

INTRODUCTION

The oil shale deposits located in Colorado's Piceance Basin are perhaps the richest in the world. An estimated one-half trillion barrels of oil are considered potentially recoverable.²⁸ Their existence has long been known, but despite periodic experimental attempts, their recovery has not yet been demonstrated to be economically feasible. Interest in oil shale has heightened once again as oil prices have reached record levels in recent years.

The Piceance Basin is located in northwest Colorado, as shown in *Figure 1*. The portion of greatest interest for oil shale development is bounded on the north by the White River, on the east by the Grand Hogback, on the south by the Roan Cliffs and the Colorado River, and on the west by Cathedral Bluffs and Douglas Creek. This area is situated primarily within Garfield and Rio Blanco counties. Most of the land in the north and east is federally owned, while lands in the south are largely private (see *Figure 2*). It is a rugged and lightly populated area, with irrigated agriculture in the creek bottoms and grazing on much of the uplands. Development of the area's substantial natural gas deposits has increased sharply in recent years. The area also contains important wildlife resources, including native and introduced trout, greater sage grouse, elk, and mule deer.

Oil shale development requires an extensive amount of water. According to the Bureau of Land Management, water would be used directly in mining and drilling operations, as well as for cooling equipment, controlling dust, cooling processed shale after retorting, wetting processed shale prior to disposal, fire control, revegetation, and on-site human uses.²⁹ In-situ operations would



Photo courtesy of The Story Group

Figure 1. Location of the White and Colorado River Basins and the Piceance Basin Oil Shale Deposits

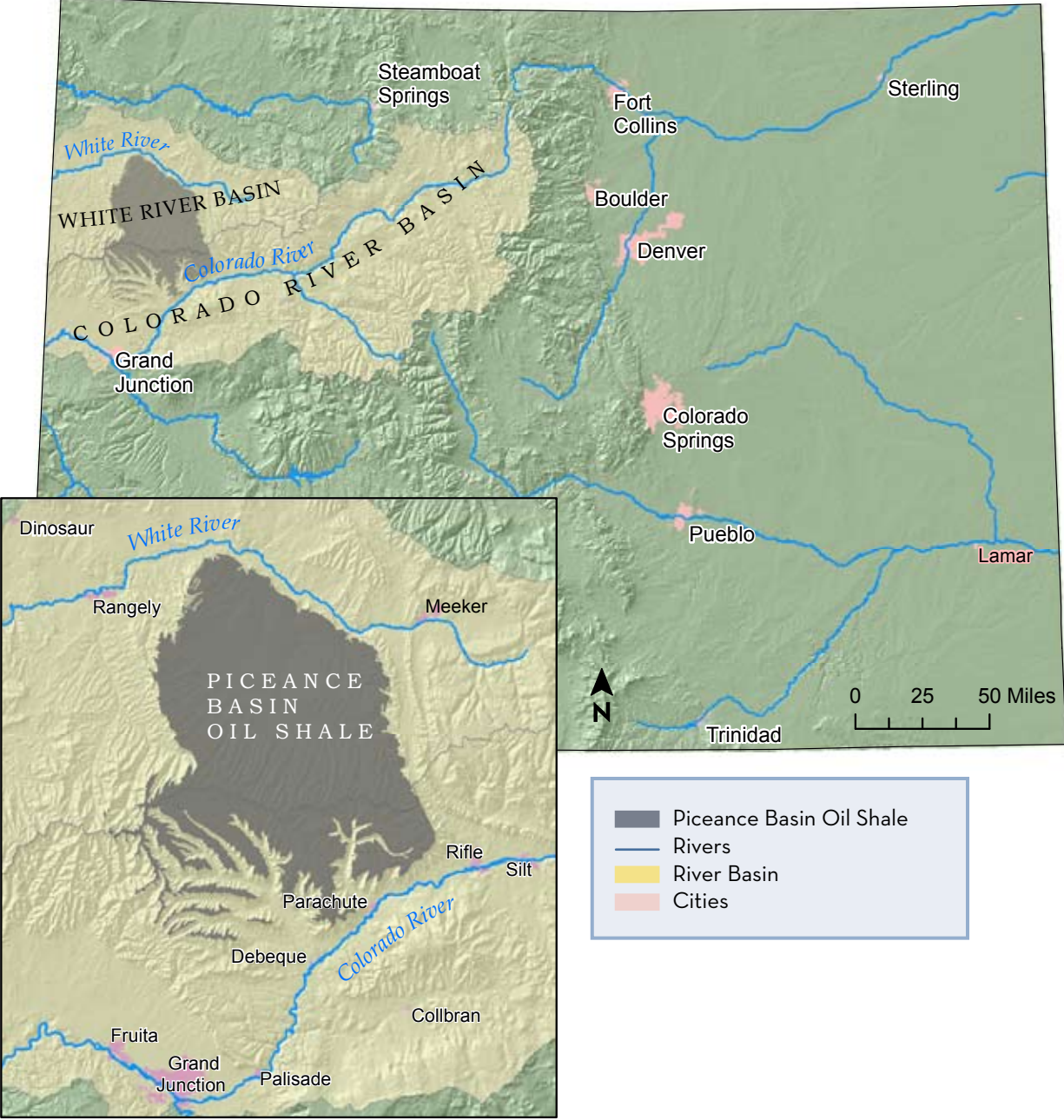
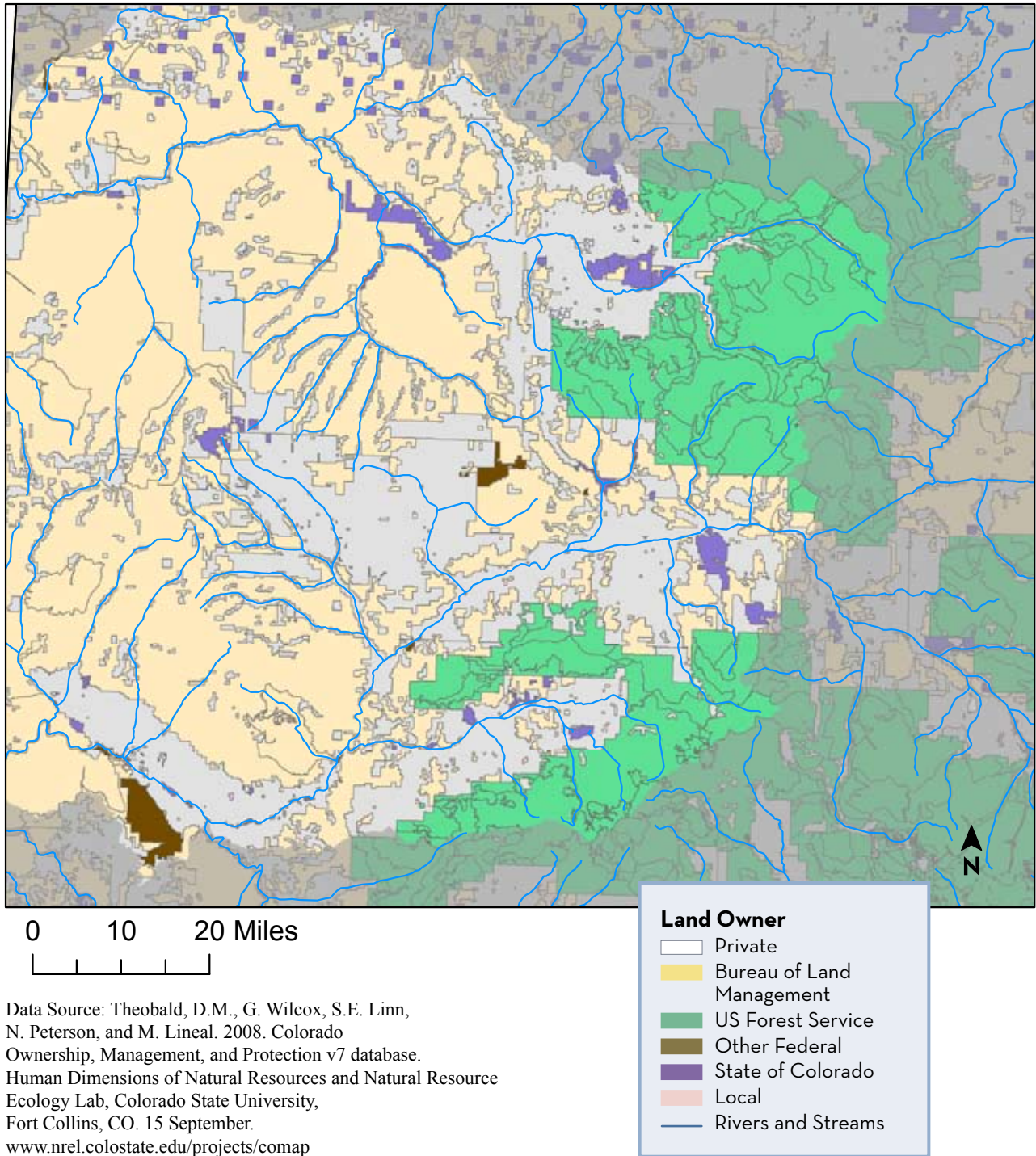


Figure 2. Land Ownership in the White and Western Colorado River Basin



use water for “hydrofracturing, steam generation, water flooding, quenching of kerogen products at producer holes, cooling of productive zones in the subsurface, cooling of equipment, and rinsing of oil shale after the extraction cycle.”³⁰ Water would also be needed for indirect demands, including power generation and municipal needs resulting from the increased local population.

In anticipation of commercial-scale oil shale development, potential oil shale developers and local water districts filed for conditional water rights to secure the rights to develop significant quantities of water. Many of these rights date back to the 1950s. They also purchased existing agricultural water rights. This report provides a detailed examination of the extent and nature of these rights.

The report begins with a look at the anticipated water demands associated with oil shale development. It then summarizes water rights — both conditional rights and acquired irrigation rights — that could be used to support oil shale development. A more detailed look at these rights is provided next according to their ownership. Finally, the report considers some implications for other water users and water uses should these water rights be exercised for oil shale production.