



### ENHANCED OIL RECOVERY (EOR)

Jacksonburg-Stringtown: Pilot waterflood began in early 1980's. Full-scale waterflood began in 1990 and is ongoing.

Mannington: Pilot waterflood tests in 1960's. Full-scale waterflood began in 1990's and is ongoing.

Salem-Wallace: No secondary recovery attempt documented.

Wolf Summit-Big Isaac: Full-scale waterflood began in mid 1990's and is ongoing





## CHALLENGES TO A SUCCESSFUL CO<sub>2</sub>-FLOOD OPERATION

1. Potential leakage via unplugged, unknown, and abandoned wells. Many of these "orphan" wells were historic oil producers and are located in the same area.

- 2. Lack of pipelines
- 3. Challenges regarding cost and transport of CO<sub>2</sub>
- 3. Poorly understood fault and fracture networks
- 4. Potential corrosion issues in both upstream and midstream operations.
- 5. Capital expenditure required (should this be #1?)

Lighter colors depict lower density while darker colors show higher density. Wells within a 1 mile buffer of field boundaries are included.



# Assessing Suitability of Depleted Fields for Enhanced Oil Recovery in West Virginia



## CONCLUSIONS

Although a shift is underway to utilize CO<sub>2</sub> as a commodity, technical, economic, and regulatory issues present a significant challenge to CO<sub>2</sub> EOR efforts. Despite these drawbacks, the data presented herein suggest that historic oil fields in north-central WV have potential for future secondary or tertiary recovery efforts. Of the specific fields included in this study, the Jacksonburg-Stringtown field has a proven track record of successful waterflooding and would be the top candidate for tertiary recovery via CO<sub>2</sub> floods. Wolf Summit-Big Isaac may also be an attractive target due to the ratio of cumulative production to OOIP. Salem-Wallace and Mannington fields have not been as extensively tested and may be more suitable for secondary recovery (waterfloods) before investing the capital necessary to conduct CO<sub>2</sub> floods. An additional consideration for development of residual oil is the presence of the productive Marcellus Shale in this region. The potential for significant behind-pipe oil pay presents a value-added opportunity for Marcellus

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