



# Federally Owned Coal and Federal Lands in the Northern and Central Appalachian Basin Coal Regions

The U.S. Geological Survey (USGS) assessed five coal beds or coal zones (fig. 1) in the northern and central Appalachian Basin coal regions for the National Coal Resource Assessment: the Pittsburgh coal bed, the Upper Freeport coal bed, the Fire Clay coal zone, the Pond Creek coal zone, and the Pocahontas No. 3 coal bed. The assessment produced stratigraphic and geochemical databases and digital coal maps, or models, which characterized the coal beds and coal zones (Northern and Central Appalachian Basin Coal Regions Assessment Team, in press). Using the assessment models, the USGS estimated original and remaining (unmined) resources (Wood and others, 1983) for these coal beds or zones.

The Appalachian Basin assessment was conducted in collaboration with the State geological surveys of West Virginia, Pennsylvania, Ohio, Maryland, Kentucky, and Virginia. The author thanks individuals from the Forest Service (U.S. Department of Agriculture, the National Park Service (U.S. Department of the Interior), and the U.S. Army Corps of Engineers for supplying estimates of Federal mineral ownership. Guidance from persons at the Bureau of Land Management is also appreciated.

## Resources on Federal Lands

Federal surface lands in the eastern United States include National Forests, U.S. military properties, Tribal land, National Parks, water bodies, other recreational areas, and historical sites (fig. 2). In the coal-bearing area of the Appalachian Basin, about 90 percent of Federal land is in National Forests. Four of the assessed Appalachian units have less than 5 percent of their assessed resource area under Federal surface ownership; the Fire Clay coal zone has 15 percent of its area under Federal surface ownership. Coal units assessed in

| SYSTEM        | SERIES | GROUP                     | ASSESSED COAL BED or ZONE |
|---------------|--------|---------------------------|---------------------------|
| PENNSYLVANIAN | UPPER  | Monongahela Group         | Pittsburgh coal bed       |
|               |        | Conemaugh Group           |                           |
|               | MIDDLE | Allegheny Group           | Upper Freeport coal bed   |
|               |        |                           | Fire Clay coal zone       |
|               |        | Pottsville Group          | Pond Creek coal zone      |
| LOWER         |        | Pocahontas No. 3 coal bed |                           |

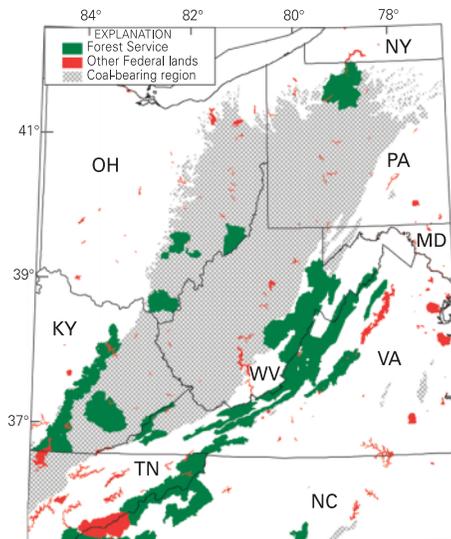
**Figure 1.** Generalized stratigraphic column showing the relative positions of the five assessed coal beds and zones in the northern and central Appalachian Basin coal regions.

the West can have nearly 100 percent of their area in Federal coal ownership.

Ownership of surface rights does not imply ownership of mineral rights, which include coal rights. The amount of federally owned coal is in a state of flux on eastern Federal lands. Through time, mineral rights can be acquired by the Federal government or can revert to it from prior owners.

Officials at individual Federal sites estimated the percentage of their land on which the Federal Government owns the mineral rights. Tonnages of Federal coal were calculated by using these percentages and the total tonnage estimates from Tewalt (2001). This method only approximates the actual coal tonnage that is federally owned and does not include Federal coal that does not underlie Federal lands.

Figure 3 summarizes, by State, estimates of remaining federally owned coal resources and describes coal quality for each assessed coal bed or coal zone



**Figure 2.** Distribution of Federal lands and the extent of coal-bearing rocks in the northern and central Appalachian Basin coal regions. About 90 percent of Federal land is in National Forests.

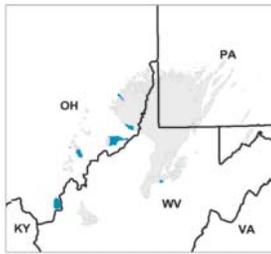
based on results from the Northern and Central Appalachian Basin Coal Regions Assessment Team (in press).

## Conclusions

Although Federal ownership of the remaining tonnage in the five assessed Appalachian coals potentially totals 4,000 million short tons, this coal is not necessarily available or economically feasible to mine. The scattered geographic distribution of mineral ownership parcels and existence of legal, surface, and technological restrictions on the minability of these coals could eliminate much of the estimated resource from consideration for development.

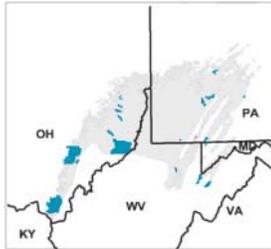
Most remaining resources in the five assessed units are thinner and at greater depths than the resources that have already been mined. It is unlikely that federally owned coal in the assessed beds or zones in the northern and central Appalachian Basin coal regions will be utilized extensively in the near future.

—Susan J. Tewalt



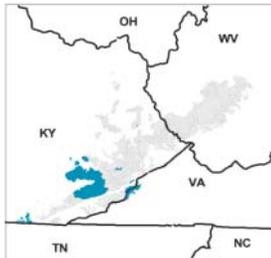
### Pittsburgh Coal Bed

The Pittsburgh coal bed has about 280 million short tons remaining of federally owned coal in Ohio within the Wayne National Forest and under Piedmont Lake (1.8 percent of total remaining resources for the bed). The Pittsburgh coal bed in Ohio is poorer in quality than in other States, averaging about 9.97 weight percent ash yield, 3.48 weight percent sulfur content, and 12,380 Btu/lb in gross calorific value. Although the Pittsburgh coal bed resource area underlies minor amounts of Federal land in Pennsylvania and West Virginia, there are no remaining resources.



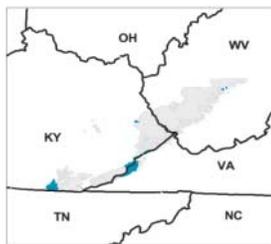
### Upper Freeport Coal Bed

The Upper Freeport coal bed is more areally extensive than the Pittsburgh and underlies a dozen federally owned lakes, two National Forests, and two National Historic Sites. Remaining federally owned resources of the Upper Freeport coal bed include approximately 1,300 million short tons in Ohio, 700 million short tons in Pennsylvania, 310 million short tons in West Virginia, and 44 million short tons in Maryland. Average values for Upper Freeport coal quality are 12.31 weight percent ash yield, 2.24 weight percent sulfur content, and 12,950 Btu/lb in gross calorific value. The estimated total of remaining federally owned Upper Freeport coal is 2,300 million short tons (7.4 percent of total remaining resources for the bed).



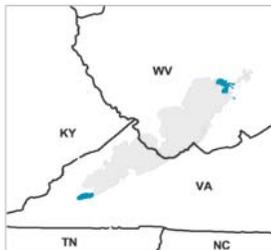
### Fire Clay Coal Zone

In Virginia, the George Washington and Jefferson National Forests contain a small amount of remaining federally owned coal resources in the Fire Clay coal zone—about 41 million short tons. The Daniel Boone National Forest in Kentucky has approximately 640 million short tons remaining, for a total of 680 million short tons of federally owned coal (roughly 13 percent of the total remaining Fire Clay resources). Ash yield for the Fire Clay coal zone averages about 10.62 weight percent, sulfur content about 0.99 weight percent, and gross calorific value around 12,910 Btu/lb.



### Pond Creek Coal Zone

The Pond Creek coal zone has remaining federally owned resources in Kentucky (190 million short tons), in Virginia (240 million short tons), and in West Virginia (10 million short tons). The total for remaining federally owned coal in these forests, parks, and lakes is 440 million short tons (5.1 percent of total remaining Pond Creek resources). The Pond Creek coal zone is fairly low in ash yield (averaging 7.24 weight percent), moderate in sulfur content (1.05 weight percent), and high in gross calorific value (13,540 Btu/lb).



### Pocahontas No. 3 Coal Bed

The Pocahontas No. 3 coal bed is the highest quality coal that was assessed. Generally, ash yield and sulfur content are low (5.75 and 0.91 weight percent, respectively) and gross calorific value is high (14,490 Btu/lb). Remaining federally owned resources of the Pocahontas No. 3 coal bed include about 100 million short tons in the George Washington and Jefferson National Forests in Virginia and about 250 million short tons in West Virginia National Parks, for a total of 350 million short tons (6.9 percent of remaining Pocahontas No. 3 resources).

**Figure 3.** Maps of the northern and central Appalachian Basin coal regions showing the distribution of Federal lands (turquoise) and areas of known coal resources (gray) in the Pittsburgh coal bed, Upper Freeport coal bed, Fire Clay coal zone, Pond Creek coal zone, and Pocahontas No. 3 coal bed. The summaries at right give estimates, by State, of remaining federally owned coal resources and coal-quality data (on a whole-coal, as-received basis) for each assessed unit. Btu/lb, British thermal units per pound.

## References

- Northern and Central Appalachian Basin Coal Regions Assessment Team, in press, 2000 Resource assessment of selected coal beds and zones in the northern and central Appalachian Basin coal regions: U.S. Geological Survey Professional Paper 1625-C, CD-ROM's.
- Tewalt, S.J., 2001, Resources on Federal lands for five coal beds in the northern and central Appalachian Basin coal regions: U.S. Geological Survey Open-File Report 01-178, 8 p.
- Wood, G.H., Jr., Kehn, T.M., Carter, M.D., and Culbertson, W.C., 1983, Coal resource classification system of the U.S. Geological Survey: U.S. Geological Survey Circular 891, 65 p.

**For more detailed information on the following subjects, please contact:**

National Coal Resource Assessment, Appalachian Basin  
Leslie F. Ruppert (E-mail: [lruppert@usgs.gov](mailto:lruppert@usgs.gov))

Assessed resources on Appalachian Federal lands  
Susan J. Tewalt (E-mail: [stewart@usgs.gov](mailto:stewart@usgs.gov))  
U.S. Geological Survey  
National Center, Mail Stop 956  
Reston, VA 20192