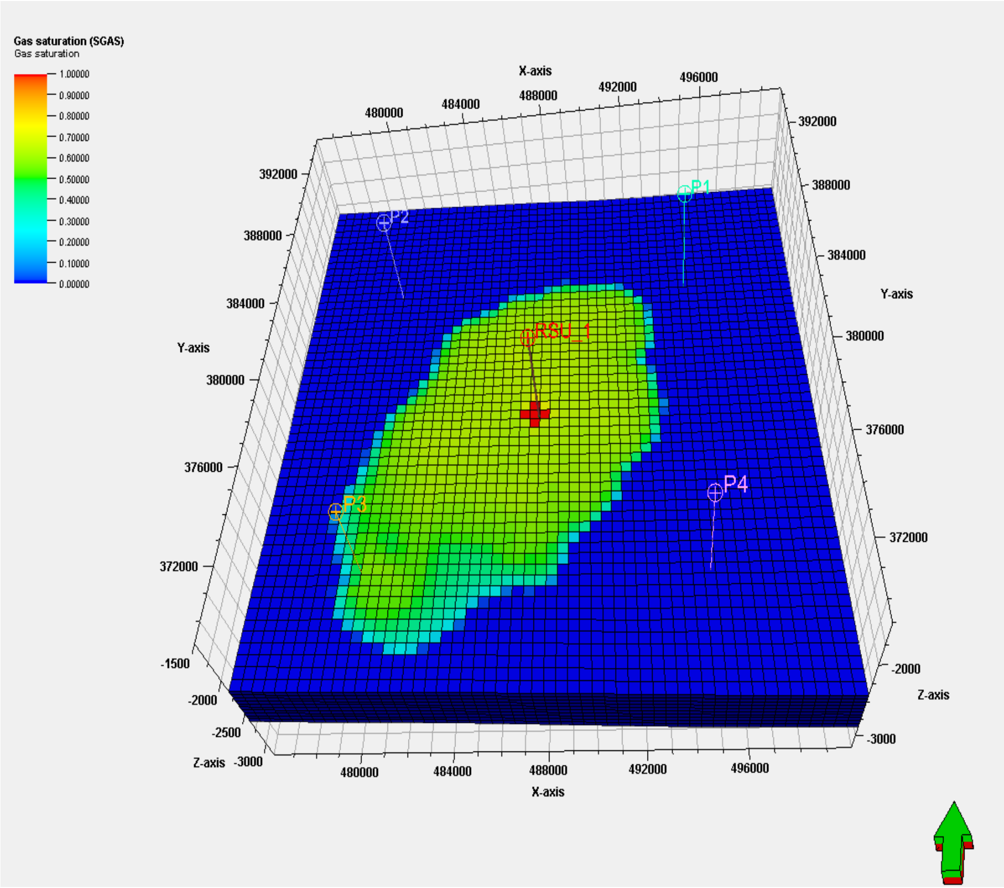
Example from Phase II Wyoming CarbonSAFE

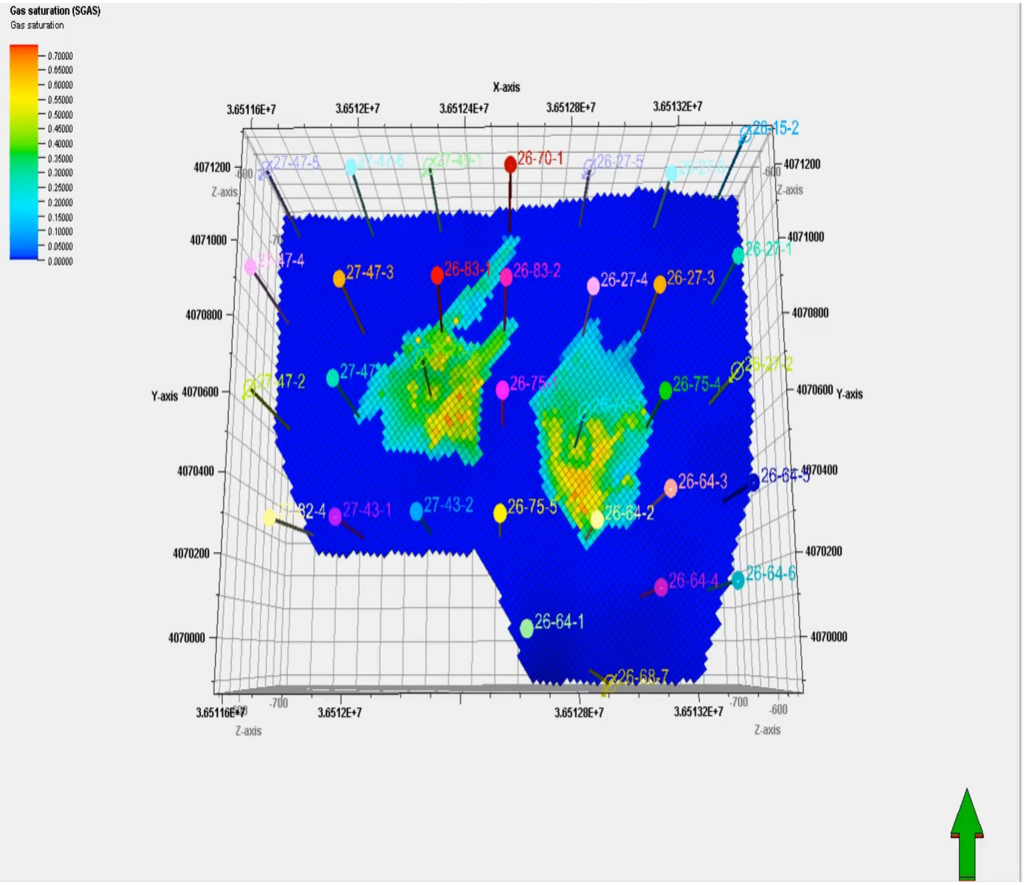


Courtesy of N. Bosshart et al., EERC

Application Requirements – *Geologic and Technical (cont.)*

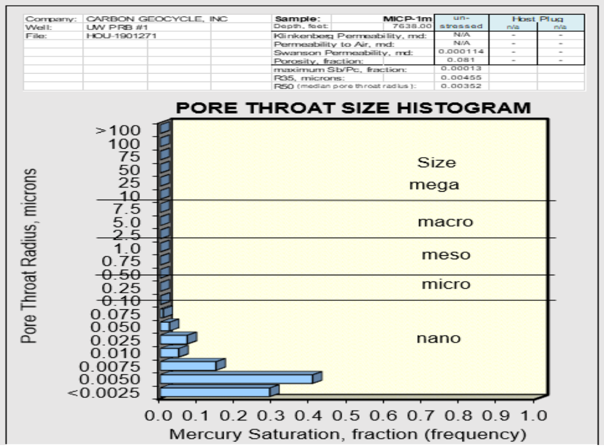
Plume and pressure modeling (essential and unique to CCUS permitting)

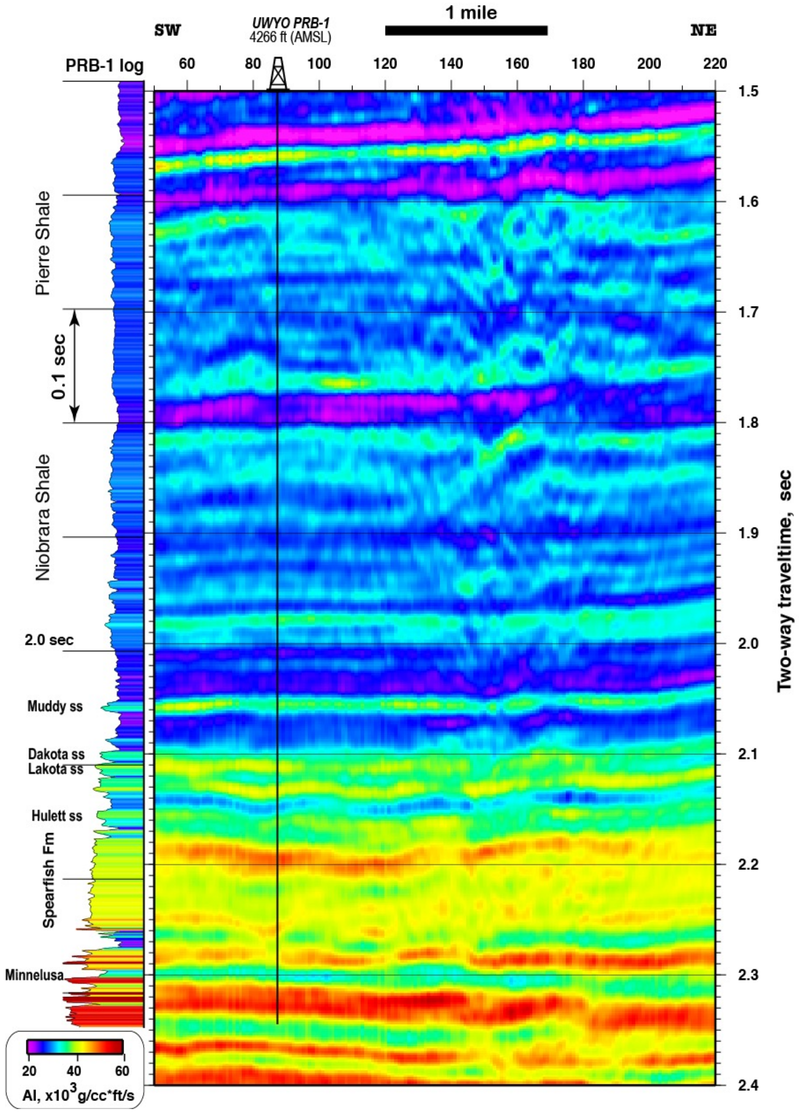




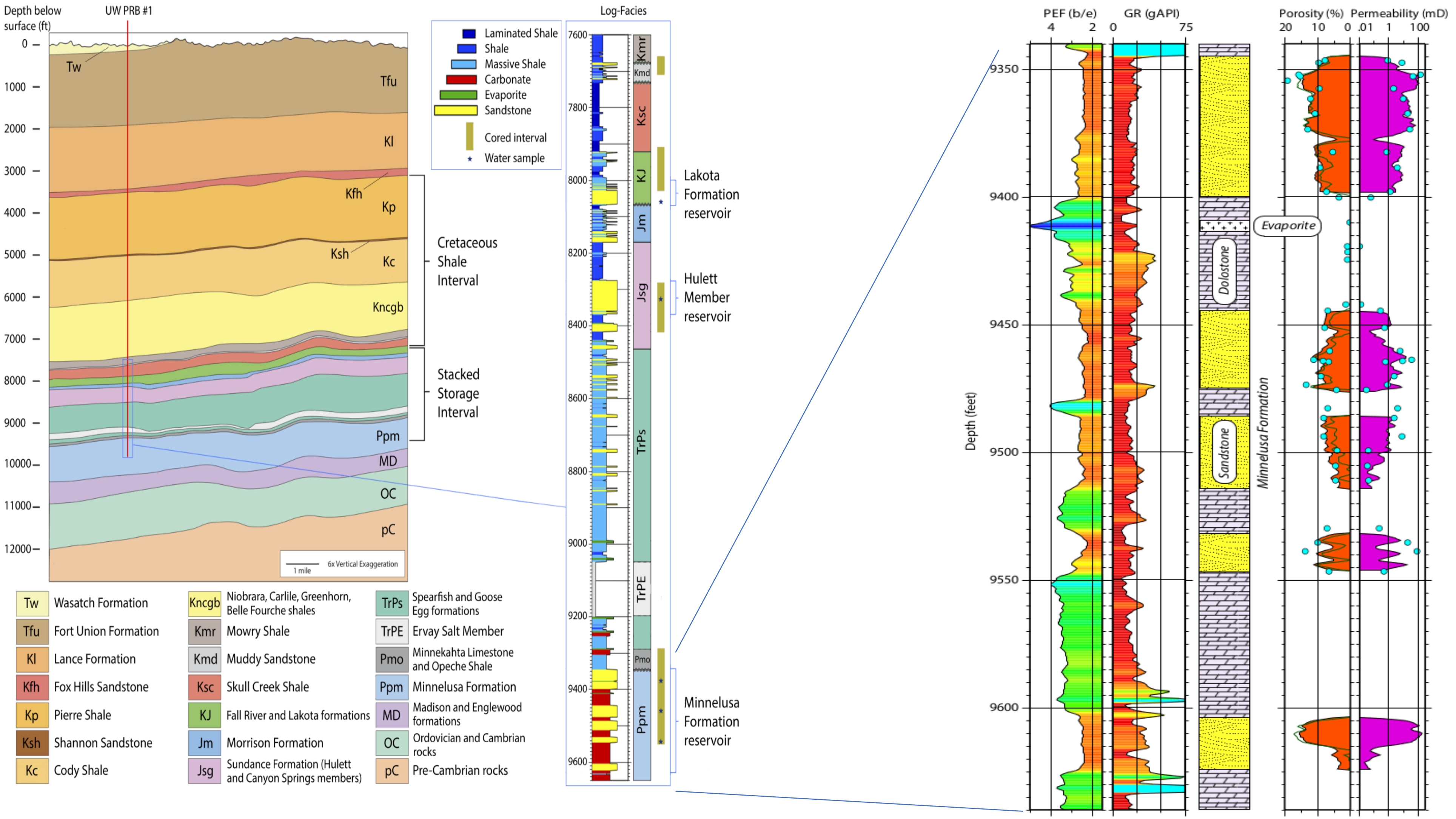
Geologic And Subsurface Data for CCUS

1. **Geophysical seismic data**
   - Structural geology
   - Medium-scale geologic heterogeneity and attributes
2. **Petrophysical well logs**
   - Property and well completion-focused logs
   - Porosity (value, type and distribution), lithology type/character, fluid-bearing zones and character, geologic variability, sometimes mineralogy, some mechanical properties
   - Small-scale geologic heterogeneity and attributes
3. **Core**
   - Porosity distribution, permeability (vertical and horizontal), mineralogy, capillary pressure, lithofacies determination, mechanical properties, advanced fluid injection response
   - Fine-scale geologic heterogeneity and attributes
4. **Formation fluids**
   - TDS, reactivity, formation fluid history
   - Storage-site scale characterization
5. **In-situ well tests**
   - Reservoir performance/well integrity





Characterization Goal: Incorporate Geologic Data across all Scales



Well Log Interpretation

Reservoir Well Log Identification

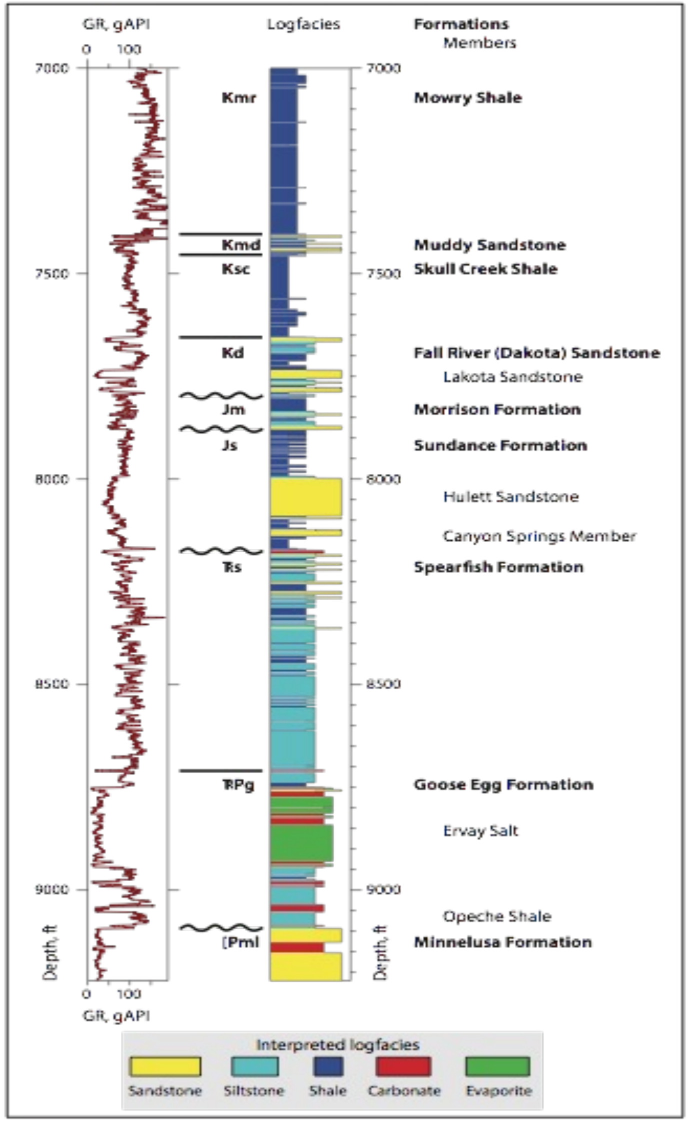
- CCS reservoirs are dominantly sandstone or carbonate
  - Low gamma response
  - If porous, definitive shifts in SP, sonic, resistivity logs relative to non-porous formations
  - Caliper and density will vary

Seal Well Log Identification

- Dominantly shale, but can also be also carbonate, evaporate, cemented sandstone, siltstone, mudstone
  - High gamma response
  - Generally more consistency in SP, sonic, resistivity, caliper and density logs

Introduction to gamma logs for lithology

- Gamma logs read the natural radioactivity of geologic formations from minerals bearing U, K and Th. Typical reservoir rocks have lesser concentrations of radiogenic minerals. Typical seal rocks (bearing clays and organics) accumulate radiogenic minerals.



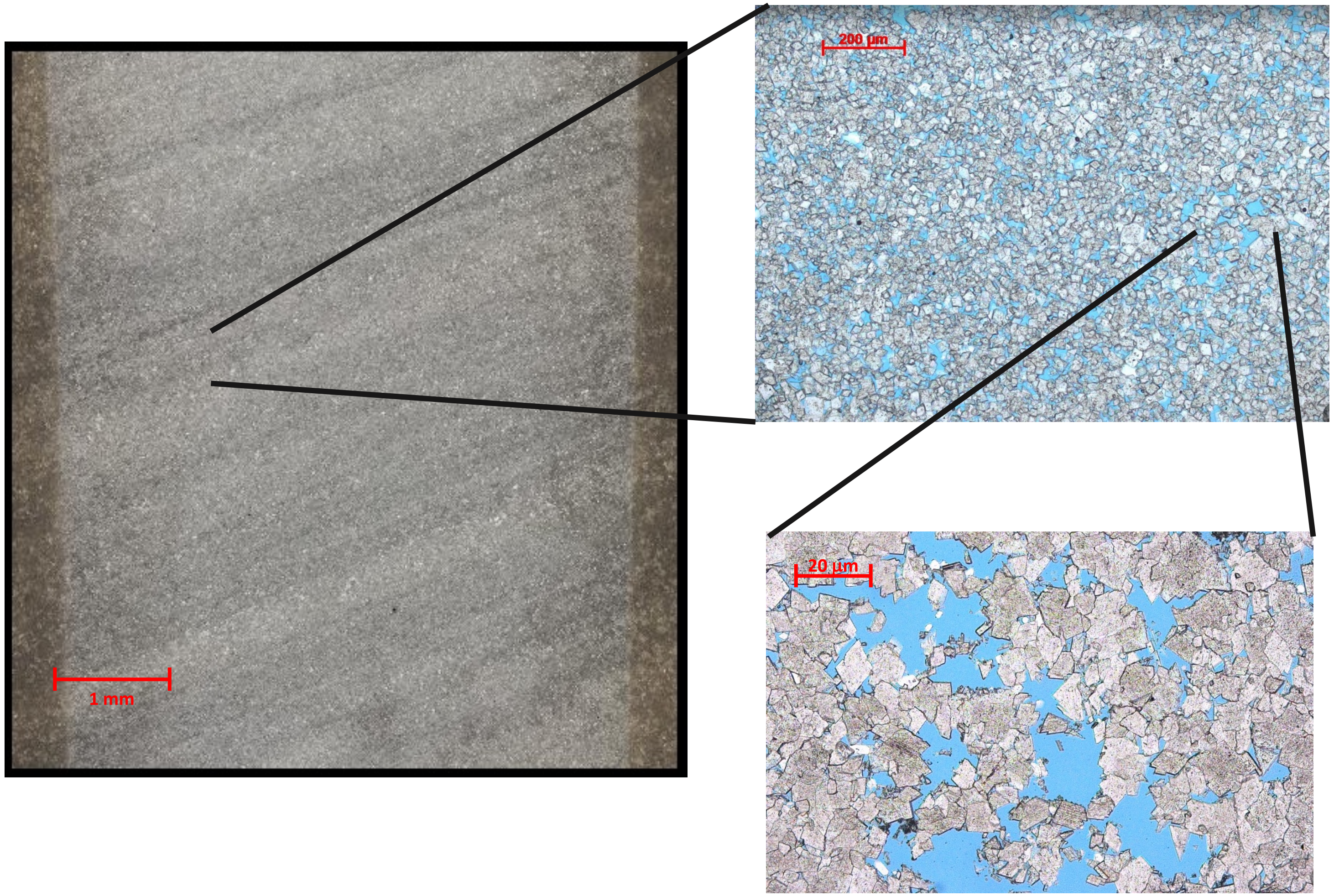
Well Log Interpretation

General Log Matrix

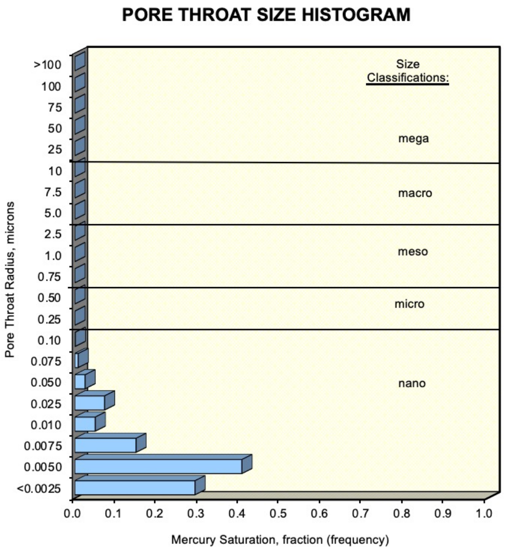
Lithology		GR	Density	Neutron	Acoustic	Resistivity	PE
Sandstone		Low (Unless RA min)	2.65	-4	53	High	1.81
Limestone		Low	2.71	0	47.5	High	5.08
Shale		High	2.2-2.7 (water content)	High (water content)	50-150 (water content)	low (water content)	1-5
Dolomite		Low (higher if U)	2.87	+4	43	High	3.14
Anhydrite		V.Low	2.98	-1	50	V.High	5.06
Salt		Low (Unless K salt)	2.03 (1.87)	-3 (-2)	67 (74)	V.High	4.65
Water		0	1-1.1 (salt & temp)	100	180-190	0 - infinite (salt & temp)	0.36 (+salt)
Oil		0	0.6-1.0 (api)	70-100 (H2 index)	210-240 (api)	V.High	Low
Gas		0	0.2-0.5 (pressure)	10-50 (H2 index)	~1000	V.High	Low

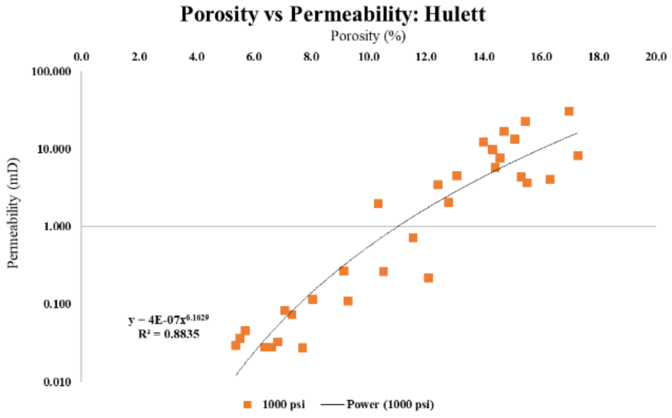
Well log cheat sheet courtesy of the World Wide Web

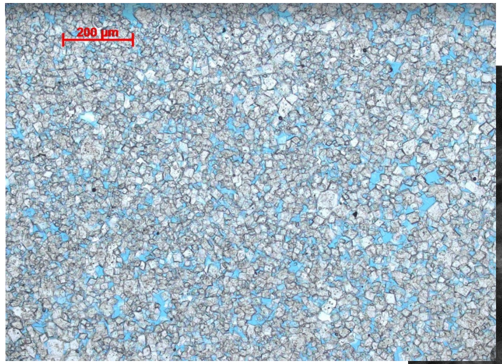
Core

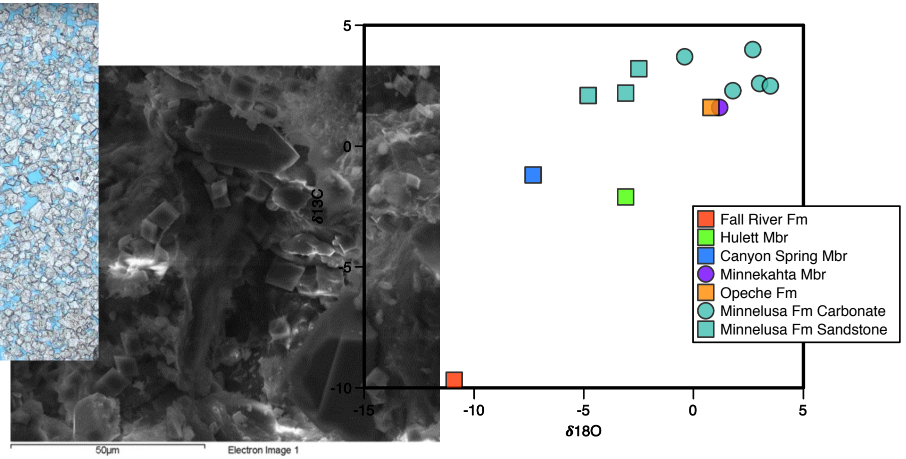


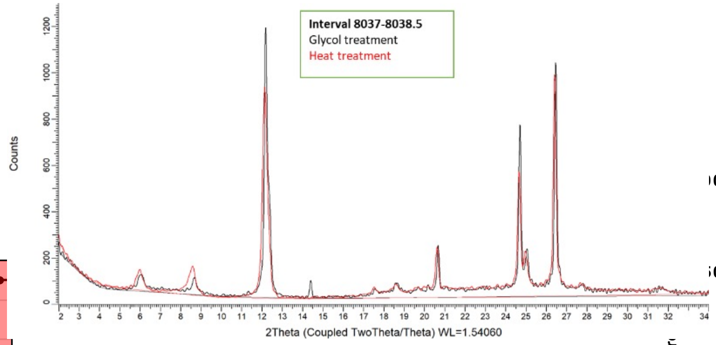
Core Analyses – A Wealth of Data

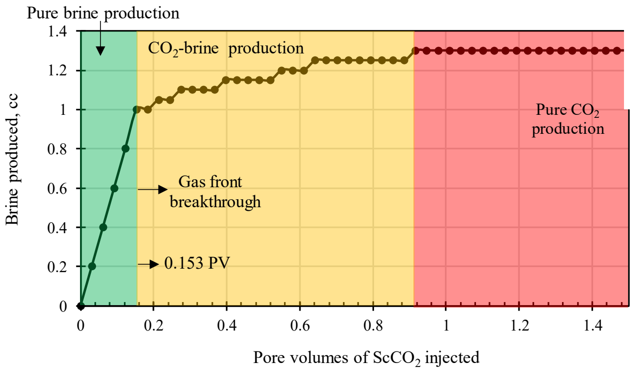


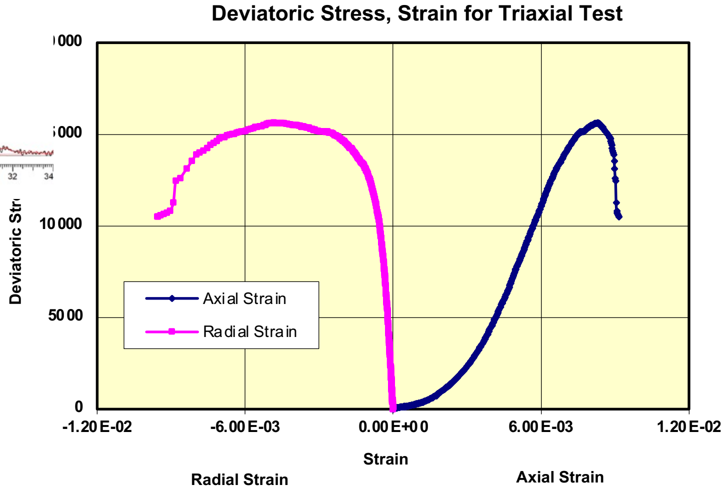


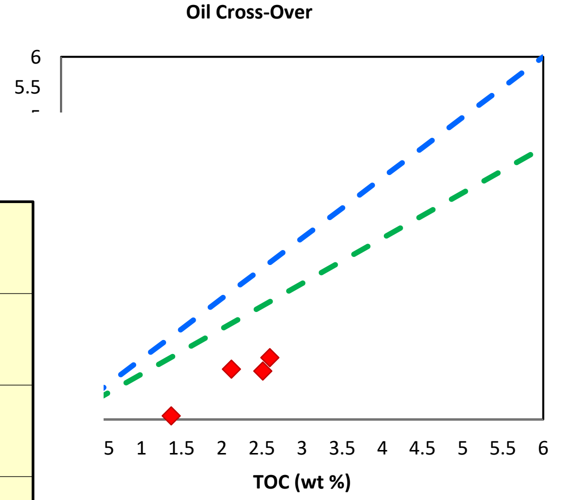






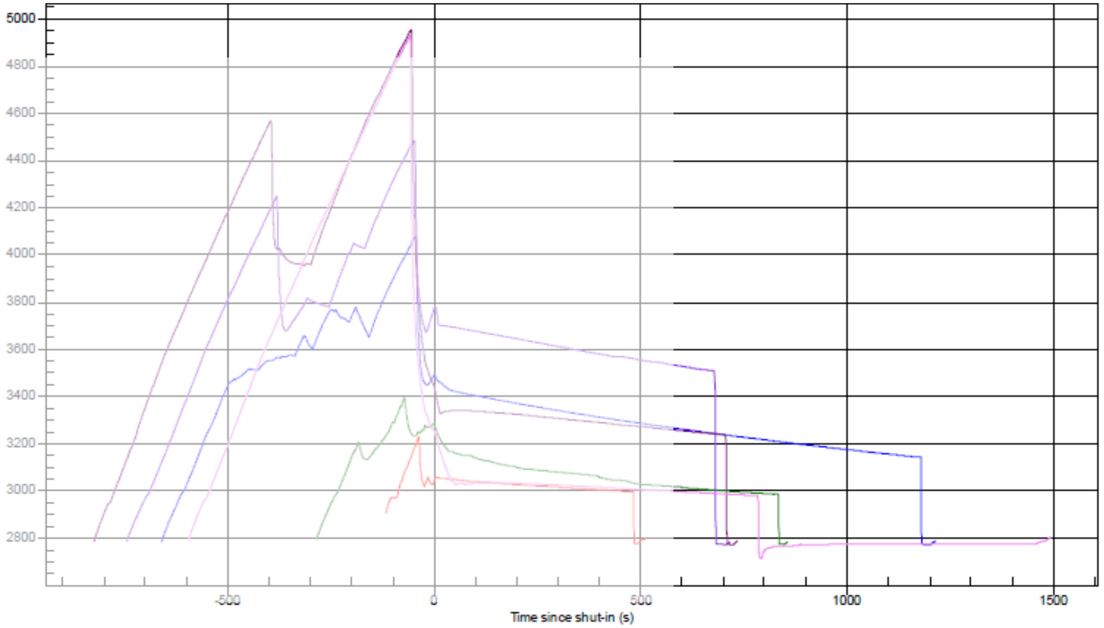






Additional Subsurface Data

Formation fluids: critical for permitting Class VI wells, modeling



In-situ well tests: field proof of reservoir response, fracture gradient, pressure propagation

Fast facts

We develop, manufacture, and deploy modular direct air capture machines that remove excess carbon dioxide from the air.

- Based in Los Angeles, CA
- Venture-backed ($43m to date)
- Flexible and upgradeable technology
- Focused on U.S. projects
- Recently announced the world's largest atmospheric carbon removal project in Wyoming

Our commitment to Wyoming is built on the following pillars:

Transparency
To have open, clear, and prompt communications with the community

Dependability
To be a valued partner and employer to the community for decades to come

Preservation
To ensure preservation of Wyoming's wildlife and natural beauty

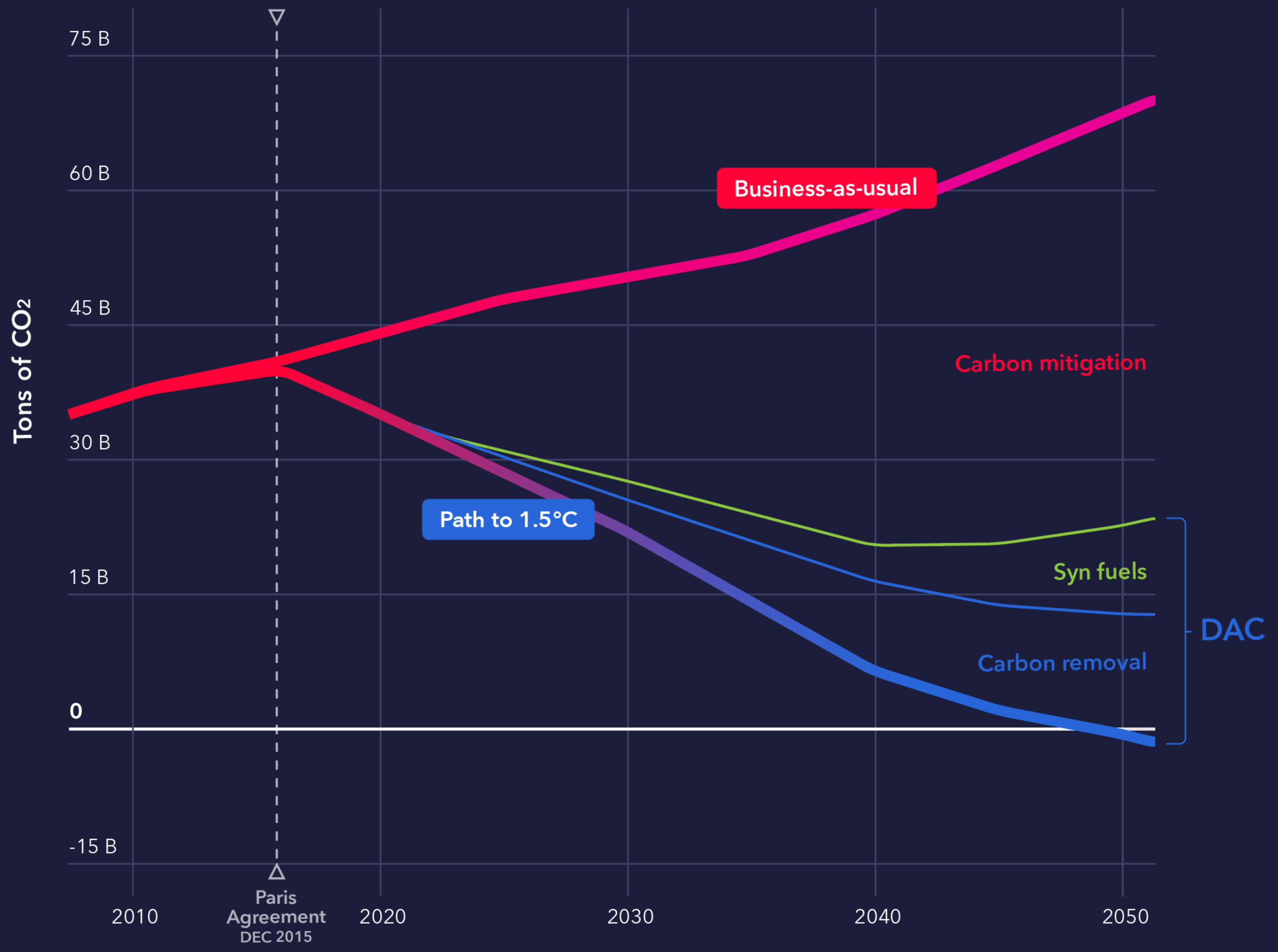
Opportunity

To reach net zero by 2050, a new carbon removal industry must emerge to remove 10 billion tons of excess atmospheric CO_2 annually.

Wyoming has an opportunity to be a leader in a massive new industry.

Meeting the < 1.5°C Paris Agreement goal

Greenhouse gas emissions



Sources: IPCC, Mercator, Center on Global Energy Policy at Columbia University, internal estimates

Why Wyoming?

- Excellent geology for permanently and safely storing large volumes of carbon dioxide
- Energy industry jobs skills are similar to what the carbon removal industry needs
- Note that any CO_2 removed in Wyoming lowers levels around the world because the atmosphere mixes extremely quickly

CarbonCapture™

Project Bison

On September 8th we announced Project Bison, a five million ton/year atmospheric carbon removal project in Wyoming.

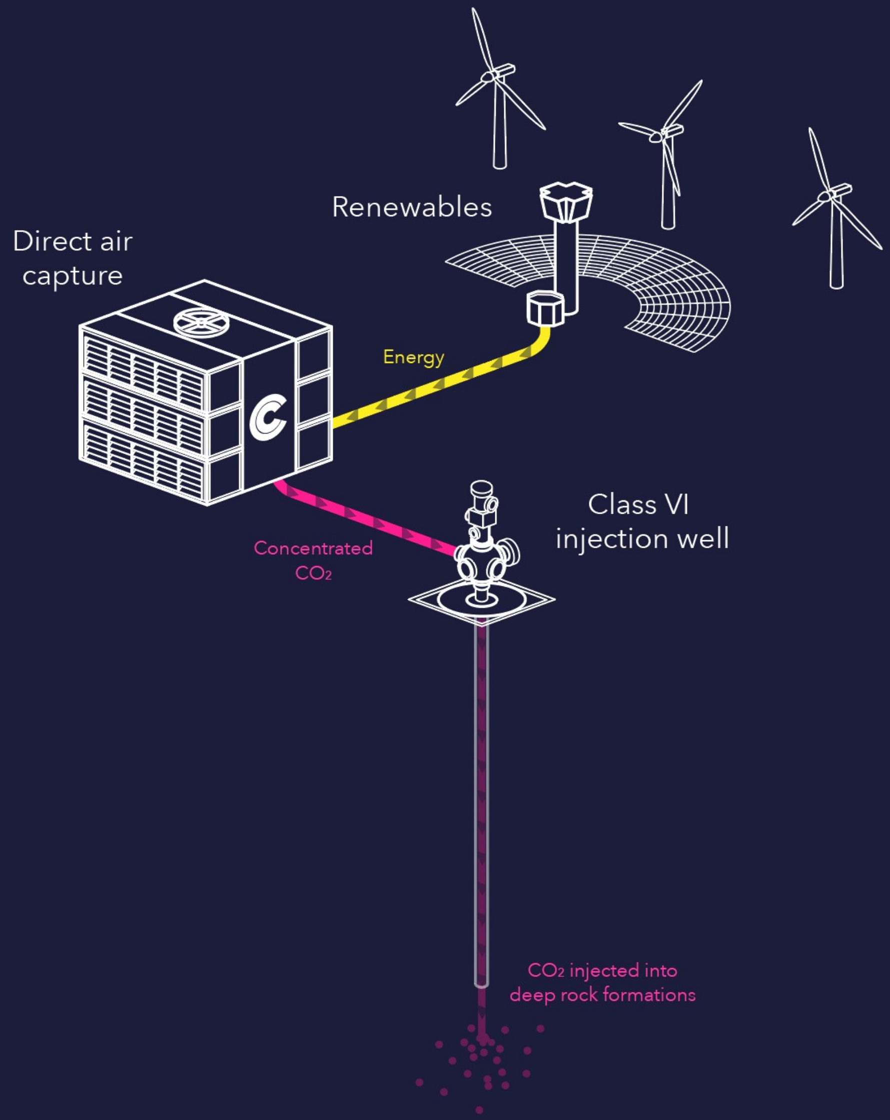
- Largest single DAC project in the world yet announced
- First DAC project to use Class VI wells for permanent CO_2 storage
- First massively scalable DAC deployment

Carbon removal credits

Project Bison begins in 2023.

- **Business:** selling DAC carbon removal credits AND collecting IRA 45Q subsidies
- **Clients:** net zero-focused organizations
- **Engineering:** Fluor Corporation
- **Location:** WY due to attractive geology and regulatory environment

How Project Bison generates carbon credits

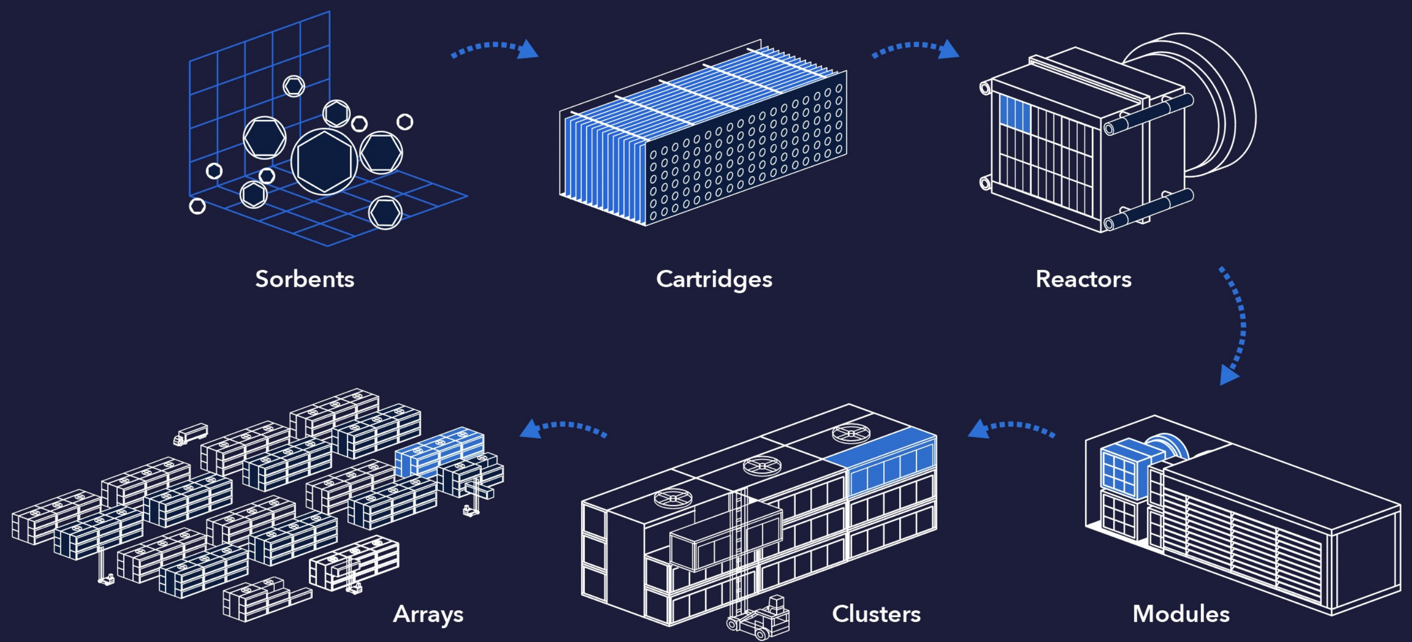


Technology

Our product strategy is based on a unique **modular open systems architecture**.

- **Modularity** lets us start small and grow over time
- **Open architecture** enables upgrades, which future-proofs our systems

A modular open system architecture for DAC



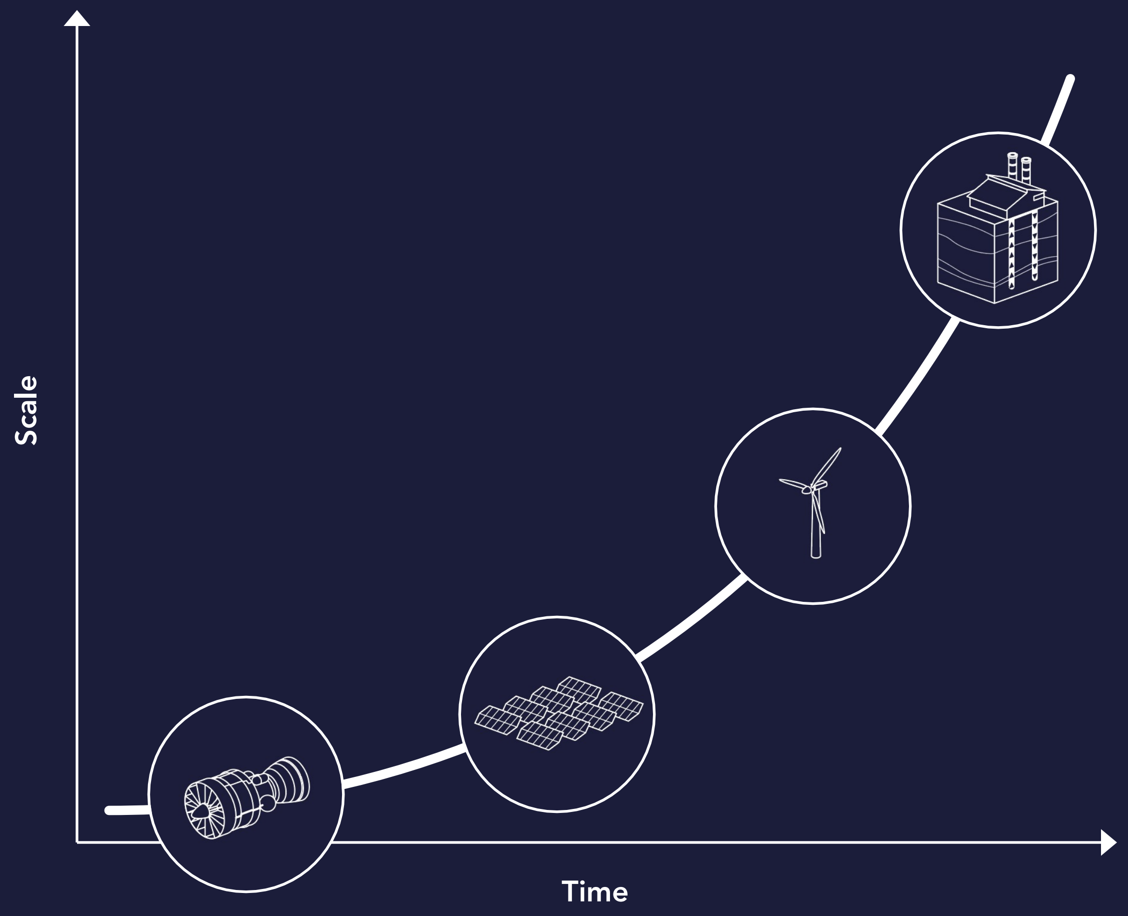
Energy

Our sources of energy will likely change over time. Key requirements:

- Zero emissions
- Adding energy capacity, not using existing sources

Energy usage

Time and scale

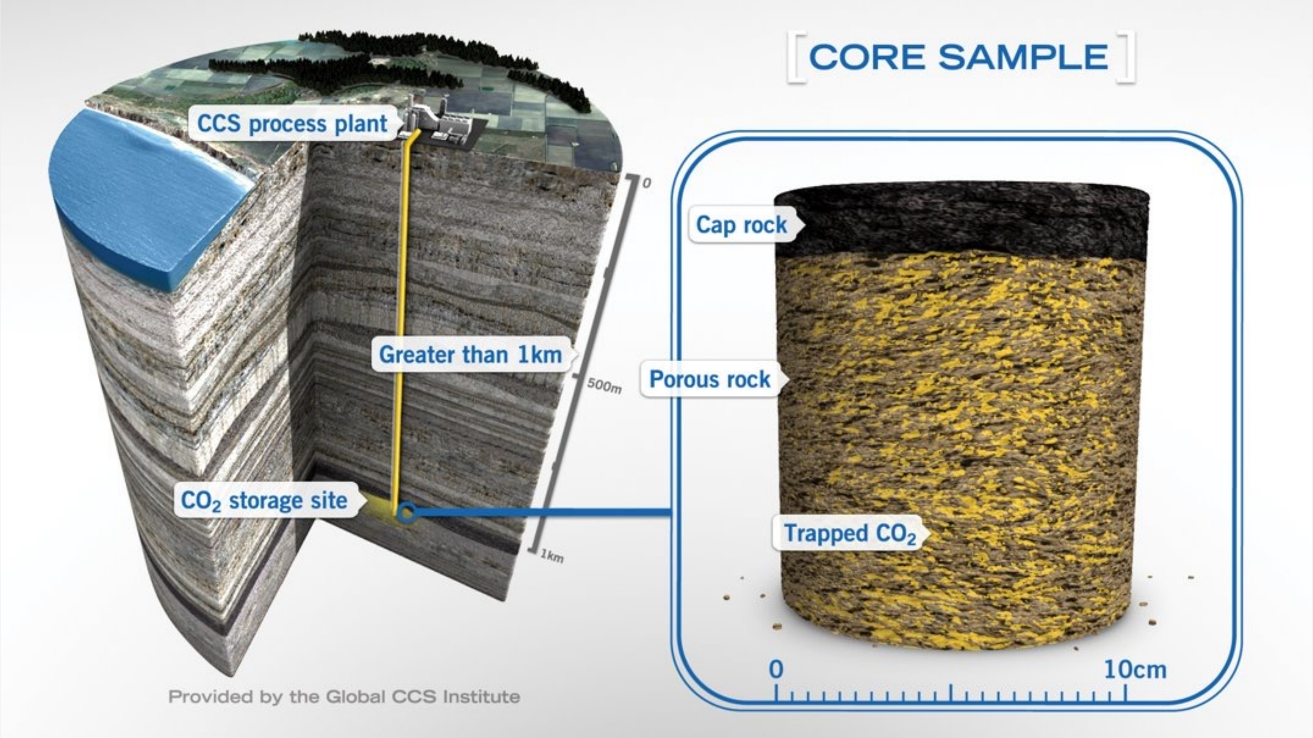


Secure geological sequestration

With geological sequestration, we can safely store CO_2 permanently for thousands of years.

To store CO_2 in the U.S. requires a Class VI permit that is expressly designed to ensure groundwater resources are not affected by CO2 storage.

Class VI permits also require the constant monitoring of the CO_2 to ensure it remains in the storage zone.



Job opportunities

For a 5-million-ton facility by 2030, we estimate:

- 200+ long-term operational jobs
- 100s of jobs for construction and installation
- Potential for manufacturing facility to be located in Wyoming

We will work with local educational institutions to provide training for these jobs.

Western Wyoming Community College

Other carbon removal projects

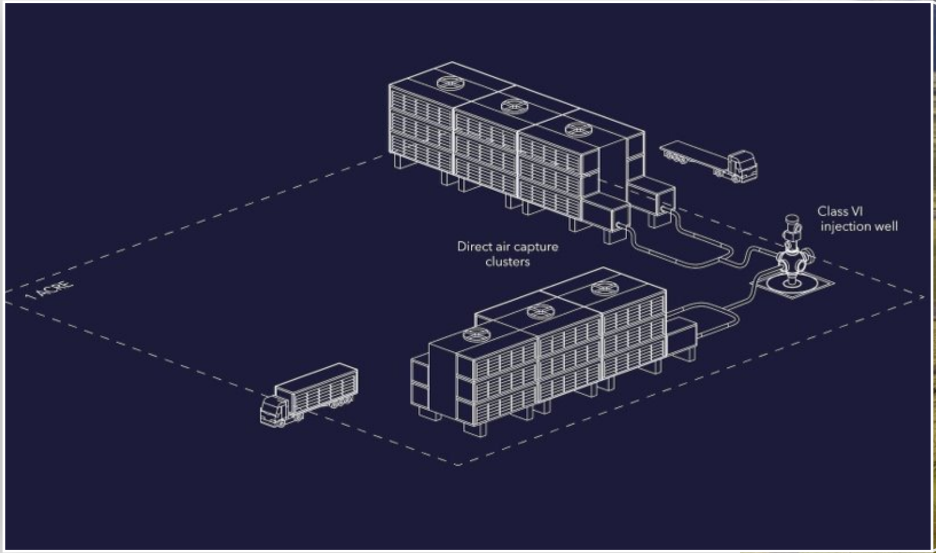
The largest current direct air capture plant is "Orca," operated by Climeworks (a Swiss company) in Iceland.

- Capacity of 4,000 tons/year
- New 36,000 tons/year facility being built

Project Bison

Phase I of Project Bison:

- Capacity of 10,000 tons/year
- Roughly the same size of Orca



CarbonCapture™

Project Bison
Phases

Project Bison starts small and ramps up over time, giving us ample time to adjust to community feedback as we grow.

	Land for DAC modules Sweetwater	**Land for energy** Flexible
Phase 1 (2023 – 2024) 10,000 t/year	1 acre	7 acre
Phase 2 (2025 – 2026) 200,000 t/year	4 acres	46 acres
Phase 3 (2027 – 2028) 1,000,000 t/year	20 acres	200 acres
Phase 4 (2029 – 2030) 5,000,000 t/year	100 acres	1000 acres

BUILDING SAFE, PERMANENT CARBON STORAGE
FOR TOMORROW'S WORLD

FRONTIER
CARBON SOLUTIONS

Frontier Carbon Solutions

Who We Are

Carbon Storage Development

Full team of engineers, developers, and project managers dedicated to CO2 storage development

Dedicated Carbon Market Prescence

Proprietary network of partners to accelerate tax equity and carbon market financing

Supported by Institutional Capital

Fully backed by Tailwater Capital, a $4.5B AUM infrastructure fund focused on transitional and infrastructure investments

The Green River Basin

A Premier Carbon Storage Hub

Plentiful Natural Resources

Natural Gas, Oil, Helium, Trona, Lithium, Uranium

Critical Industrial Corridor

Power, Natural Gas Processing, Hydrogen, Emerging Nuclear

Immense Carbon Storage

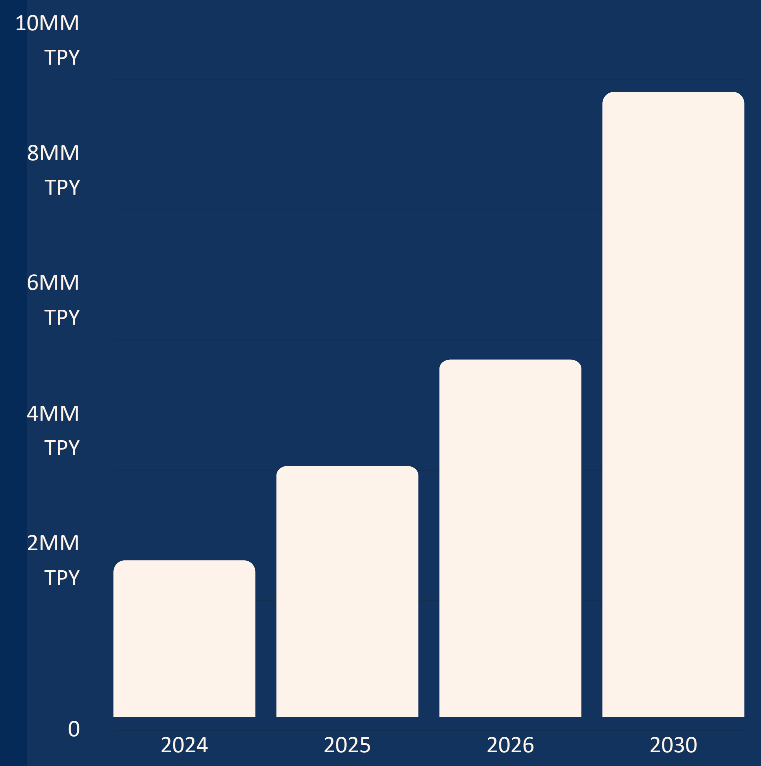
World-class geology for CO2 sequestration

Sweetwater Carbon Storage Hub

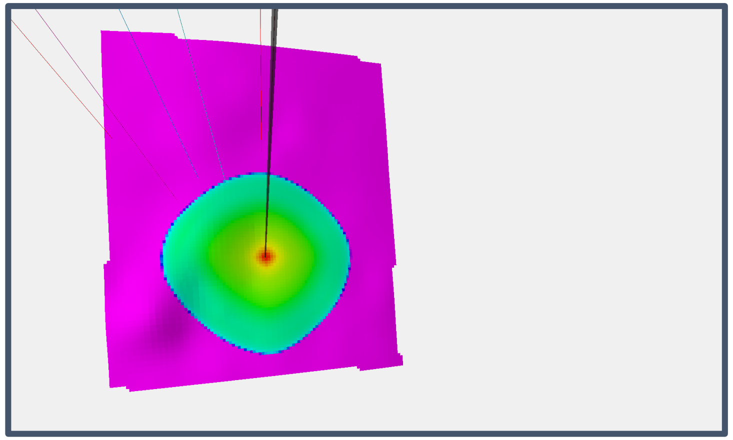
Mission Critical Infrastructure for WY Decarbonization

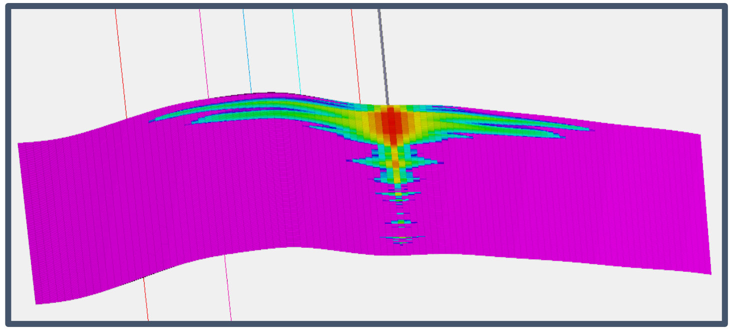
Frontier Carbon Solutions is developing the Sweetwater Carbon Storage Hub in Southwest Wyoming. This facility can provide permanent CO2 storage for some of Wyoming's most critical industries.

At scale, we can remove up to 10 million tons of CO2 annually, representing 17% of Wyoming's total emissions.



Does the CO2 stay where we put it?
YES





Two Key Trapping Mechanisms for CO2

- **Physical**

  Physical trapping is a function of stratigraphy & structure in the target reservoir

- **GeoChemical**

  Geochemical trapping turns injected carbon dioxide into fully mineralized rock over time

Frontier Carbon Solutions

Key Development Milestones

- Developed & submitted 3 Class VI permits to the Wyoming DEQ with 2 additional permits planned for next month
- Launched FEED engineering with Shell Cansolv to develop innovative and leverageable carbon capture solutions for industrial emitters
- Lead storage developer for Project Bison, the first Direct Air Capture – to – Carbon Storage partnership in North America with Carbon Capture Inc

Project Partners

OUR FOCUS

Ensure Community Engagement
Secure Legislative and
Stakeholder Support

Permitting
Development
Environmental Stewardship

Create Permanent CO^2 Storage
To Permanently Decrease Emissions
in Wyoming by +10MM TPY

THANKS
FOR YOUR
SUPPORT

www.frontierccus.com
info@frontierccus.com

For the full event Q&A or more project information,
go to: **carboncapture.com/project-bison-wy**

CarbonCapture™

Sweetwater town hall
October 2022