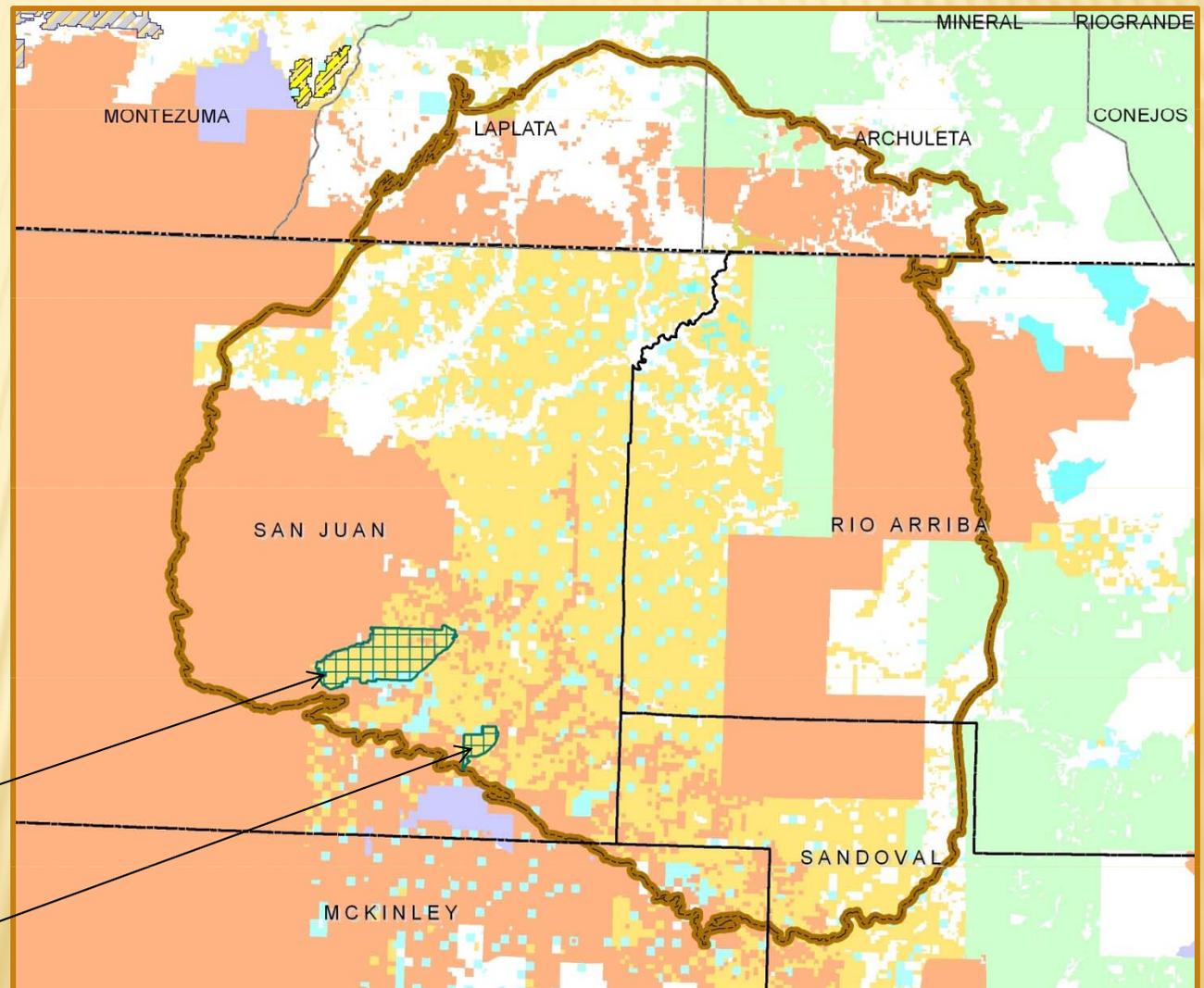
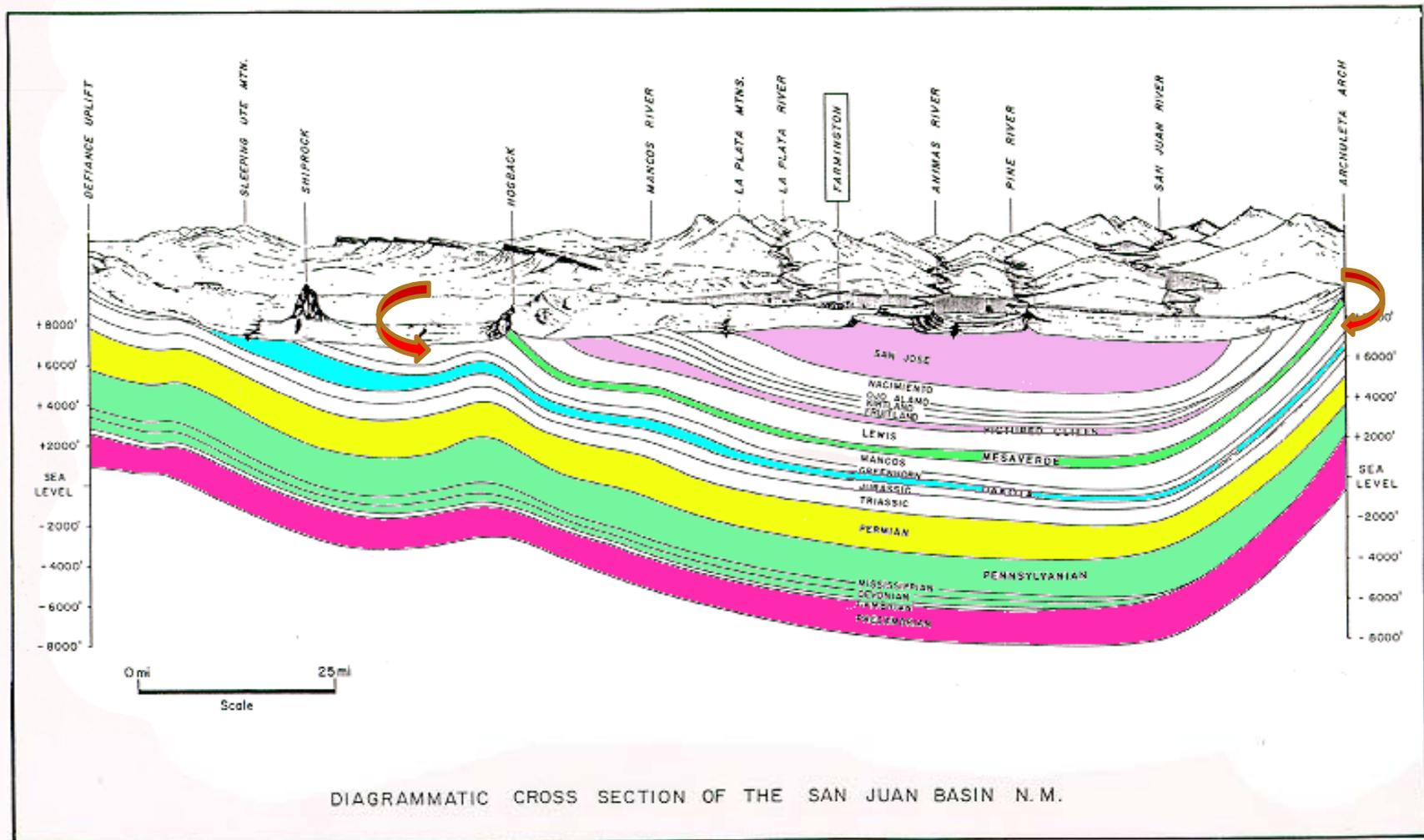


# MANCOS SHALE

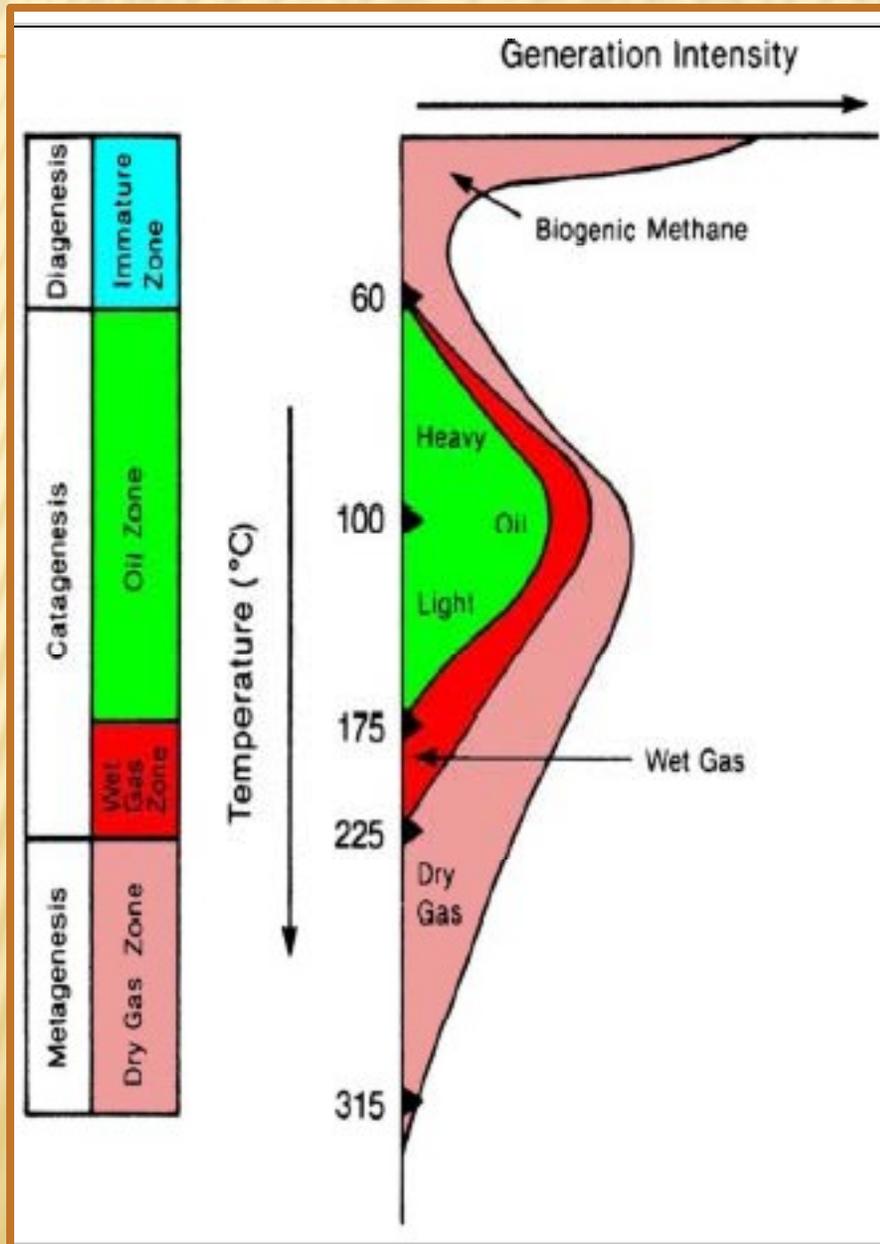
# LAND OWNERSHIP



# DIAGRAMMATIC CROSS SECTION OF THE SAN JUAN BASIN



# OIL AND GAS GENERATION

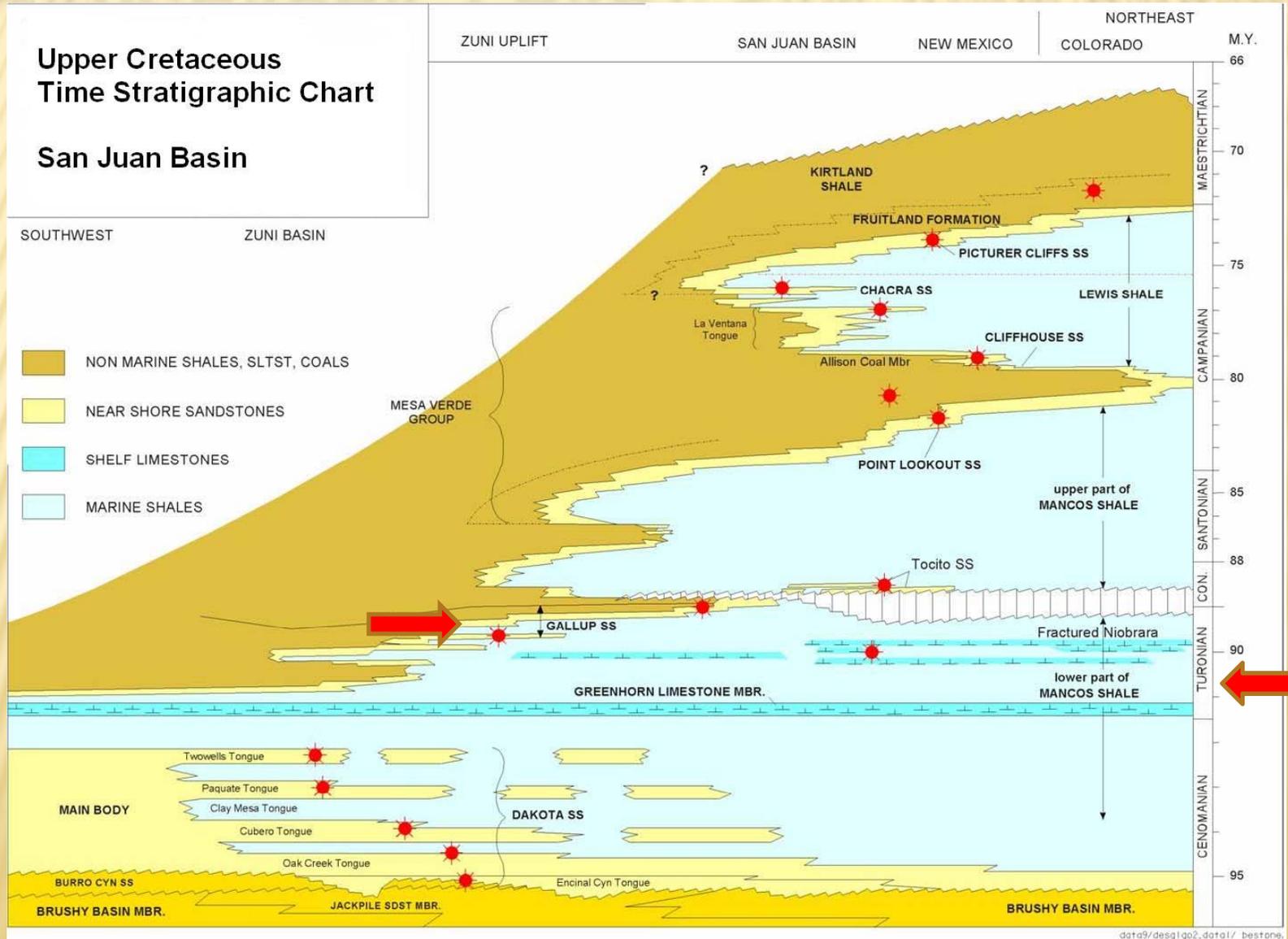


Biogenic Gas

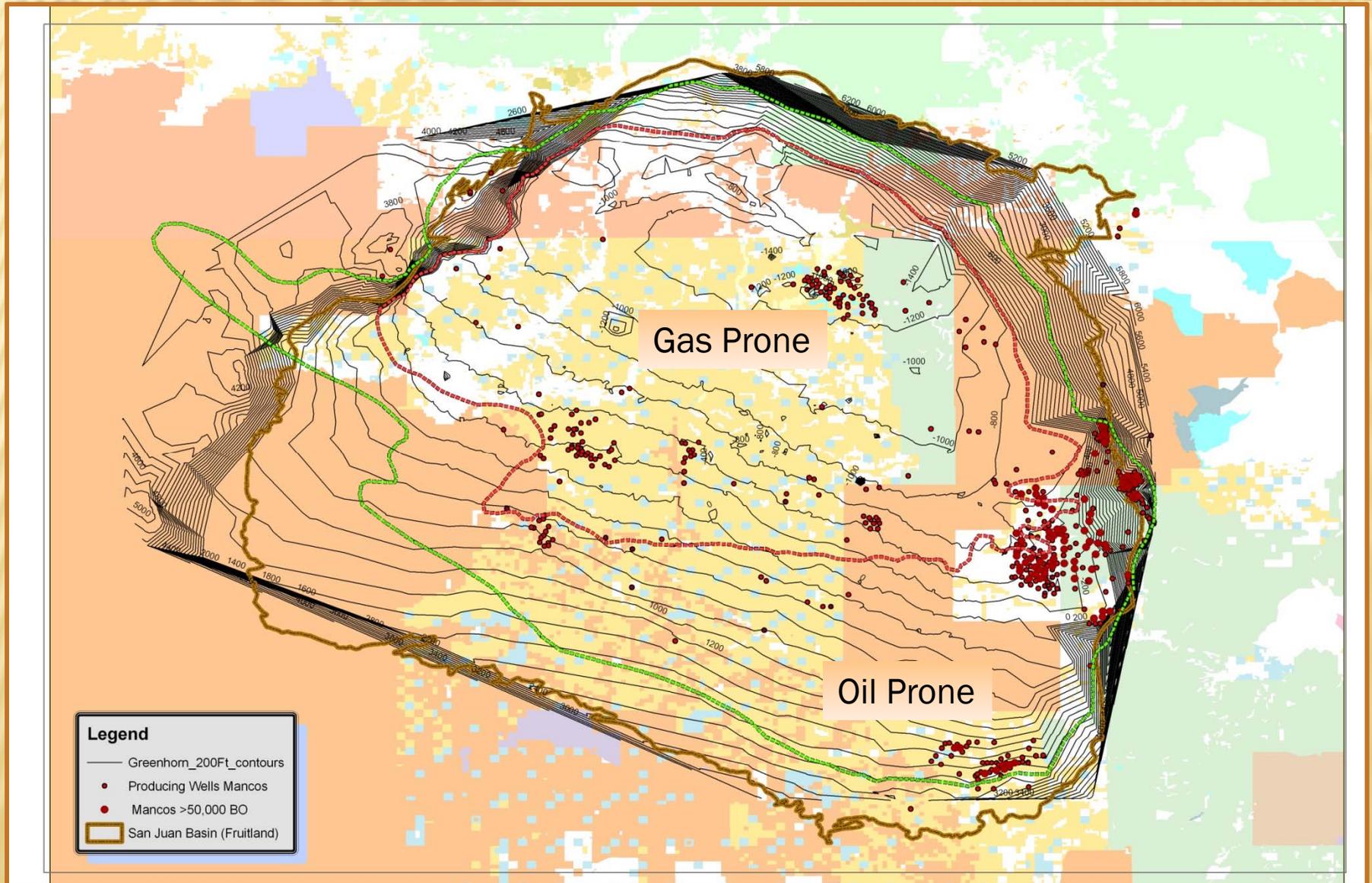
Oil Window

Gas Window

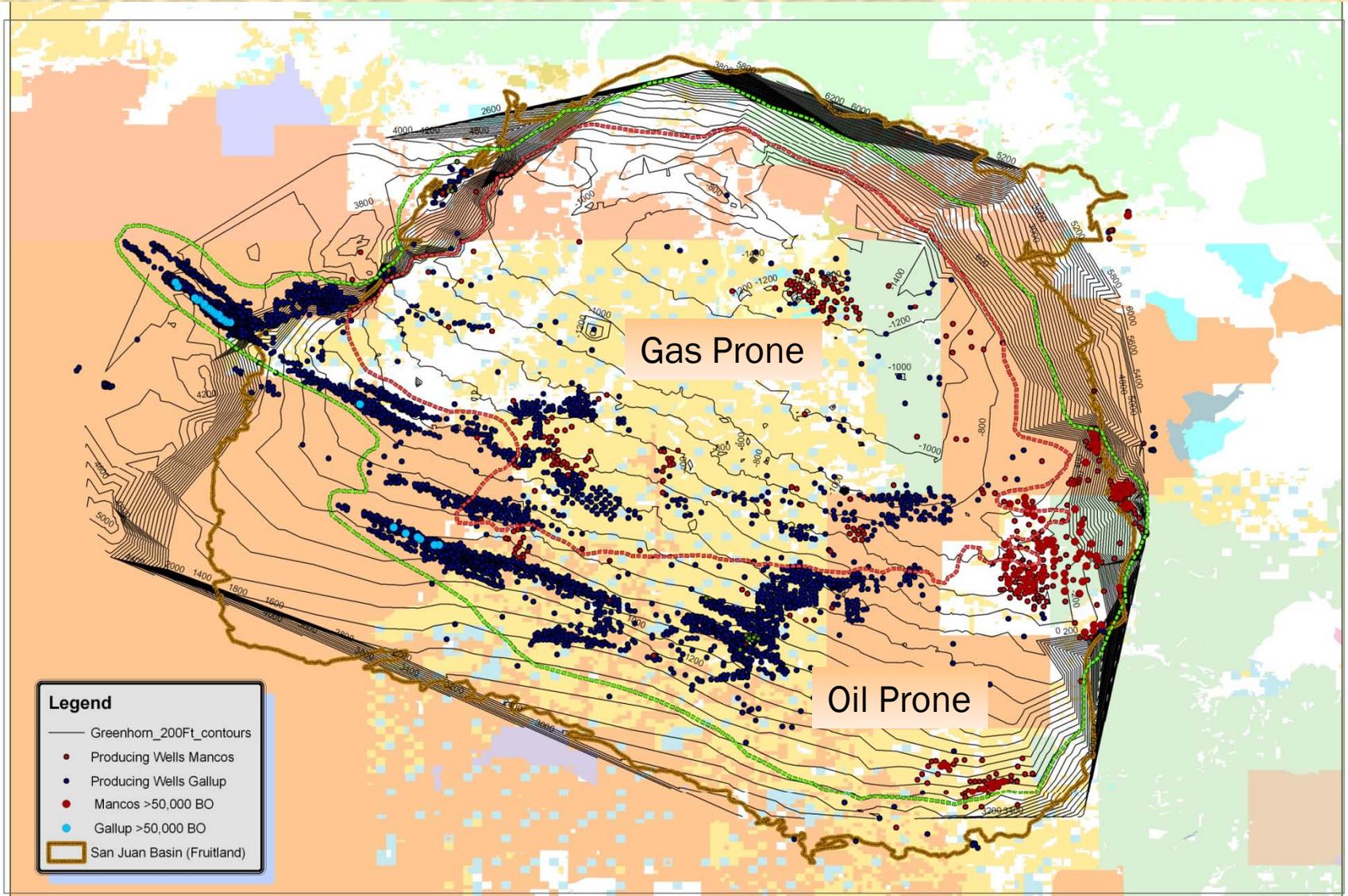
# STRATIGRAPHIC CHART: SAN JUAN BASIN



# MANCOS WELLS



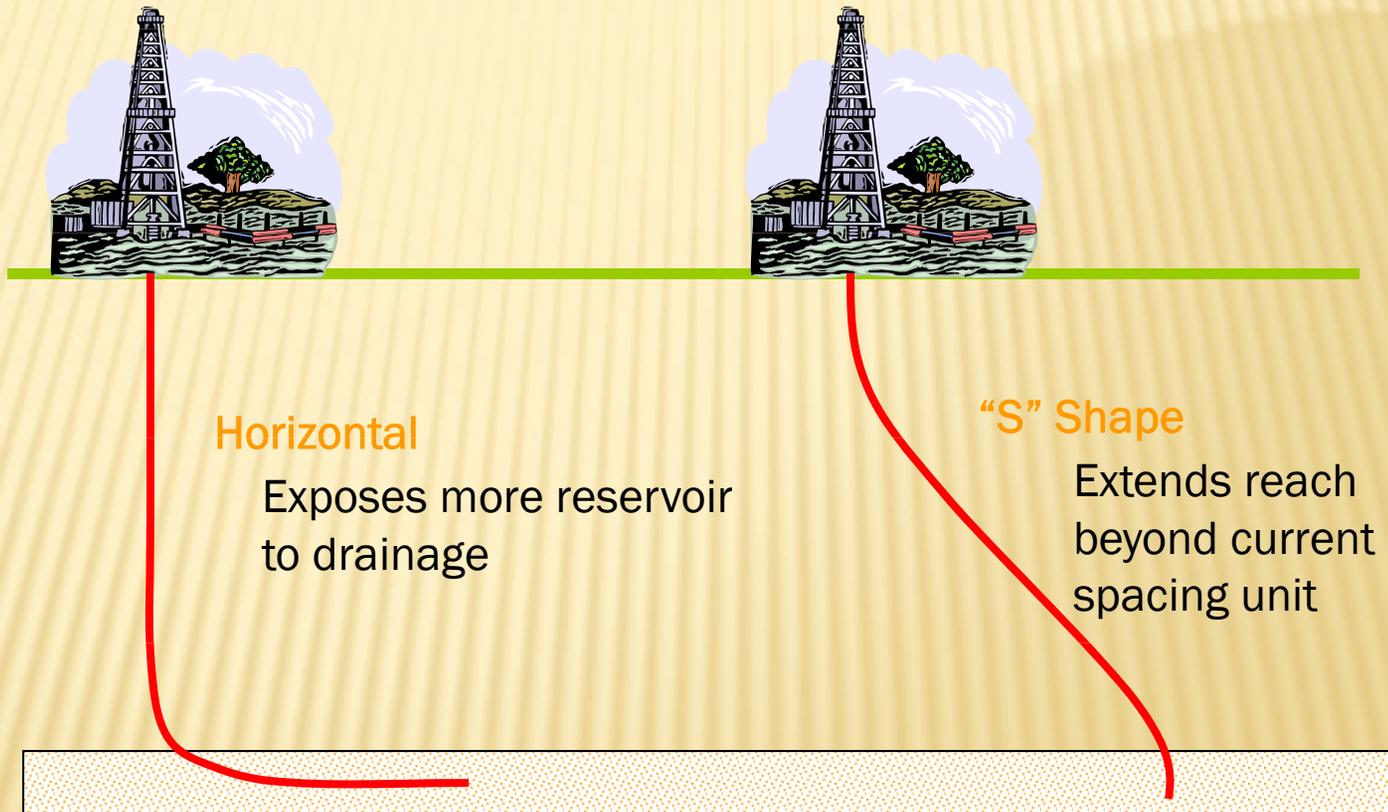
# MANCOS AND GALLUP WELLS



# CUMULATIVE PRODUCTION BY GEOLOGIC HORIZON

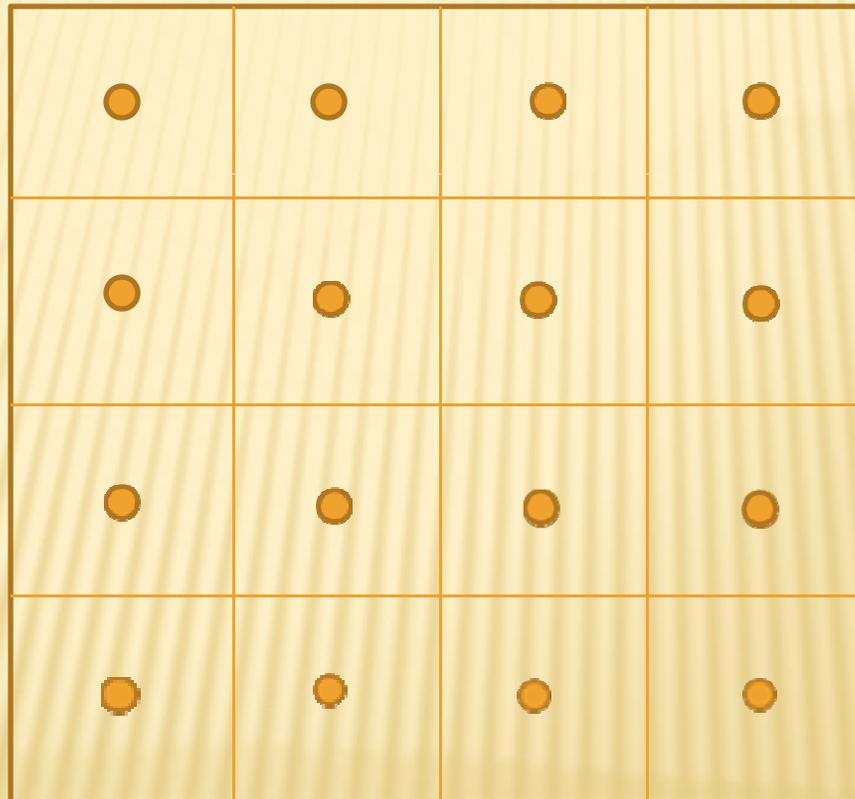
Formation	Cum Gas (mcf)	Cum Oil (Bbls)	Cum Water (Bbls)	Well Count
Chacra	171,687,665	60,490	795,230	566
Dakota	6,904,170,759	69,068,317	114,602,952	7,780
Fruitland	16,687,743,952	344,790	842,380,287	8,543
Gallup	920,036,304	173,139,083	273,869,975	3,827
Hospah	33,603	17,832,296	380,467,839	245
Lewis/Mesaverde	167,916,024	391,136	523,944	317
Mancos	96,259,320	28,833,591	1,989,249	316
Mesaverde	11,736,498,030	45,142,064	31,431,788	6,880
Pictured Cliffs	4,080,968,420	973,615	22,073,342	5,926
TOTAL	40,765,314,077	335,785,382	1,668,134,606	34,400

# DIRECTIONAL WELL TYPES USED IN THE SAN JUAN BASIN



# VERTICAL DRILLING: 40 ACRE SPACING

16 pads @ 2 ac. Ea.  
32 acres disturbance

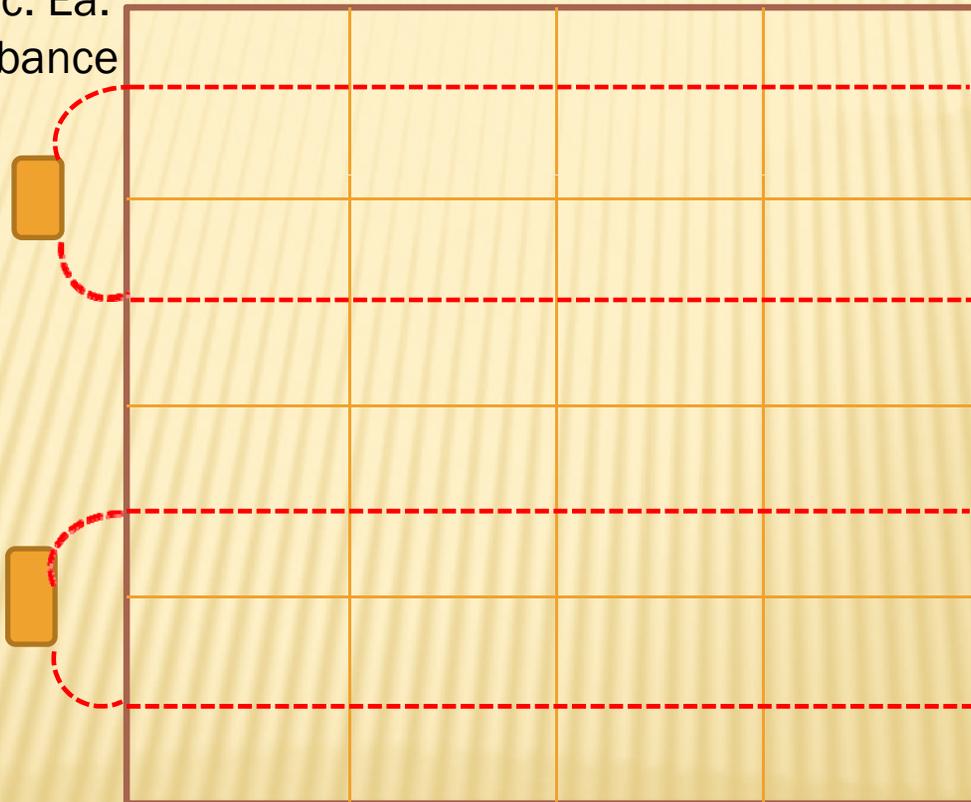


16 Wells  
16 Pads

7 drilling days  
Per well:112 days

# HORIZONTAL DRILLING: 40 ACRE SPACING

Two pads @ 6 ac. Ea.  
12 acres disturbance



Four Wells  
Two Pads

25 drilling days  
Per well: 100 days

# MANCOS SHALE PLAY: SUMMARY

---

- ✘ Mancos Shale Play split between oil and gas
- ✘ Northern part of the SJB is gas prone while the southern part of the basin is oil prone
- ✘ Gas play is uneconomic at current gas prices
- ✘ Horizontal well development results in less emissions than vertical wells with the same or higher resource recovered.