Photos: L. C. Axthelm, USBR

"Reclamation" of a Wyoming coal mine: Will it be effective? *Montana mine: Critics claim "a new Appalachia."*

Plains energy complex: Debate quickens

There may be as much as a trillion and a half tons of sub-bituminous coal in the Powder River Basin in Wyoming and Montana. The basin is just a portion of the total Fort Union coal formation, which stretches across the high northern plains from central North Dakota to the foothills of the Bighorn Mountains in Montana and Wyoming. New technologies may make it possible to convert the coal into virtually every usable form of energy, and development of the vast reserves is already under way. This development has the potential of being the largest single natural resource project in the history of the world (SN: 3/4/72, p. 156).

It also has the potential of creating a controversy that could dwarf even the one over the proposed Trans-Alaska pipeline. There are three major contenders: environmentalists, regional populists and energy companies. Indications are that the populists and the environmentalists will form a coalition; whether such a coalition can defeat the energy companies is questionable in the face of expanding national energy demand and an Administration that the environmentalist-populist group claims is hand and glove with the energy companies.

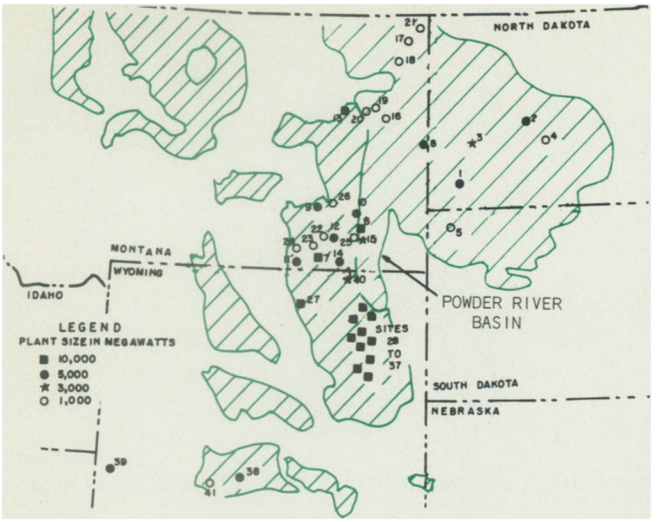
The controversy began boiling Sept. 25 when Democratic Presidential candidate George McGovern attacked the Administration's energy and mine-reclamation policies in a widely reported Billings, Mont., speech. It became even more heated last week when the Interior Department announced creation of an interagency task force to study "all aspects" of the coal development. Scientists at universities in the region, as well as a Senator and a Congressman from Montana, claimed the task force is largely a sop to the populists and the environmentalists and that it will really serve the interests of the companies and of development-oriented Federal agencies.

Whether this is so or not, there appears little doubt that the Interior Department sees itself as having a promotional role. "Visualize, if you will," Hollis Dole, assistant Interior secretary for mineral resources, told the Oil Daily Forum earlier this year, "a coal processing complex located at one of our more remote areas where jobs are few and far between. The construction project itself would require an investment in mine and physical plant of $750 million." He urged his listeners to "think big . . . the [energy] supply problems we face are huge and the solutions we address to them must be of the same order of magnitude." What he had in mind, he continued, was utilization of the Great Plains coal in huge energy complexes that would produce electric power, synthetic natural gas and petroleum, plus a kind of concentrated "solvent-refined" coal that would rival the highest-grade Eastern coal in thermal value.

So far, only electric power plants have actually been proposed (and some small one built), and it is this aspect of the total possible development that is occasioning the current controversy. The North Central Power Study, released a year ago by a group of 20 utilities and Interior's Bureau of Reclamation, forecasts a possible coal-fired generating capacity in the region of 50,000 megawatts. This would easily make it the largest single generating complex in the world. However, it was recently reported that 14 of the utilities have declined to participate in the second, more detailed, phase of the North Central study; this indicates, says Robert McKelvey, a University of Montana systems analyst, that the 14 utilities may now want either to ship the coal to their Midwestern power plants via unit train or to gasify it in mine-mouth plants and pipe the gas to their power plants. Thus whether or not the huge power complex is actually built on the coal fields, there still remains the problem of strip-mine reclamation. And if coal gasification is the route the utilities should take, the gasification plants will use far more water than would the power plants—in a region that is semiarid and water short.

McKelvey, along with Sen. Lee Metcalf and Rep. John Melcher (both Montana Democrats), are major critics of the new task force. At a Congressional briefing last week, said a Metcalf aide, task force personnel told Western coal-state Congressional delegations that the interagency group favored passage of a "weak" strip-mine reclamation bill without strengthening amendments offered by the coal-state Senators. Melcher charged the task force will be a "farce" without an adequate strip-mine reclamation bill and without Congressional supervision —including Congressional hearings in the region. The Metcalf aide claimed the task force's failure to ask for specific, line-item budgeting makes clear it does not really plan meaningful studies.

McKelvey claims regional interests are being shut out of the task force. He says his application to the Environmental Protection Agency (a member of the task force) for funding a three-day technical symposium on the



Vast strippable coal reserves are found over a huge region between the Midwest and the Rocky Mountains. Sites indicated show power-generation potential.

USBR

coal developments was rejected as "premature."

"This is quite wrong," McKelvey told SCIENCE NEWS. "We wanted at the symposium to raise the very questions the government study should be answering." He is not certain the task force will ever raise these questions meaningfully; instead of a Federal agency-dominated study, he says, "this is really a job for an independent critic." Best suited for the job, he believes, is an interdisciplinary team of scientists from universities in the region. He maintains such a group would have the capability to make a "pointed critique" of the coal developments similar to a study of the California Water Plan made by the University of California.

McKelvey says the powerful development-oriented agencies, such as Interior's Bureau of Reclamation and the Department of Commerce's Old West Regional Commission, are likely to dominate the interagency task force.

Bruce B. Hanshaw of Interior's Geological Survey, staff chief for the task force, disagrees with the critics. "Our study," he says, "is going to be the biggest attempt ever to look at the whole ball of wax in connection with a natural resource development." Not only environmental studies but also studies of the demographic, social and economic impacts on the entire region will be made. He adds that his team is made up almost entirely of scientists (he is a geophysicist) and that it will bring high standards of objectivity to examining the coal developments. He also insists that regional interests will have ample opportunity for input to the studies.

Until he was given the task force assignment, Hanshaw had been a "working scientist" without administrative experience. He admits he does not yet know what the budget of the task force will be or even where it will come from.

Perhaps most significant are statements by Dole and by Interior Secretary Rogers C. B. Morton indicating their belief in the inevitability of development, certainly an assumption the task force will have to accept. Thus the option of no development, or even of only limited development, appears to be closed in advance. McKelvey says there has been so little experience in strip-mine reclamation in the area that there is no assurance it can be done even with the best of intentions. "There is so little topsoil, the area is so subject to drought cycles and so arid," he says, "that it is still largely speculative as to whether reclamation of strip mines is economically feasible." He says there is also a possibility that industrial water will be taken from the Yellowstone River and its tributaries to a point where in a dry year the flow would be reduced by one-half, with consequent severe damage to stream-side ecosystems or to irrigation farming. Power plants also pose a threat of high levels of air pollution (a threat that would be considerably diminished if coal gasification were the option chosen). Further, McKelvey says that if part of the power output of a generating complex were transmitted to the West Coast, the transmission line network required would be so immense that it would pose severe ecological problems in the scenic mountain areas it would traverse.

Because many environmentalists have more faith in state government control, they have joined populists in calling for creation of a giant, multistate wholesale public power district to supervise coal development. □

NRC group calls for rejecting 'concept of continuing material growth . . .'

The United States is in a natural resources bind that will probably get worse instead of better. The components of the bind are growing Third World competition for limited foreign resources and growing costs—in energy and environmental destruction—of utilizing domestic resources. The main answer to the problem may be conservation policies that would eventually lead to a stable and materially static economic order resembling the one proposed in *Limits to Growth*, the computer simulation of world trends released earlier this year by a Massachusetts Institute of Technology systems dynamics team (SN: 3/25/72, p. 202).

These are the general conclusions drawn from a study released last week by the National Materials Advisory Board of the National Research Council. The study was prepared for the National Commission on Materials Policy, appointed in 1971 to advise the President and Congress on raw materials policies. The diverse interdisciplinary team conducting the study was headed by Preston Cloud, professor of biogeology at the University of California in Santa Barbara.

Says the study's summary: "We are now almost completely dependent on foreign sources for 22 of the 74 non-energy mineral commodities considered essential for a modern industrial society. . . . Meanwhile, consumption is pushed upward both by growing populations and by increasing per capita demands. . . . [and] 'Third World' voices for an equitable share in earth's material goods grow ever more insistent." The study alludes to an Interior Department report which predicts that by the turn of the century, "even with substantially enlarged domestic production and recycling," there will be a raw materials deficit of 54 percent of total demand.

A new and more realistic materials policy, the report continues, might reject "the concept of continuing *material* growth as an axiom and keystone. . . ." Such a policy instead would examine the possibility of limiting growth "where [growth] does not add demonstrably to quality of life." Further it would count environmental, social and energy costs "along with obvious fiscal costs, as the total price we must pay for continuing material affluence."