

opments in mining technology, coupled with soaring demands for mineral commodities. We can expect a continuing great increase in surface mining activity in the years just ahead.

With shovels capable now of moving 185 cubic yards of earth and rock at one bite, it is not too surprising to find that, in 1965, 35 percent of our coal, 80 percent of our copper, and 90 percent of our iron ore came from surface operations.

This trend probably will be accentuated in the future.

What do we mean when we talk of surface mining?

In our Department we use the term to include such mining operations as coal strip and auger mining; sand and gravel pits; dredging for gold, gravel, and other mineral commodities; hydraulic mining; and deep pits for extraction of copper, iron, and other ores.

Surface mining is an essential part of the American industrial economy. It is going to continue. Overall, 80 percent of our mineral production tonnage comes from surface mines. It provides the highest efficiency in mineral recovery. It usually is more economically favorable than any alternative means of mining. It generally is safer for the mineworkers.

But surface mining has costs—costs which may not appear in the market transaction of the commodity. These hidden costs arise with the diminishing of the useful availability of land—with pollution and the hazards to human life, property, and wildlife—with the impairment of natural beauty—with the degradation of other natural values which occurs.

It is of interest that public attention has focused on surface mining in the last few years. It appears that surface mine reclamation is a policy issue whose time for resolution has arrived.

Let me make the record clear about our use of the word "reclamation." In the context of surface mining we do not consider reclamation to mean a restoration of the land to its original condition. Often this would not be as desirable as some alternative land condition. Rather, we use reclamation to mean that activity which avoids or corrects damage to the lands and waters of the vicinity and leaves the area in a usable condition. In some instances it can be more productive than it was originally.

In 1965, Congress enacted the Appalachian Regional Development Act, which recognized that adverse conditions resulting from surface mining were of national significance requiring a long-range comprehensive program for their elimination or alleviation, and called for a 2-year study.

Our nationwide report resulting from the study was issued last summer under the title of "Surface Mining and Our Environment" and that is the report I have in my hand and that members of this committee I am sure are familiar with. It is a pioneering study and I should like to compliment my people. I feel it is a balanced study and one which represents good use of resource analysis.

Leadership of the study was placed in the Assistant Secretary for Mineral Resources, and I should note that some of the photographs you have just seen were taken by Assistant Secretary Cordell Moore. He and his staff slogged through mud and dust to get on-the-spot knowledge of surface mining conditions. The day-to-day working responsibility for the study was assigned to the Bureau of Mines.