The Permian Basin Of Texas & New Mexico: The Jewel in the Crown of North American Oil & Gas

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Abstract

Unconventional oil and gas shale resources are transforming the global energy outlook with the largest impact being seen in the United States - and specifically Texas.

The Permian Basin of West Texas and New Mexico is the largest oil patch in the U.S. and the most prolific basin in the world. Corporations and organizations invested more than $28 billion in land acquisition in 2016, which is more than triple what was spent in 2015. In the past eighteen months alone, a remarkable increase in the drilling activity in the Permian Basin has been observed. Further, of the 930 rigs drilling horizontal wells in the U.S., the Permian Basin alone is the location of 450. It is estimated that some 50,000 wells will be drilled in the Permian Basin in the future.

The current challenges in developing the 4000-foot reservoir section in the Permian Basin are: optimization of development plans; improvement of recovery and rates; and the investigation of the impact of water production, water disposal and field development on seismicity, environment and on human life. The drilling of additional wells will raise the average demand of approximately five million barrels of water per day and approximately two billion barrels of water annually. Current demand through 2040 could eventually exceed 40 billion barrels of water. Further complicating the scenario, the produced saline water in the Permian Basin is higher than in the other unconventional plays in Texas.