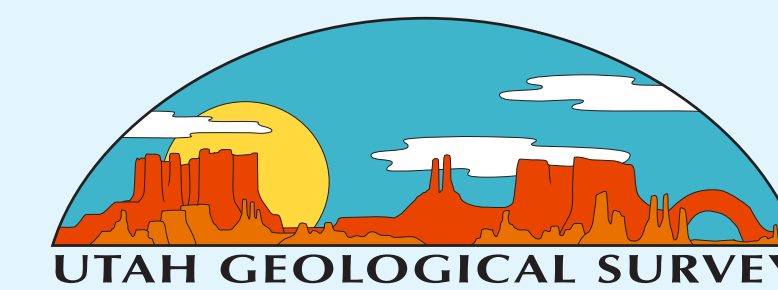


# FRONTIER COALBED GAS PLAYS IN UTAH

by David E. Tabet and Jeffrey C. Quick

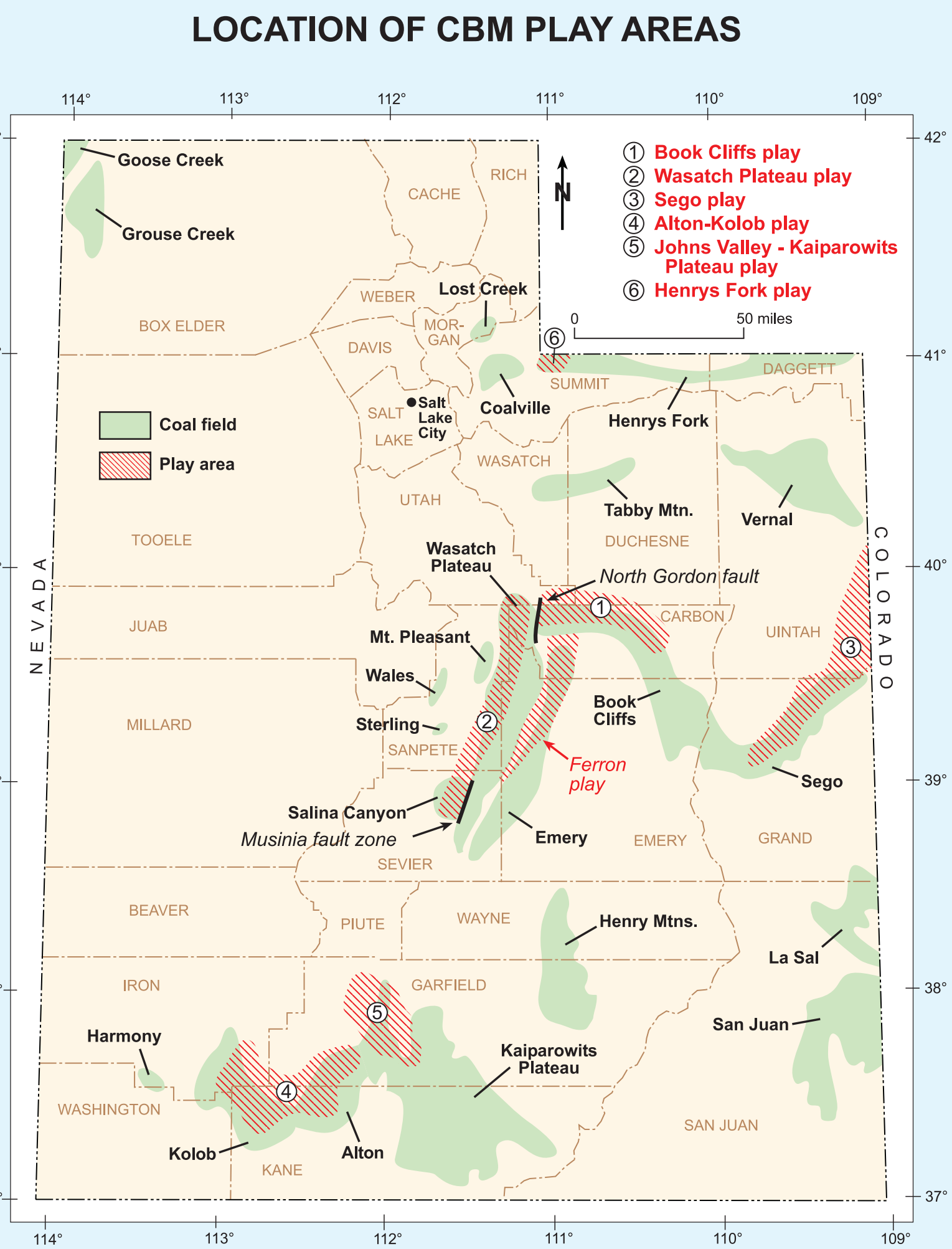


## ABSTRACT

Following the successful development of gas deposits associated with the coals of the Ferron Sandstone Member of the Mancos Shale in central Utah, several companies have begun looking for other economic coalbed-gas plays elsewhere in the state. Other prospective areas receiving attention from coalbed-gas exploration companies include the Blackhawk Formation coals in the Book Cliffs coalfield, the coals of the Emery Sandstone Member of the Mancos Shale in the northern Wasatch Plateau coalfield, the Neslen Formation coals in the Sego coalfield, and the Dakota Formation coals in the Alton-Kolob coalfields. Thick coals with potential for gas exploration also occur in the Frontier and Adaville Formations that extend south from Wyoming into the Henrys Fork coalfield in northern Utah. The coal geology, organic maturity, and structural data for these various areas, as well as the level of company activity, are summarized for these various coalbed-gas play areas.

## INTRODUCTION

Since 1992, there has been remarkably successful development of Utah's gas deposits associated with the coals in the Ferron Sandstone Member of the Mancos Shale in central Utah's Emery coalfield. Encouraged by the success of the Ferron play, petroleum companies are looking elsewhere in the state for new, economic, coalbed-gas plays. There are currently six prospective coalbed-gas plays in Utah being explored (see location map): 1) Blackhawk Formation coals in the Book Cliffs coalfield, 2) coals in the Emery Sandstone Member of the Mancos Shale in the Wasatch Plateau coalfield, 3) Neslen Formation coals in the Sego coalfield, 4) Dakota Sandstone coals in the Alton-Kolob coalfields, 5) Straight Cliffs Formation coals in the Johns Valley-Kaiparowits Plateau coalfields, and 6) the thick coals in the Frontier and Adaville Formations that extend south from Wyoming into the Henrys Fork coalfield in northern Utah. These plays have attracted varying levels of industry development interest. The undeveloped portions of these six plays are estimated to contain in-place gas resources ranging from 1.96 to 9.78 Tcf.



# Wasatch Plateau and Henrys Fork plays

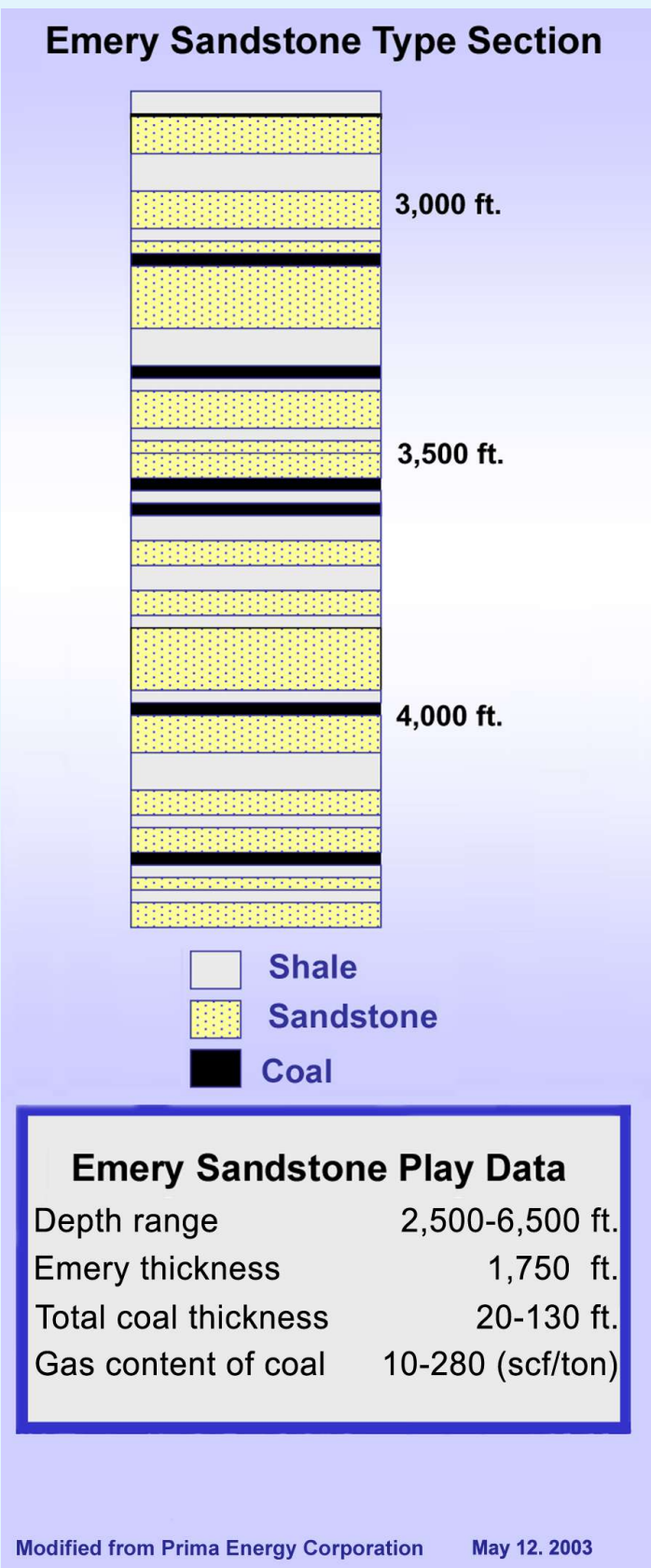
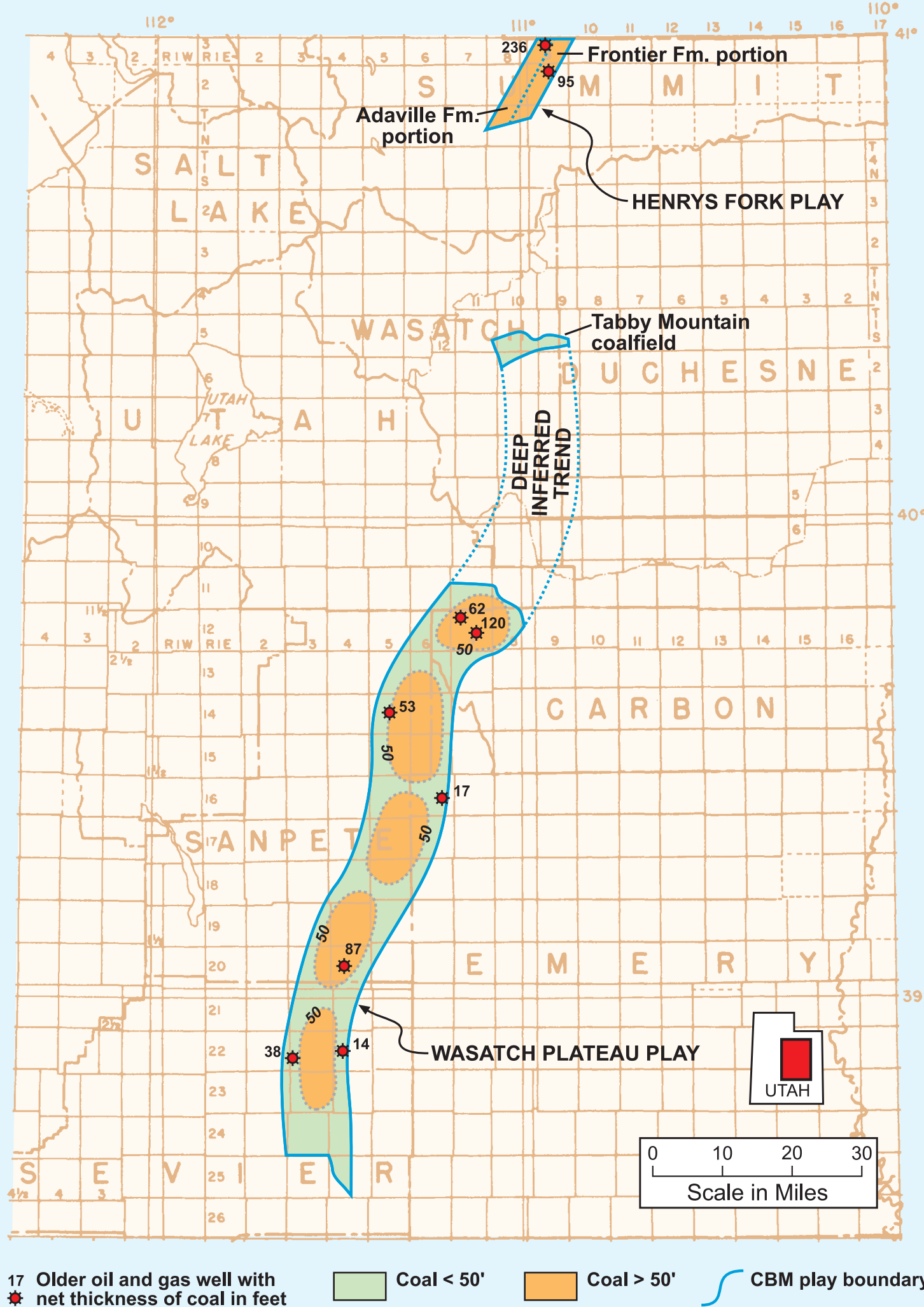
## WASATCH PLATEAU PLAY

The coalbeds in the Emery Sandstone Member of the Mancos Shale occur under the Wasatch Plateau, and are not exposed at the surface. These coals have never been mined, but are projected from a handful of oil and gas test wells to underlie about 180,000 acres of the Wasatch Plateau of central Utah. The coals are between the overlying Blackhawk Formation coals and underlying Ferron Sandstone coals. Up to 17 coalbeds, with an aggregate thickness of up to 120 feet, occur within the 1,600-foot-thick Emery strata. No gas content measurements are available for these high-volatile bituminous coals, but some beds are reported to be gassier than others. The in-place gas resource for this play is estimated to range from 0.1 to 3.6 Tcf. Prima Energy Corporation is actively exploring this play on its 71,000 net acres of leases in the area. Several other petroleum companies have drilled wells in this play in the past few years.

## HENRYS FORK PLAY

This frontier coalbed gas play lies north of the Uinta Mountains in eastern Summit County. This is actually a dual play, where the thick coals in both the Frontier and overlying Adaville Formations can be traced south from Wyoming, where they crop out, into northern Utah, where they are poorly exposed or buried by younger rocks. The coals appear to have a high-volatile bituminous rank in Utah, which is slightly higher in rank than the corresponding coals in Wyoming. These two coalbed gas plays occur as parallel, north-trending belts, with the Adaville play covering roughly 35,000 acres, and the Frontier play covering about 15,000 acres. Data from two Utah wells indicate that the Adaville Formation has an average aggregate coal thickness of 100 feet, while the Frontier Formation's coals average an aggregate of 50 feet thick. No activity is known on the Utah portion of the play, but at least two companies have drilled wells to test the gas content of these coals in Wyoming, although no test results have been released. As a result, little is known of the gas content of these coals. The total in-place coalbed gas resource for these two formations is estimated to range from 0.06 to 0.99 Tcf.

## NET COAL THICKNESS OF THE WASATCH PLATEAU AND HENRYS FORK COALBED GAS PLAYS



## LOCATION OF EXPLORATION ACTIVITY IN THE WASATCH PLATEAU AND HENRYS FORK COALBED GAS PLAYS

