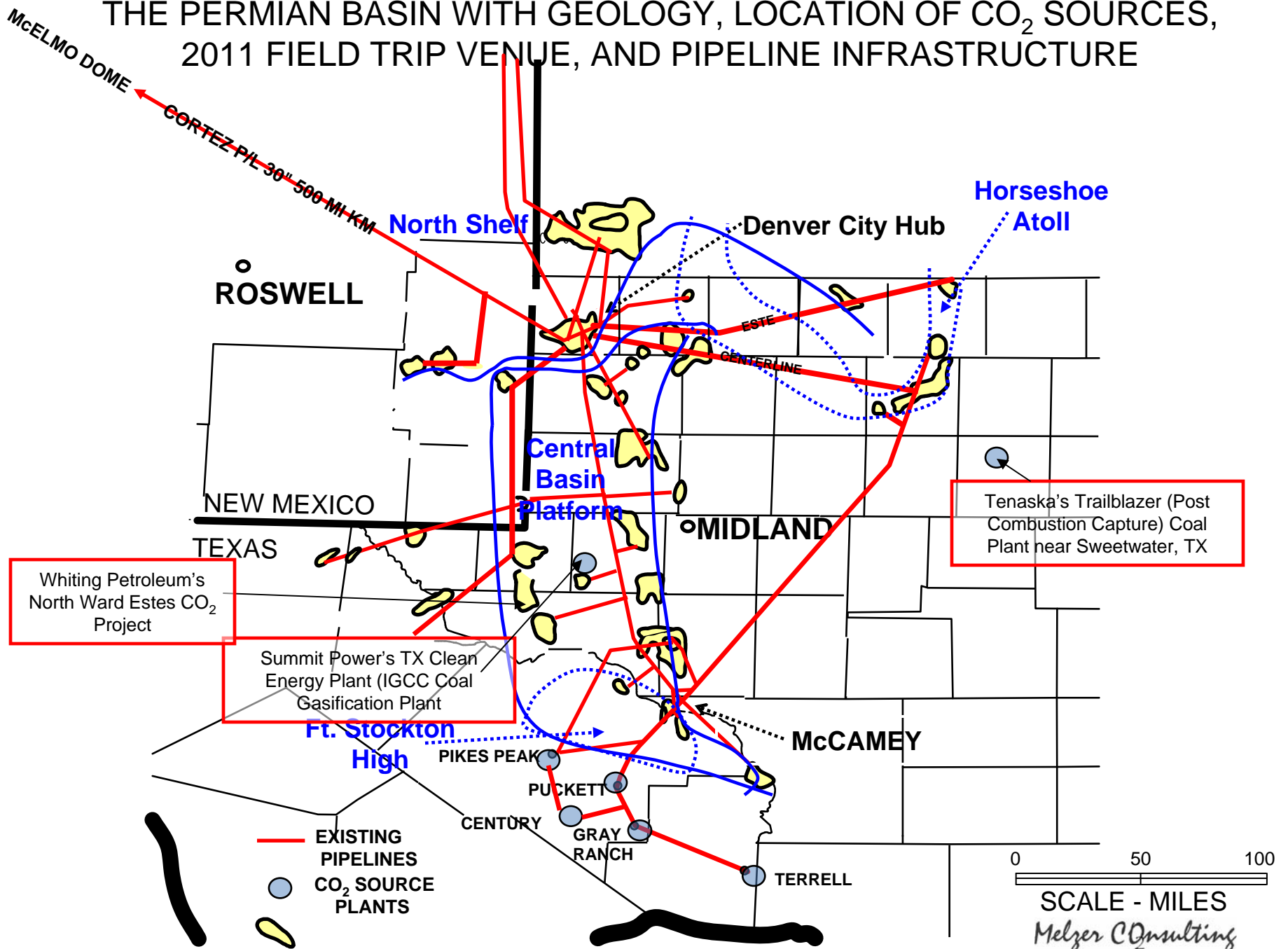


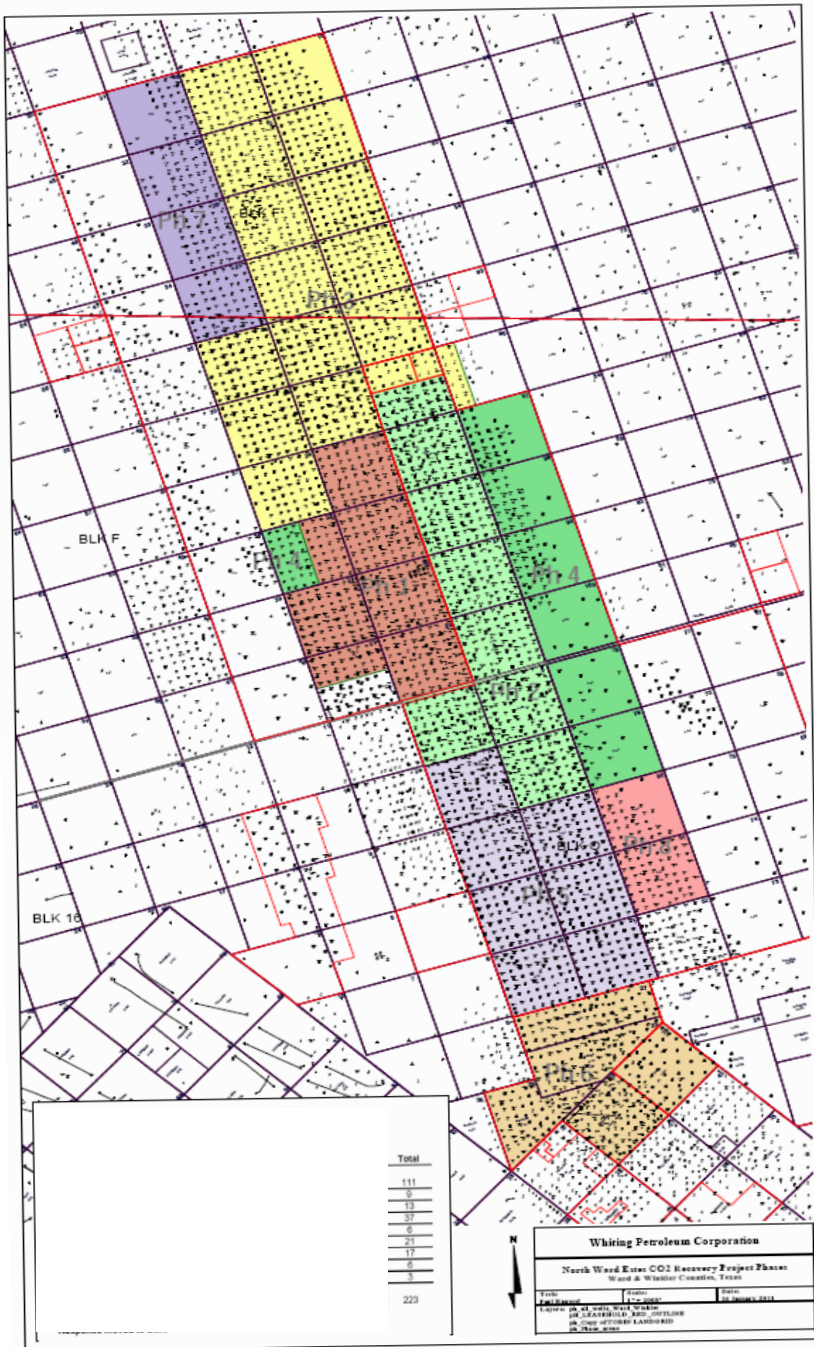


2011 CO₂ Flooding Conference
Field Trip to the North Ward Estes
CO₂ Flood and Facilities
(Whiting Petroleum Host)

December 7, 2011

THE PERMIAN BASIN WITH GEOLOGY, LOCATION OF CO₂ SOURCES, 2011 FIELD TRIP VENUE, AND PIPELINE INFRASTRUCTURE





North Ward-Estes Field: Yates / 7 Rivers / Queen

Discovered: 1929

Acreage: ~42,400 Acres

Fine-grained Sandstones to Siltstones Separated By Dense Dolomite

Tidal Flat to Lagoonal Depositional Environment

Cum Oil Production To Date: ~366 Million Bbls

Initial Conditions:

Bubble Point: 1,400psi

Oil Formation Volume Factor: 1.2 RB/STB

Oil Viscosity: 1.4cp

Solution GOR: 500 scf/STB

Oil Gravity: 37° API

Average Reservoir Properties:

Depth: 2,600ft

Net Pay: 60ft

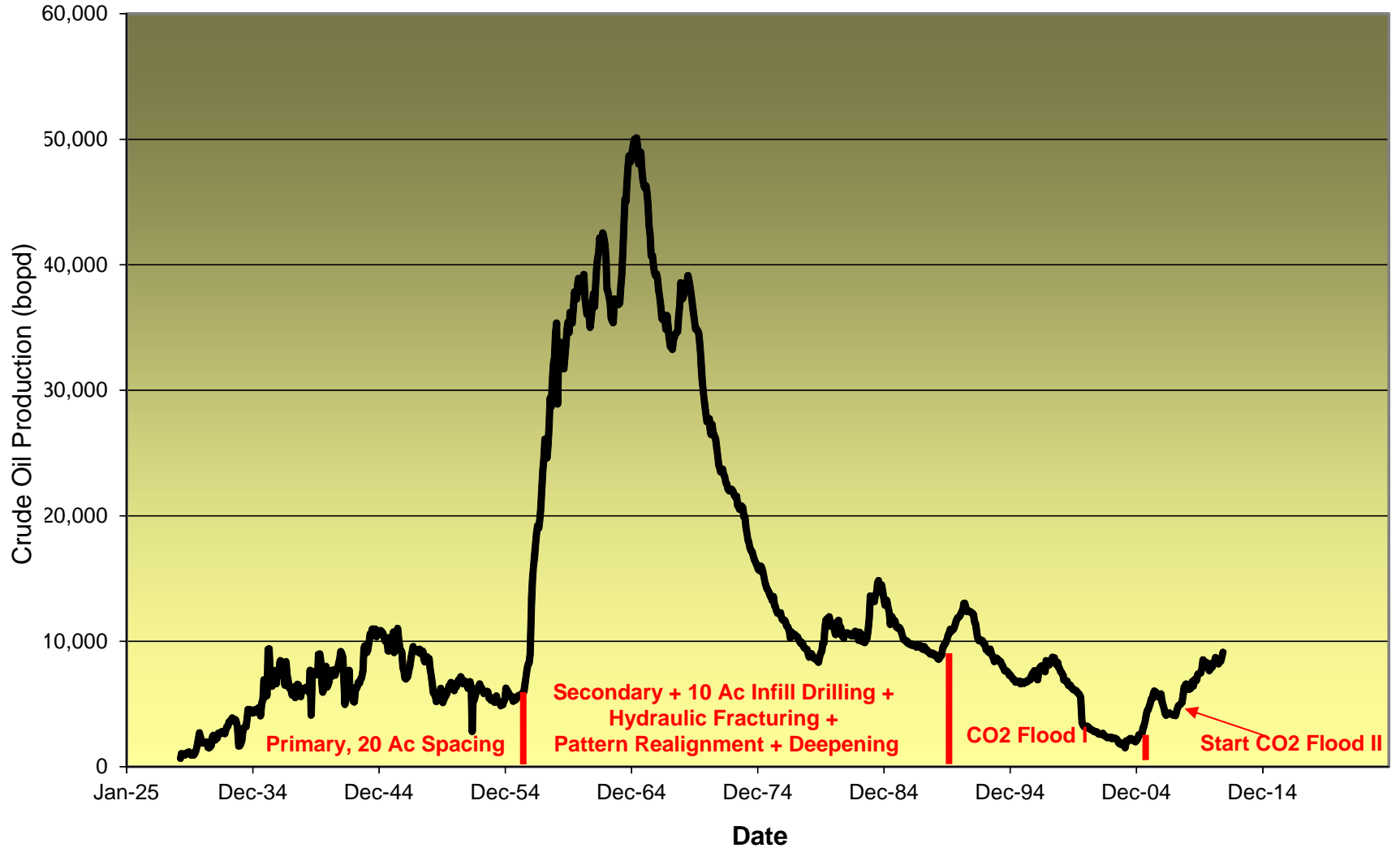
Porosity: 18%

Permeability: 15md

Dykstra-Parsons Coefficient: 0.85

Reservoir Temp: 83° F

North Ward-Estes Oil Production



CO₂ Recycle Plant Control Room



Injection Well Skid (Rigged for Wagging)



Production Well with Gas (CO₂) Lift

