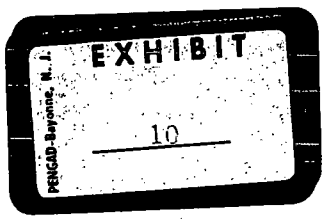
Fruitland Coal Increased Density Pilot Project

History of Fruitland Coal In the San Juan Basin

- Fruitland Coalbed Methane Committee formed 1986
- Committee consisted of Industry, NMOCD, COGCC, BLM and Southern Ute Indian Tribe
- New temporary pool was designated Basin-Fruitland Coal Gas Pool October 17, 1988 by Order R-8768
- Order R-8768 designated one well per 320 acres with setbacks of 790' from outside boundary and 130' internal boundaries
- Pool was described as stratigraphic interval 2450-2880 ft. in Schneider Gas Com "B" 1 well
- Aerial extent of the Pool included all or portions of San Juan, Rio Arriba, McKinley and Sandoval Counties
- NMOCD Order R-8769 dated November 1, 1988 contracted 26 pools to exclude the Coal interval
- NMOCD Order R-8768-A dated July 16, 1991 allowed for a second well after notice and hearing
- NMOCD Order R-8768-B dated February 10, 2000 changed setbacks to 660' and 10'



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History of Fruitland Coal In the San Juan Basin (Cont'd)

- **NMOCD Order R-8768-C dated October 15, 2002 changed set back footages for Federal Units and established "High Productivity Areas" and "Low Productivity Areas"**
  - **Well density in "Low Productivity Areas" was increased to 2 wells per 320 acres**

- **NMOCD Order R-8768-D, NMOCD Order R-8768-E and NOCD Order R-8768-G concern disputes between San Juan Coal Company and Dugan Production Company which were eventually dismissed and did not effect subsequent rule R-8768-F**

- **NMOCD Order R-8768-F dated July 17, 2003 abolished the Cedar Hill-Fruitland Coal Pool and increased well density in the "High Productivity Area" to 2 wells per 320 acres with notice to offset owners with right to hearing**

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Geologic Summary

- Fruitland coal deposition in the Pilot Project Area is highly variable
  - Fruitland depositional environment (next graph)
  - The following maps and displays demonstrate the disconnected nature of some coal seams (see net coal isopach map)
  - The mapped net coal thickness ranges from a high of 80' to a low of 50'
  - This is consistent with the regional Fruitland coal depositional model: a highly dynamic peat swamp environment with rapid lateral facies changes, dissected by a complex channel system
  - The internal structure and permeability of the coal is further effected by changes in ash content and maceral content of plant material

- The unpredictability of individual coal seam thickness and the disconnected nature of some coal seams in the Pilot Project Area cause significant variability in the volume of gas recovered (see cross section)
  - Parent well cumulative production ranges from 0.2 to 1.7 BCF
  - Parent/Increased Density well flow rates range from a high of 350 mcf/day to 30 mcf/day
  - The production variability does not support a conclusion that the Fruitland coal reservoir is one big connected tank

- Based on the erratic deposition and compaction history of coals in the Pilot Project Area, the proposed locations can be expected to lower abandonment pressures of individual coal seams, increase gas recovery and reduce waste