

ADM CCS Projects

UIC Class VI Permitting Experience



Carbon Storage R&D Review Meeting

August 18, 2015

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Acknowledgements



- **The Industrial Carbon Capture and Storage (ICCS) project is administered by the U.S. Department of Energy's Office of Fossil Energy and managed by the National Energy Technology Laboratory (award number DE-FE-0001547) and by a cost share agreement with the Archer Daniels Midland Company, University of Illinois through the Illinois State Geological Survey, Schlumberger Carbon Services, and Richland Community College. This ICCS project received DOE funding from the American Recovery and Reinvestment Act of 2009 (\$141.4 million).**
- **The Midwest Geological Sequestration Consortium is funded by the U.S. Department of Energy through the National Energy Technology Laboratory via the Regional Carbon Sequestration Partnership Program (contract number DE-FC26-05NT42588) and by a cost share agreement with the Illinois Department of Commerce and Economic Opportunity, Office of Coal Development through the Illinois Clean Coal Institute.**
- **The Midwest Geological Sequestration Consortium (MGSC) is a collaboration led by the geological surveys of Illinois, Indiana, and Kentucky**



ADM - Decatur CCS Projects

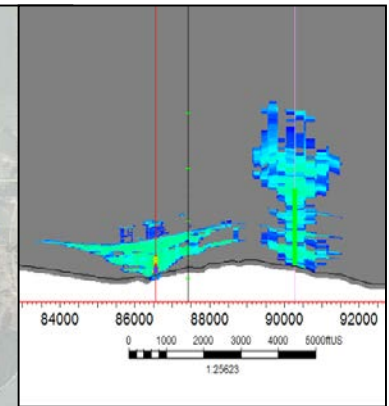
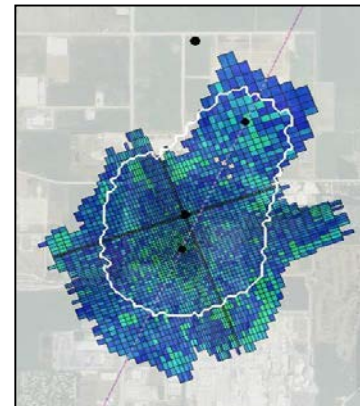
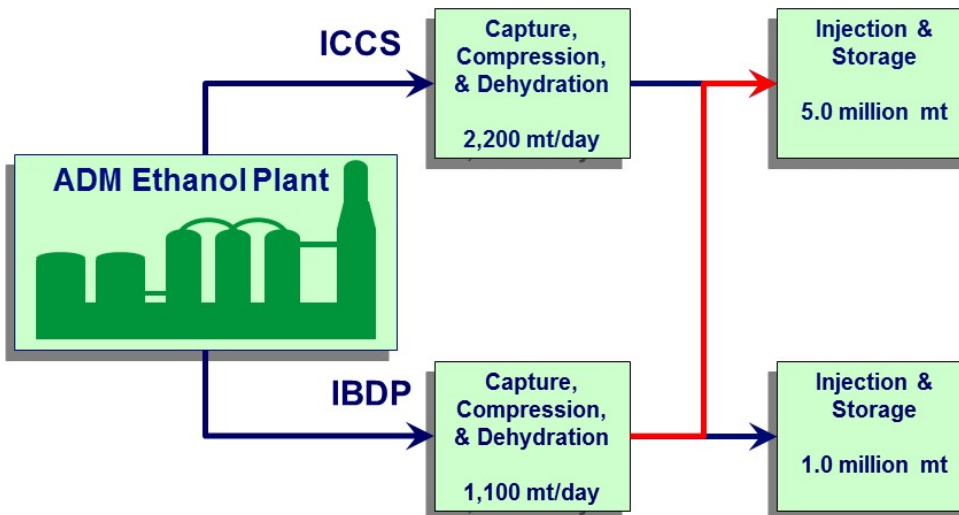
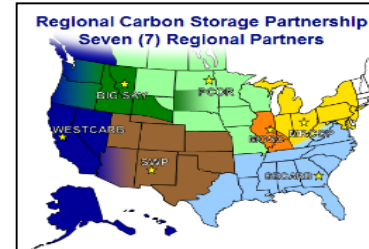


Illinois Basin Decatur Project

- Large scale geologic test to inject 1.0 million mt of CO₂ over a three year period (1,000 MT/day).

Illinois Industrial CCS Project

- Target & demonstrate advanced CCS technologies at industrial scale facilities.
- Inject and store 1.0 million mt CO₂ per year (3,000 tons/day).
- Study the interaction of two separate plumes.



Decatur Site Overview



Richland CC

NSEC

VW#2

GM#2

CCS#2

VW#1

CCS#1

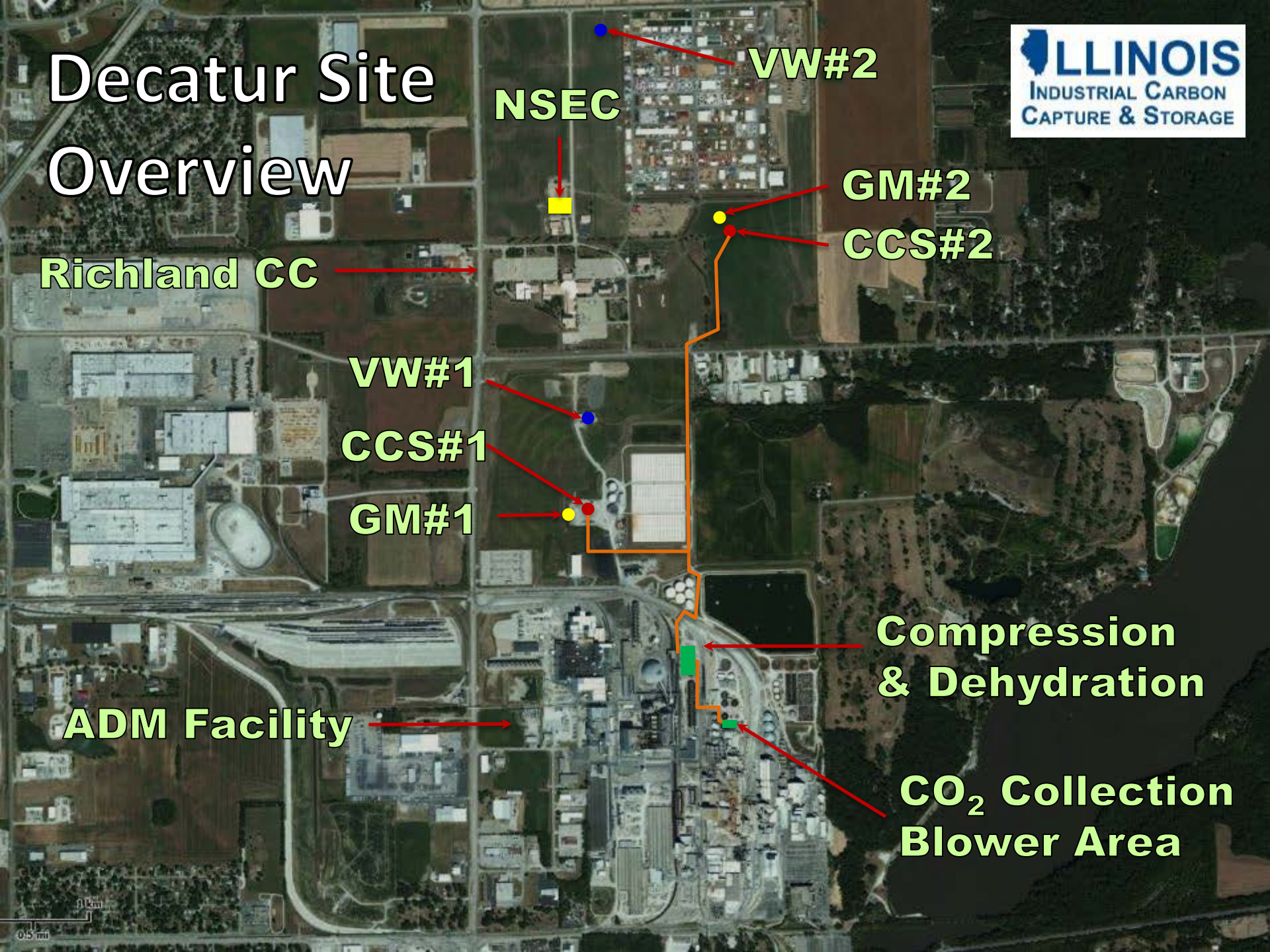
GM#1

ADM Facility

**Compression
& Dehydration**

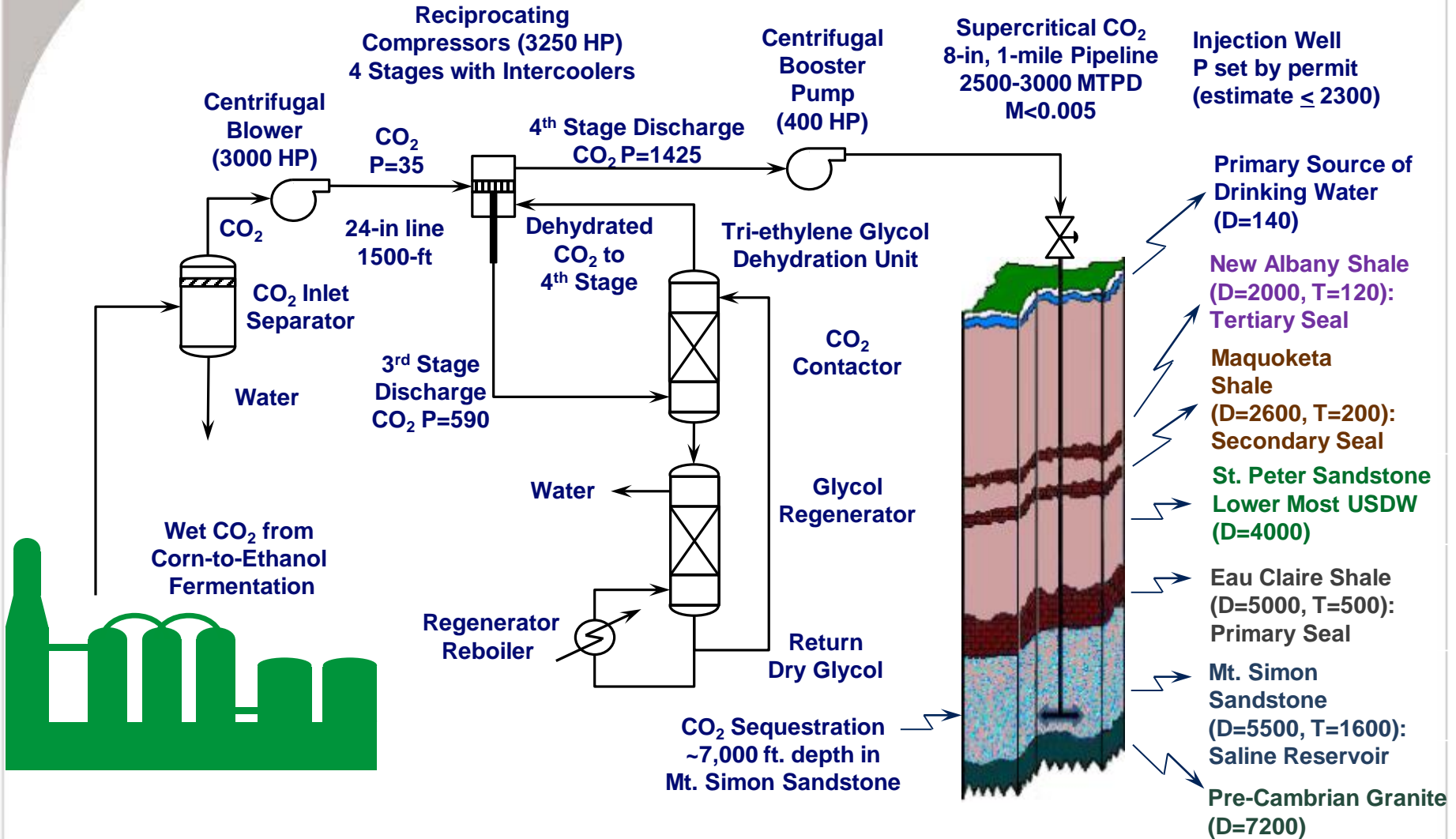
**CO₂ Collection
Blower Area**

0.15 mi





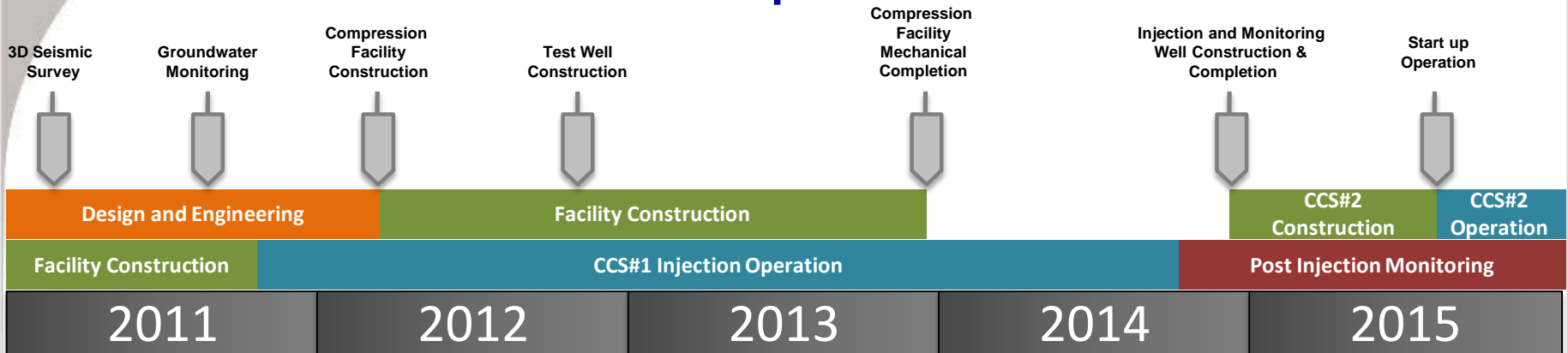
Project Process Flow Diagram



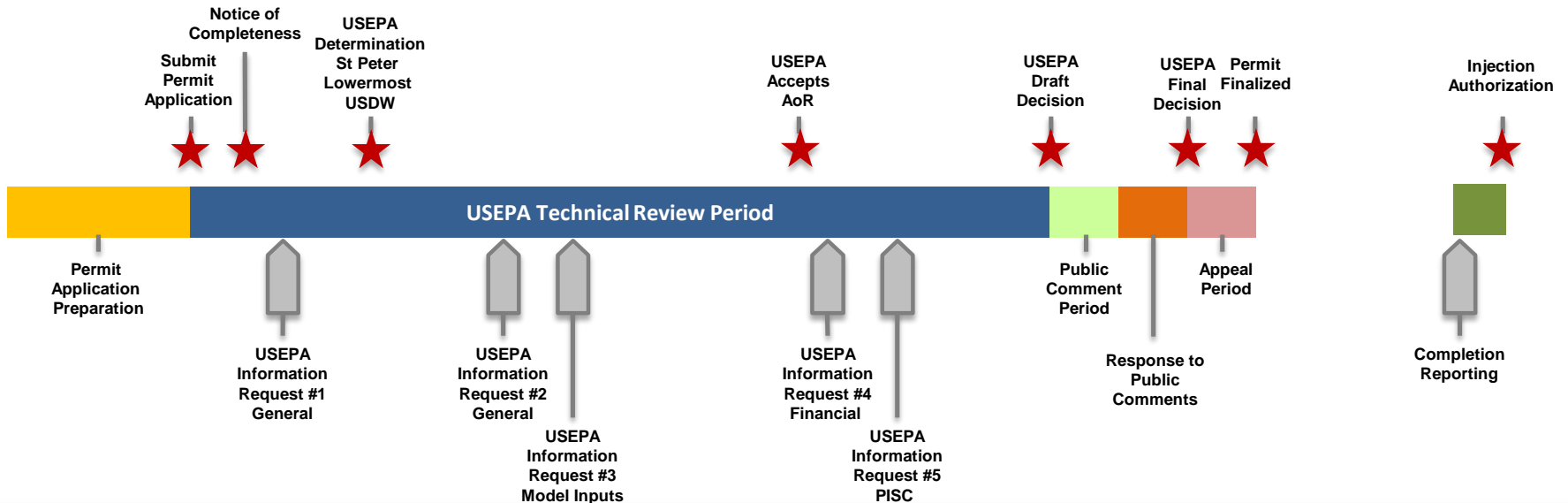


ICCS & IBDP Project Timelines

ICCS & IBDP Construction and Operations Timeline



ICCS Permitting Timeline





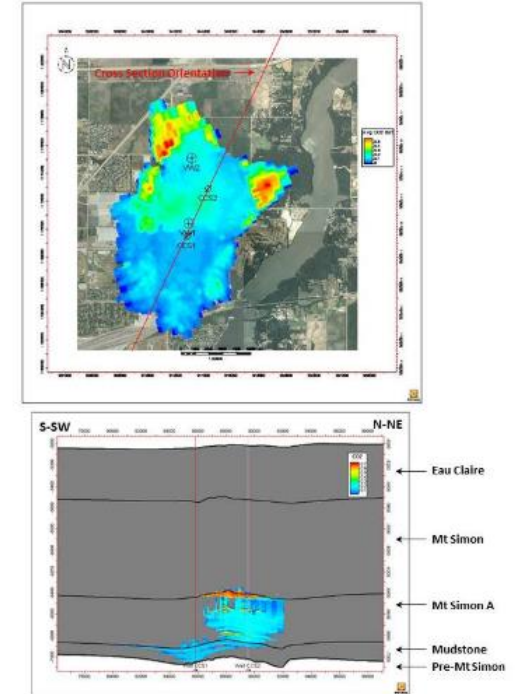
Main Challenges

Alternative PISC Timeframe

- Default PISC is 50 Years
- Applicant allowed to petition for an alternative timeframe
- ADM Proposed 10 Year PISC
 - Reservoir Pressure Decline
 - Plume Stabilization
 - CO₂ Partitioning



Extent of Plume & Saturation Cross Section
January 1, 2070 [$\text{SCO}_2 \geq 1.0\%$]



Operation

50 Year Post Injection Monitoring

2015

2020

2070



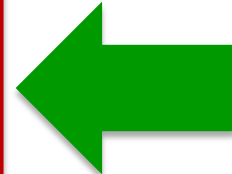
Main Challenges

Alternative PISC Timeframe

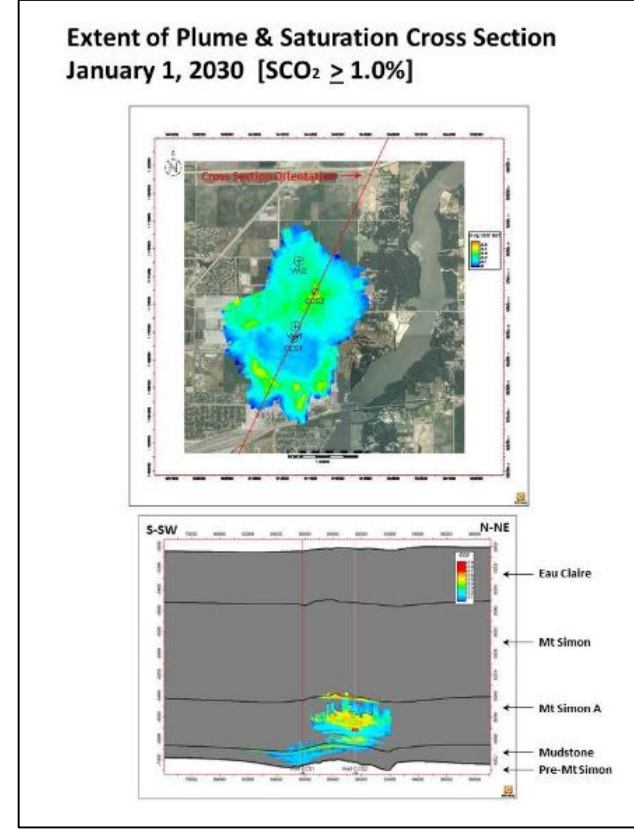


- Default PISC is 50 Years
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- ADM Proposed 10 Year PISC

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- Plume Stabilization
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2015 2020 2030



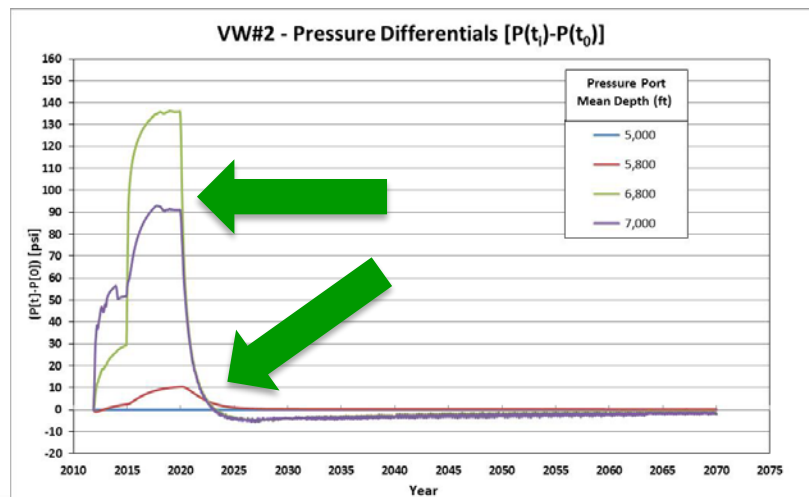
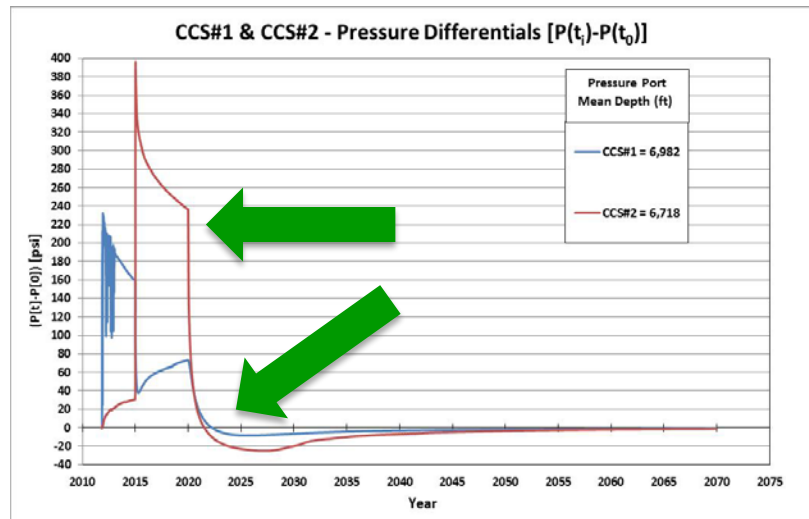


Alternative PISC Timeframe

Reservoir Pressure Decline



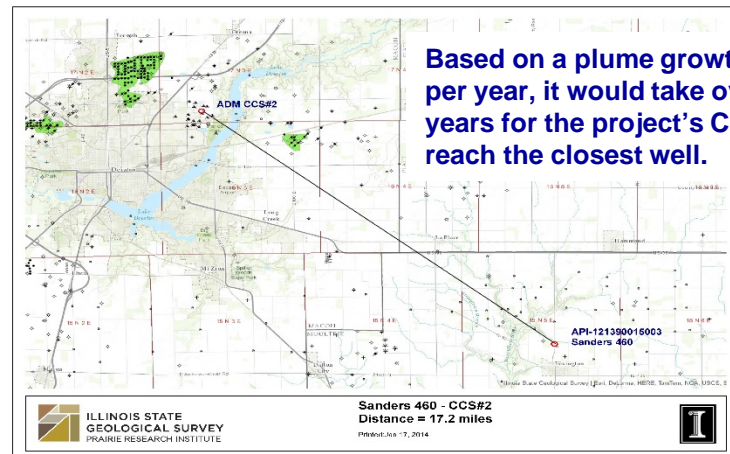
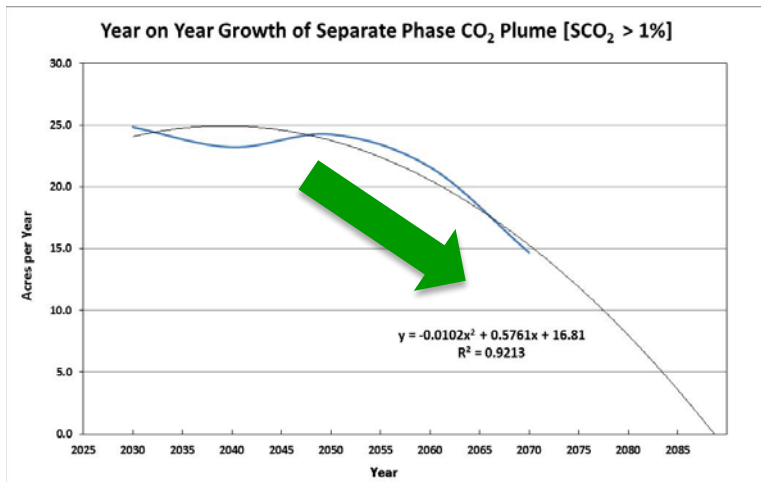
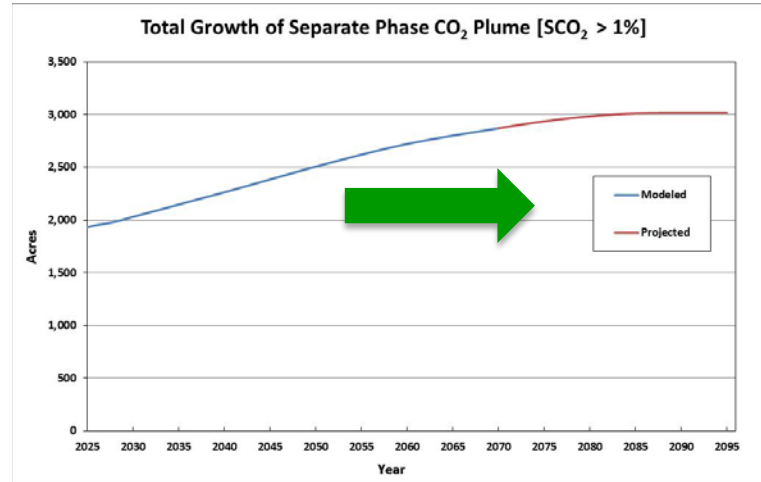
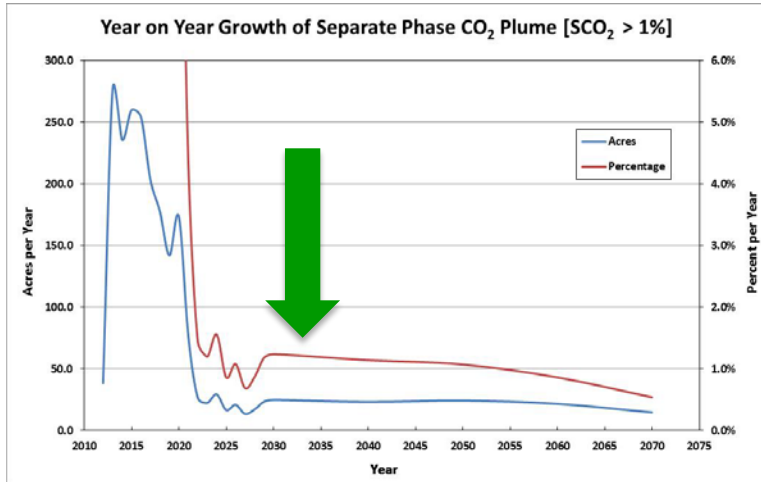
Aggregate differential pressure contours at the end of the operational period.





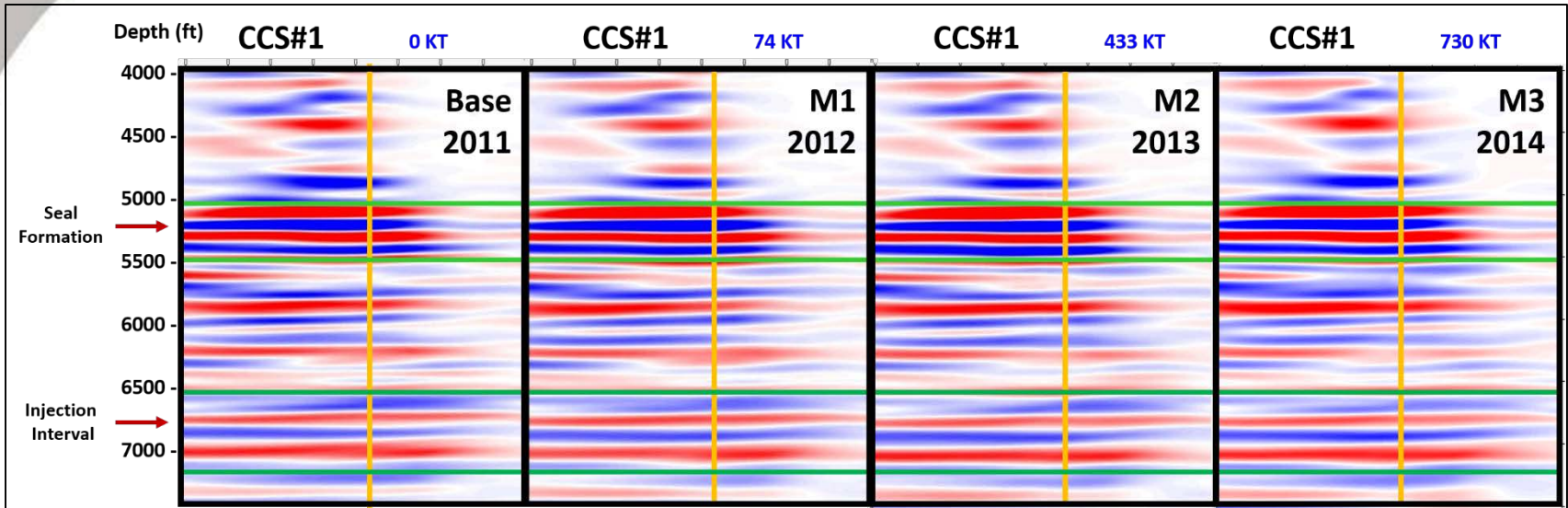
Alternative PISC Timeframe

CO₂ Plume Stabilization

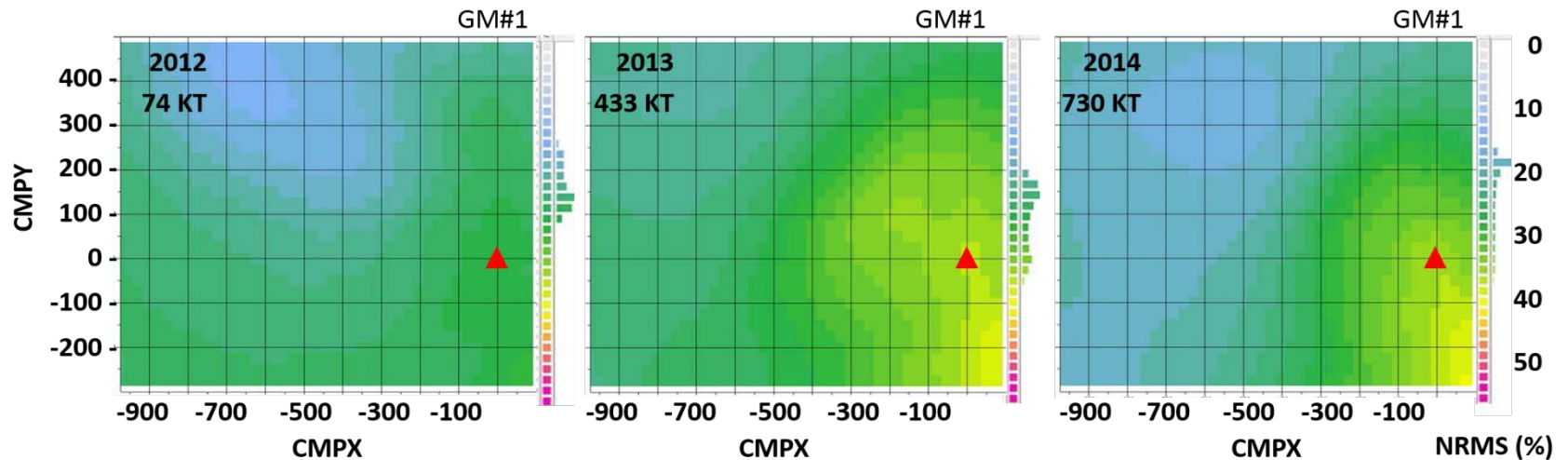




Time Lapse VSP Surveys

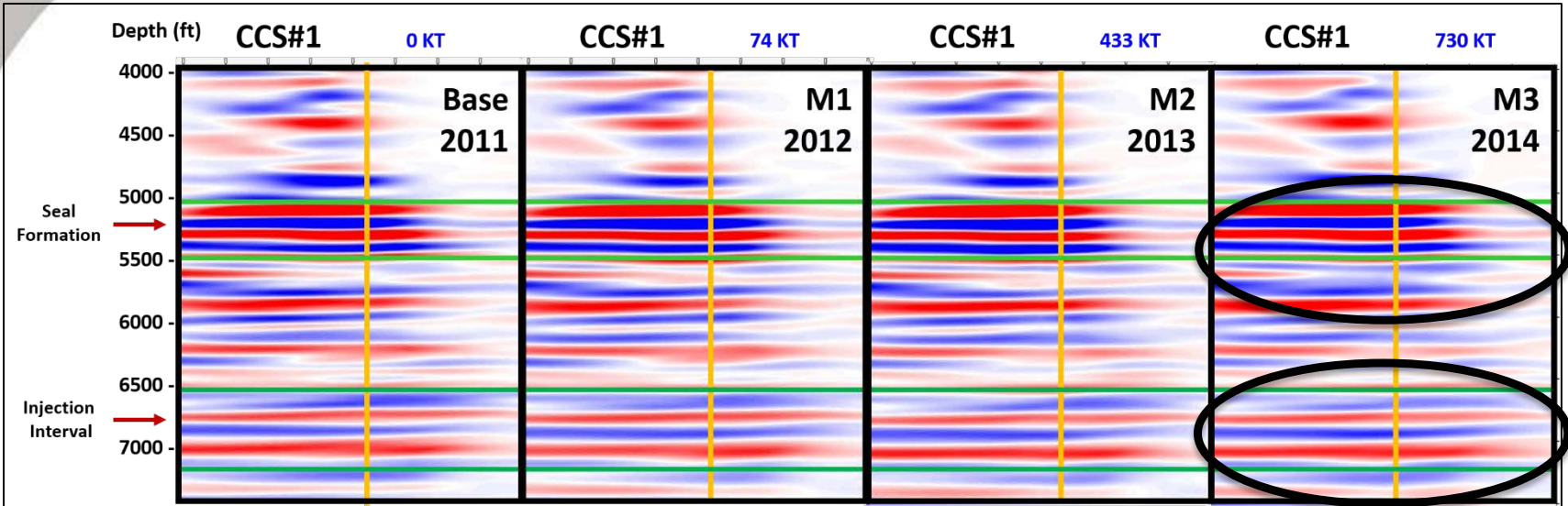


NRMS Maps: M1 Mid-to Lower Mt. Simon Sandstone (6500 –7200 ft)

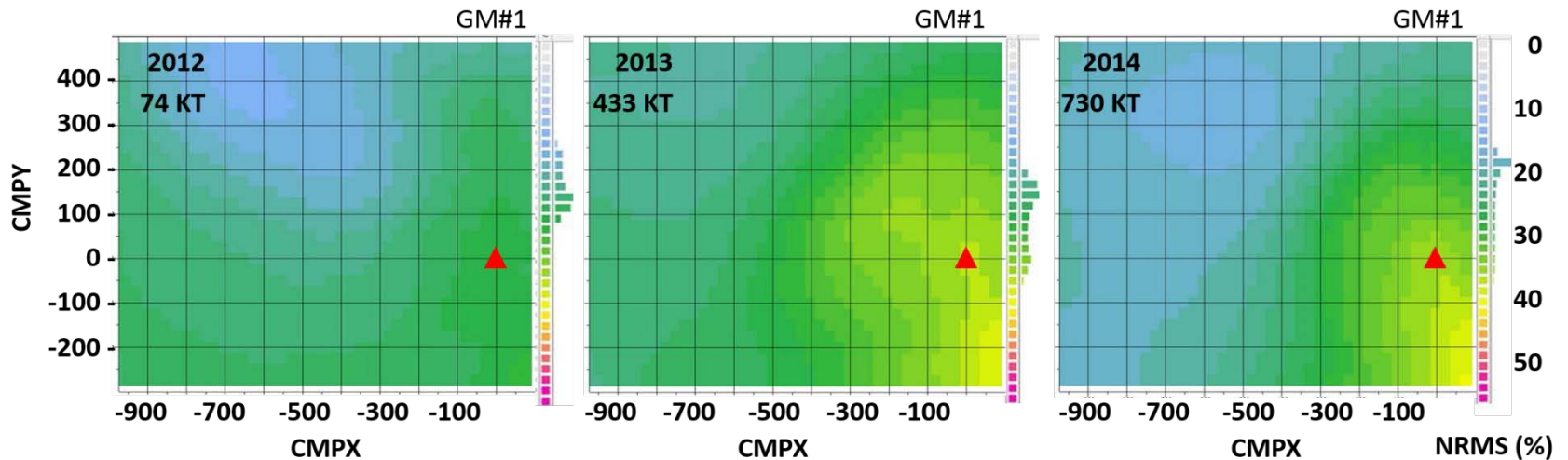




Time Lapse VSP Surveys

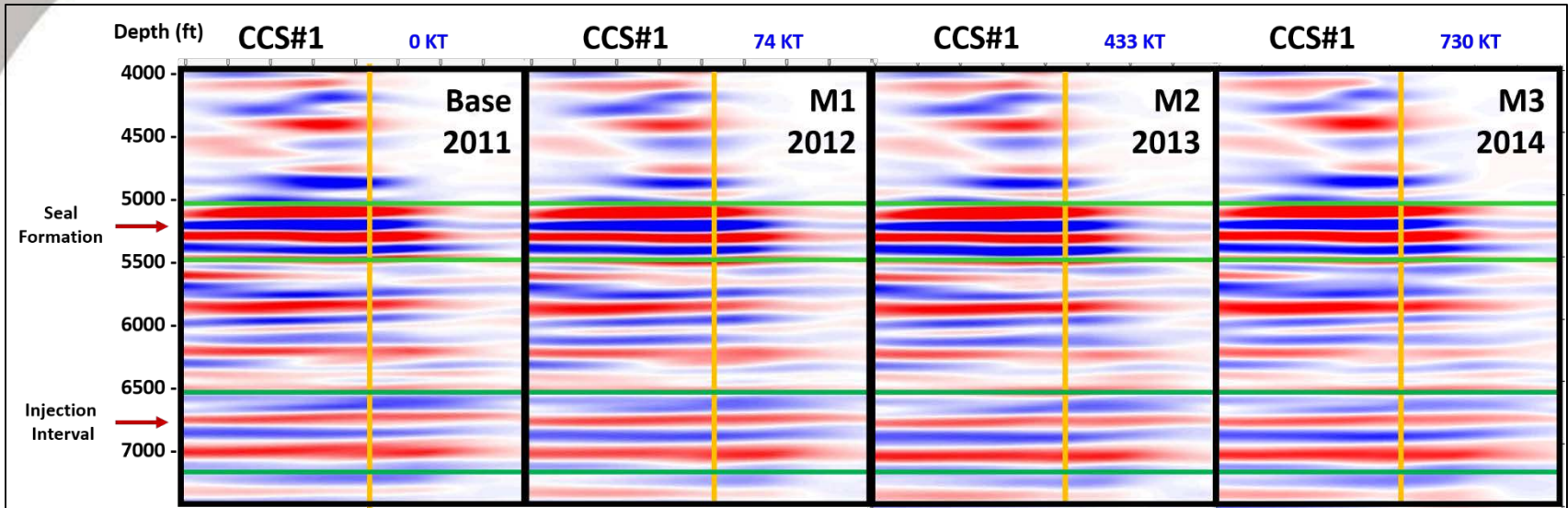


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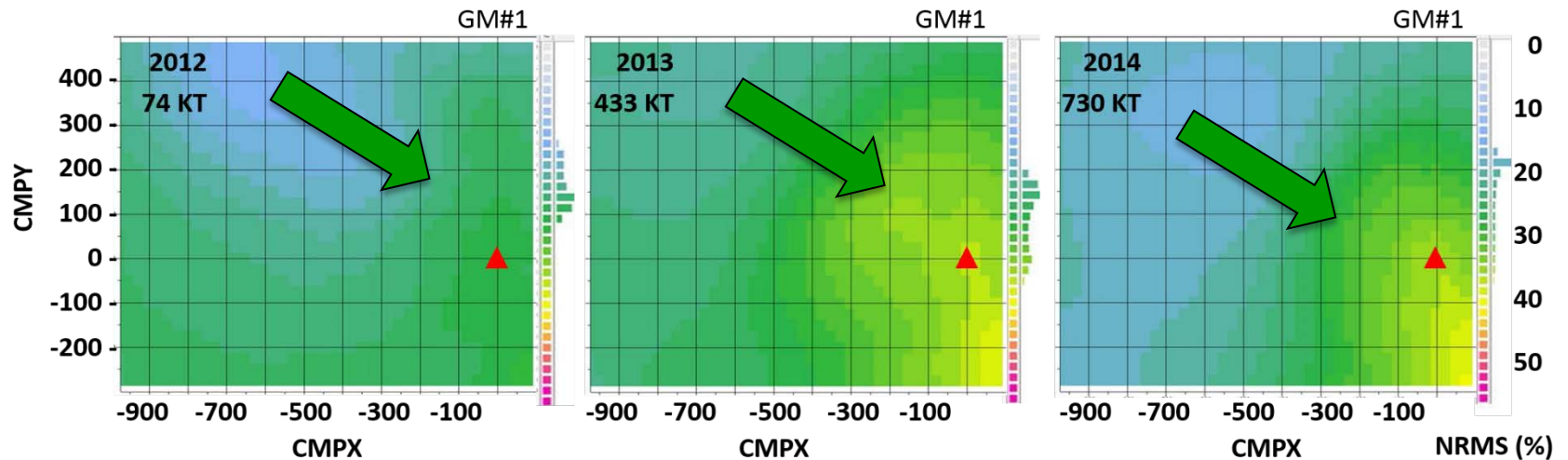




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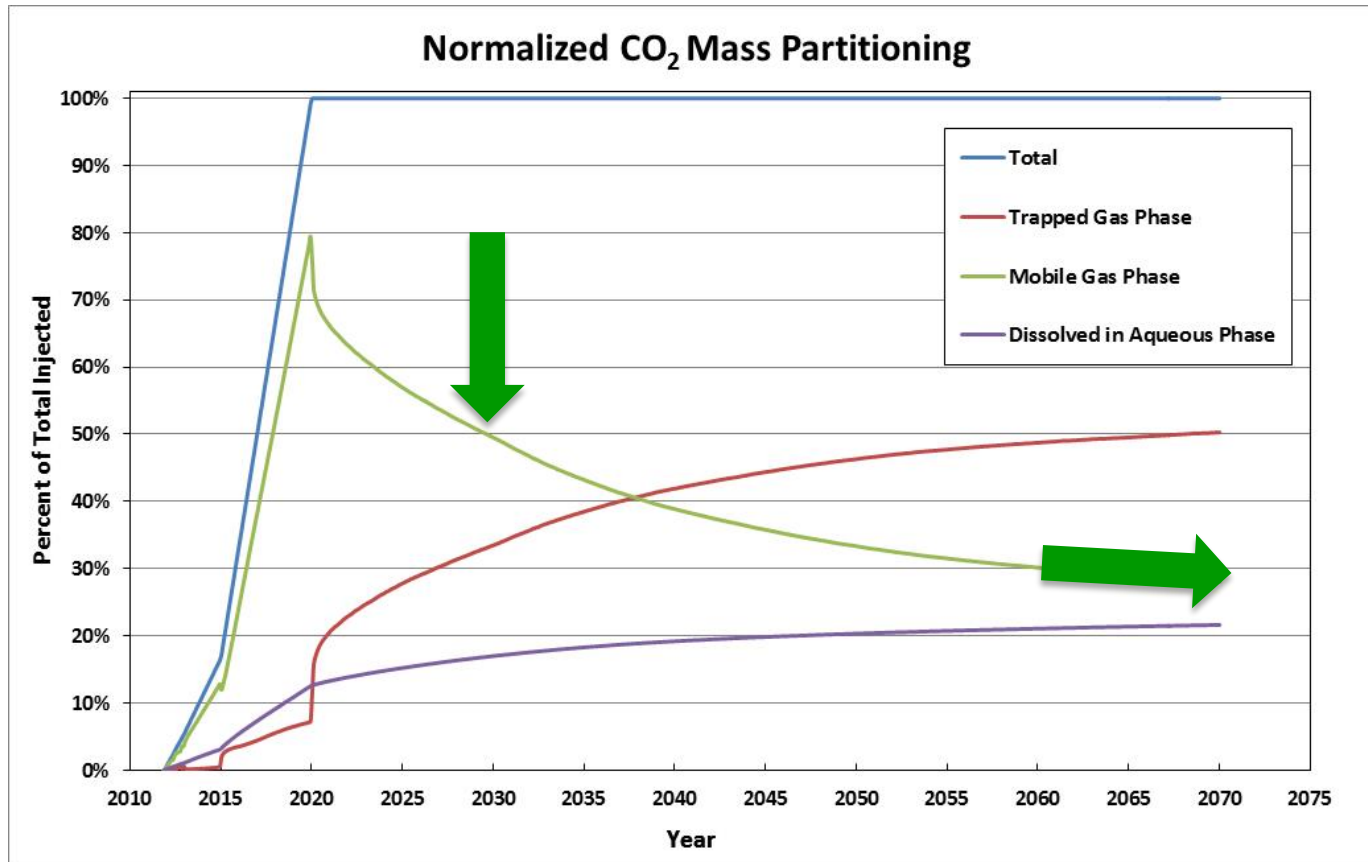
NRMS Maps: M1 Mid-to Lower Mt. Simon Sandstone (6500 –7200 ft)





Alternative PISC Timeframe

CO₂ Mass Partitioning



Over 50% of the CO₂ is trapped within the reservoir after 10 years.



Thank You!



Industrial Carbon Capture and Storage Project:

- U.S. Department of Energy Award No. DE-FE-0001547
- Administered by the DOE's Office of Fossil Energy
- Managed by the National Energy Technology Laboratory
- DOE cost share from American Recovery and Reinvestment Act of 2009

Cost Share Agreements:

- Archer Daniels Midland Company
- University of Illinois through the Illinois State Geological Survey
- Schlumberger Carbon Services
- Richland Community College

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